Momentum Effects on the Chinese Stock Market

By Yunlin Yang

Doctor of Philosophy

Business School

November 2016

Abstract

Momentum effect refers to a pattern in stock price behaviour whereby prices of stocks which experienced relatively strongest gains in the past ("winners") continue to overperform, and those of stocks with relatively weakest gains in the past ("losers") continue to underperform. Momentum profits are widely documented in most developed markets except for Japan. However, evidence on their existence is ambiguous in developing markets, especially in China. This thesis attempts to provide an insight into the existence and characteristics of momentum effects in China, and to reconcile what often appears to be contradicting results in the literature.

In this thesis, momentum strategies in Chinese A-share stock markets (1991-2012) are evaluated. Overall, no momentum profits but significant contrarian profits are found for whole sample periods. It is found that the ambiguous results with respect to momentum effects in Chinese stock market are due to different sample periods examined. This finding helps to reconcile often-contradicting results as reported by other studies.

The second part of this thesis investigates the reason as to why no momentum profits are found in the Chinese stock market by examining momentum returns in different market-states. It is found that in the Chinese stock market, momentum strategies generate relatively less momentum returns following UP market-states than following DOWN market-states. Motivated by this result, momentum strategies following different market dynamics are studied subsequently in part three. The results reveal that momentum effects are more pronounced when markets stay in the same state than when they transition into a different state. This finding is accordant with the theory of overreaction. This finding further suggests that the Chinese stock market is not fundamentally different from other, developed markets. The lack of absolute momentum in the Chinese stock market is not due to investors' rationality but rather to the unique features of that market.

Dedication

To My dearest parents, Ying and Lide

Acknowledgements

First and foremost, I would like to offer my sincere gratitude to my supervisor Dr Bartosz Gebka, who has continuously supported me through my Ph.D. studies with his great patience and immerse knowledge. Without his guidance and challenges, I would not be able to finish this thesis. Besides academic, I would like to thank him to help me to resolve the difficulties I had when I had health problems. One simply could not wish for a better mentor and friendlier supervisor.

I would like to thank Prof. Hudson, my previous supervisor, for his intelligent guidance in the beginning stage of the Ph.D. study.

Besides my supervisors, I would like to thank my examiners Dr Su and Dr Kallinterakis for their helpful comments and suggestions.

Thanks are also due to my cousin Xiaojing for her kindly teaching and assistance on the programme coding in SAS software.

Last but not least, I would like to thank my parents Ying, Lide and my partner Peng for their unconditional love and support. Also, I would like to thank my true friends Zhenjiang and Michael for all the help they gave me.

Table of Contents

List of Tables

List of Figures

Introduction

Momentum effect may be observed as a pattern in stock price behaviour whereby prices of stocks, which experienced relatively strongest gains in the past ("winners"), continue to overperform/rise, while those of stocks with relatively weakest gains in the past ("losers") continue to underperform/decline. Since it was first documented by Jegadeesh and Titman (1993), momentum effect has persisted as the last anomaly which still cannot be fully explained within the traditional finance paradigm (See Fama (1998) and Galariotis (2014)). In the literature review paper of Galariotis (2014), momentum strategies are defined as those holding "a zero net investment position" of longing past winners and shorting past losers, in which the strategy is based on the expectations of momentum investors ensuring that "movement in past stock prices in one direction will be followed by movements in the same direction".

Momentum profits are widely documented in most developed markets except for Japan. For example, it was first documented by Jegadeesh and Titman (1993) that buying past ("winners") and selling past ("losers") in the US market, generates significant momentum profits. Furthermore, the abnormal momentum returns found in the US stock market are confirmed to be bias-free and immune from data snooping by Jegadeesh and Titman (1995). For the UK stock market, Lui et al. (1999) have conducted a comprehensive examination of momentum profitability in the UK stock market using the methods introduced both by Lehmann (1990) and Jegadeesh and Titman (1993) over the period 1977 to 1998. Their analysis provides statistically significant evidence that momentum profitability was found in the UK stock market over the sample period. In line with the study of Lui et al. (1999), Hon and Tonks (2003) also provide evidence of momentum profitability in UK stock market over the period from 1955 to 1996.

In terms of international evidence, Rouwenhorst (1998a) has examined 12 European stock markets using monthly data from 1980 to 1995 and found that an internationally diversified momentum portfolio generates approximately 1% per month in all the 12 stock markets after adjusting for size and beta. Chan et al. (2000) have examined 23 international stock markets including developed and emerging markets from 1980 to 1995[1]. Similarly, their evidence

[1] The data sample periods vary from different stock markets due to the data limitations.

indicates that momentum profits are statistically and economically significant, especially for a short holding period.[2] Fama and French (2012) have tested momentum strategies in four different regions; namely, North America, Europe, Japan and Asia Pacific. They found strong significant momentum profits in all the regions except for Japan, for all three risk adjusting models used (CAPM; the three-factor model of Fama and French (1993); and that of Carhart (1997)). Besides, Fama and French (2012), Griffin et al. (2003) and Asness et al. (2013) have also found evidence of significant momentum profits. Furthermore, evidence of significantly negative momentum has been found in the Japanese stock market by Chou et al. (2007).

However, evidence of the existence of momentum profits is ambiguous in developing markets. For emerging stock markets, Rouwenhorst (1998a) examined 20 emerging stock markets to test for return premiums and to provide a possible interpretation of return factors in emerging stock markets. It has been found that emerging markets qualitatively exhibit similar return factors, which have been documented in developed markets. In general, momentum is present in emerging markets: small stocks outperform large stocks and over-valued stocks outperform growth stocks. However, inconsistent with the findings of Rouwenhorst (1998a), Hameed and Kusnadi (2002) state that they cannot find significantly empirical evidence of momentum returns from 6 Asian stock markets (Hong Kong, Malaysia, Singapore, Thailand, Taiwan and South Korea). They emphasise that they fail to find under-reaction in the Asian stock market or other risk factors, which have driven price momentum differently across markets. Similarly, Du et al. (2009) have found that an overall 6-6 momentum strategy is not profitable in the Taiwan stock market for the period of January 1981 to July 2006.

As regarding momentum effects in the Chinese stock market, the evidence is even more ambiguous. For example, Kang et al. (2002) have examined the Chinese stock market for both contrarian and momentum strategies using weekly data in "A" stocks from January 1993 to January 2000. Their research demonstrates statistically significant evidence of positive returns generated from both momentum and contrarian strategies over different ranges of formation and holding periods. Naughton et al. (2008) have found significant momentum profits over 6×6-month period. On the other hand, Wang (2004), Wu (2011), Zhou et al. (2010), Li et al. (2011), Chen et al. (2012) and Pan et al. (2013) have failed to find any evidence of momentum profits, but only found significant evidence of negative momentum profits. This

[2] Different from the previous study, they also scrutinise the impact of exchange rate on momentum profit. They have discovered that exchange rate information increases the momentum profitability; however, such an effect is insignificant. Therefore, they conclude that momentum profits arise from individual stock indices.

thesis therefore attempts to provide an insight into the existence and characteristics of momentum effects in China, and to reconcile what often appears to be contradictory results in the literature.

Motivated by the ambiguous evidence regarding the momentum effect in Chinese stocks, in this thesis overall momentum effects have been examined from the beginning of the foundation of Chinese stock markets up to the year 2012, as well as for momentum effects across different sub-sample periods. I have then found that the ambiguous/contradictory evidence documented in the literature review is due to the different sample periods examined. Overall momentum effects do not therefore exist in the Chinese stock market for the period 1991 to 2012.

Therefore, another question arises: why is there no momentum effect in the Chinese stock market. Is the Chinese stock market fundamentally the same as other developed stock markets? To wit, although lacking of momentum profits in the Chinese stock markets and negative returns of momentum strategies revealed in the Chinese stock markets can be attributed to overreaction similar to the developed stock markets. Additionally, is the lack of momentum effect due to the unique features only associated with the Chinese stock market? Alternatively, is the lack of momentum effects due to a fundamental difference of the Chinese stock market?

According to Jegadeesh and Titman (1993), momentum strategies are constructed as follows. Each month sample stocks are ranked in ascending order according to their past J-month (J=3, 6, 9 or 12) accumulated returns, and then divided into ten groups according to the decile return values. In each strategy, stocks will be selected based on their past J months' returns and will be held for a period of K months (K=3, 6, 9 or 12), which will then form 16 strategies in total. The group with highest returns will be called the 'winners group' and the one with lowest returns will be called the 'losers group'. Zero-cost portfolios are created by longing the winners group and shorting the losers group. The holding period of the portfolio is K-month (K=3, 6, 9 or 12). Specifically, in any given month t, the momentum strategies as a whole hold a series of portfolios which are selected in the current month and as well as in the previous K-1 months. In the meantime, the strategy closes out the position that is formed in month t-K. The returns of a specific J/K momentum strategy are then computed as the simple average returns of each J/K portfolios rebalanced during the process.

In Chapter 1 of the thesis, a thorough investigation of momentum effects in Chinese A-share stock markets in the past 22 years (1991 to 2012) will be evaluated to provide comprehensive results of momentum effects in Chinese stock market. The main purpose of Chapter 1 is to ascertain the reasons for the ambiguous/contradictory evidence presented in the literature. Overall, no significant momentum profits have been found for whole sample periods and in 4 out of 5 sub-samples for both equal-weighted momentum portfolios and value-weighted portfolios. Instead, significant contrarian profits i.e. the opposite of momentum is found in the whole sample periods and some sub-samples. Additional to the tests mentioned above, different sample periods will also be examined to provide results comparable with those reported in the existing literature.

In addition to equal-weighted and value-weighed momentum portfolios for different sample periods, different filters have also been applied when selecting eligible stocks included in the momentum portfolios. I have also tested momentum portfolios without any filter, equal-weighted portfolios excluding first 6 months IPOs, and equal-weighted portfolios skipping 1 month between portfolio's formation month and holding month. I have found that, for the same sample period tested, the momentum strategies are not statistically significantly profitable regardless of which filter has been used to select the stock included in the momentum portfolios, or regardless of whether the portfolios are equal-weighted or value-weighted. It has only been found that sample periods changed, ceteris paribus, whether the momentum effects existing in the Chinese stock market are different. Thus, the ambiguous/contradictory results with respect to momentum effects in the Chinese stock market are not due to the different filters used to select stock nor to equal-weighted or value-weighted momentum portfolios, but only due to different sample periods examined. These findings help to reconcile often-contradicting results reported by other studies.

Chapter 2 of this thesis investigates the reason as to why no momentum profits are found in Chinese stock market by examining momentum returns in different market states, an approach inspired by Cooper et al. (2004). Following their method, the whole market is divided into two market states: UP and DOWN, based on past value weighted market-returns when momentum portfolios are formed. Stocks are then allocated to these two market states. In each market-state, momentum strategies have been constructed following the method by Jegadeesh and Titman (1993). Momentum strategies have followed different market states, while whole sample periods and different sub-samples have been tested. Additionally, different lengths of past value-weighted market returns have also been used to provide robust results. Overall, it

has been found in Chapter 2 that in the Chinese stock market, momentum strategies generate relatively higher contrarian returns/lower momentum returns following UP market states than following DOWN market states. The possible explanations of the findings might due to the following reasons: too extreme UP market states beyond a certain thresholds are more likely to generate price reversal rather than continuation (Cooper et al. 2004); less overconfidence and higher risk aversion of investors in the emerging stock market (Chui et al. 2000, Chui et al. 2010 and Du et al. 2009); frequency and severity of UP and DOWN market states in the Chinese stock market (Du et al. 2009).

Motivated by this result and by the research of Asem and Tian (2011), momentum strategies following different market dynamics will subsequently be studied in Chapter 3. In addition to the definition of market states following Cooper et al. (2004), subsequent UP/DOWN market states are defined by the value weighted market returns at the beginning of next month when the momentum strategies are generated. Thus, the markets are catalogued into four different market dynamics: (UP, UP), (UP, DOWN), (DOWN, UP) and (DOWN, DOWN), where (UP, UP) and (DOWN, DOWN) indicates that market states are in the same direction while (UP, DOWN) and (DOWN, UP) indicates that market states transition into different direction. All the stocks are then grouped into these four different market dynamics, and momentum strategies are generated within the four market dynamics accordingly.

The results reveal that momentum effects are more pronounced when markets stay in the same state (bull or bear) than when they transition into a different state. This finding is in line with the theory of Daniel et al. (1998), suggesting that investors' overreactions have occurred on Chinese stock market. This finding further suggests that the Chinese stock market is not fundamentally different from other developed markets. The lack of absolute momentum effects in the Chinese stock market is not due to investors' rationality but rather to the unique features of that market.

This thesis contributes to existing research in the following aspects. First, it provides a comprehensive analysis of the momentum effect in Chinese stock market, revealing that the mixed results presented in the literature regarding the existence of momentum in China are due to different sample periods and can be reconciled. The current existing literature regards momentum effects in the Chinese stock market as contradictory, as different sample periods are tested, while different filters are used to select stocks included in the momentum portfolios, which does not make the results comparable. Therefore, it is difficult to conclude

whether momentum effects exist in the Chinese stock market or not. However, in this thesis, a thorough investigation of momentum effects on the Chinese stock market is conducted implementing a more complete data sample than any other papers published. Additionally, different sample periods are tested and different filters are used to select the stock included in the momentum portfolios. More importantly, the tests conducted in Chapter 1 of this thesis are comparable with other results in the previous literature respecting the existence of momentum effects in the Chinese stock market.

Second, it shows that the failure of prior studies to find momentum profits is caused by different market dynamics rather than the non-existence of momentum. There have only been a few published papers examining the momentum effects under different market states and market dynamics in the Chinese stock market, especially for the momentum under different market dynamics. By examining momentum effects under different market states and market dynamics, it has been found that the lack of momentum profits in Chinese stock market are not due to the non-existence of momentum itself and not due to failure in the application of behavioural models. Meanwhile, it has been found that the theory of Daniel et al. (1998) also holds in the Chinese stock market, i.e. investors' actions are driven by overconfidence and a self-attribution bias. In this respect, the Chinese market does not fundamentally differ from that of the US and other developed markets. The results of this thesis have extended the range where the theory of Daniel et al. (1998) applies. It has been shown in the literature that the theory of Daniel et al. (1998) applies to developed markets; even for the Japanese stock market, where momentum does not exist. This thesis therefore provides evidence that the theory of Daniel et al. (1998) also applies to the Chinese stock market as the second largest stock market in the world.

Chapter 1 General Momentum Effects in the Chinese Stock Market and Different Sub-Sample Periods

1.1 Introduction

In the article of Jegadeesh and Titman (1993), in which momentum phenomenon is initially introduced, they point out that the profitability gained by this strategy cannot be attributed to the systematic risks or delayed stock price reactions to common factors. Rouwenhorst (1998a) examined 12 European stock markets using monthly data from 1980 to 1995. He found that an international diversified relative strength portfolio, which in buying past winners and selling past losers, generates approximately 1% per month. Hameed and Kusnadi (2002) state that they cannot find significant empirical evidence of momentum profits from 6 Asian stock markets. The evidence of momentum effects in the Chinese stock market is ambiguous. Literature using pre-2001 data usually found significant momentum profits existing in the Chinese stock market (Kang et al. (2002), Wang and Chin (2004), Wu 2011 and Naughton et al. (2008), while other researches using a wider range of data found significant contrarian effects (Zhou et al. (2010), Li et al. (2011) and Chen et al. (2012). However, there are researches that did not find any significant results supporting momentum or contrarian profitability in the Chinese stock market (Pan et al. 2013).

This chapter therefore tries to provide a thorough investigation of momentum effects in the Chinese stock market using the data sample from the very beginning of Chinese stock market (1991). Momentum effects analysed are for whole sample period and for each sub-sample period of 4 years for both equal-weighted portfolios and value-weighted portfolios. Besides the normal momentum strategies, momentum profits based on equal-weighted portfolios excluding the first 6 months IPO stocks and equal-weighted portfolios skipping 1 month between formation and holding periods are also examined. Another three sub-sample periods have been used in these tests to make the results comparable with Chen et al. (2012), in which similar examinations were done.

In this Chapter, it is found that, for the whole sample period, no significant momentum profits were found for both equally-weighted and value-weighted portfolios. Instead, strong contrarian profits existed in the Chinese stock market for the period of 1991 to 2012. For the sub-sample periods, the results are mixed. For sub-sample periods of 1993-1996 and 1997-

2000, no significant results of momentum or contrarian profits were found. For the sub-sample period of 2001-2004, momentum profits were found for both equal-weighted and value-weighted portfolios. For the sub-sample periods of 2005-2008 and 2008-20012, only contrarian profits were found both for equal-weighted and value weighted portfolios. Thus, in general, there is no momentum in the Chinese stock market over the 1991-2012 window.

To find out why different results were found with respect to the existence of momentum profits in Chinese stock market, six momentum strategies were constructed, which are comparable to the existing momentum strategies in the literature regarding momentum in the Chinese stock market.

The reminder of this chapter is constructed as follows: a literature review covering studies of momentum is presented in Section 1.2. The data used in this thesis is then explained in Section 1.3. In addition, a methodology of how the momentum returns are computed is presented in Section 1.3. In Section 1.4, the main results of the full sample periods and five different sub-sample periods are presented. The results of another six momentum strategies of different sample periods and different methods used to screen stocks, including for the momentum portfolios, are in Section 1.5. Finally, the conclusion of this chapter is given in Section 1.6.

1.2 Theoretical Framework

Ever since the term of 'efficient market' was first introduced by Fama (1965), in the past half century, the Efficient Markets Hypothesis (EMH) has been one the most widely debatable topics in modern financial literature. In the extraordinary work of Fama (1970), an efficient market is defined as in which "prices always 'fully reflect' available information". In the same article, he argued that the EMH 'rule out the possibilities of trading systems based only on currently available information that have expected profits or returns in excess of equilibrium expected profit or return' (Fama, 1970). In other words, it is to say that no investors can consistently beat the market. In the subsequent two decades, this argument had been tested and supported by enormous theoretical and empirical literature such as capital asset pricing model propositioned by Sharpe (1964), Lintner (1965), Fama French Three Factor model (FF3F) by Fama and French (1996a) in terms of assets pricing modelling. Nevertheless, in the past 30 years, the efficient market hypothesis is challenged by behavioural finance from both theoretical and empirical aspects. Fama (1998) argued that

most of the anomalies can be explained by FF3F, however, momentum profitability remains as the one cannot be explained yet. In this section, the theoretical framework will be discussed, including definition and taxonomy of efficient market hypothesis, theoretical foundations and challenges to efficient market hypothesis. And last, momentum definition and its drivers are discussed.

1.2.1 Definition of efficient market hypothesis

Fama (1965) first defined an efficient market as 'a market where, given the available information, actual prices at every point in time represent very good estimates of intrinsic values'. Campbell et al. (1997) pointed out that an informationally efficient market, where prices fully incorporate all the expectations and information of all market participants, may not be 'an allocationally or Paretoefficient market'. This idea was then summarised and incorporated in the formal definition of the EMH presented in Fama (1970): 'A market in which prices always "fully reflect" available information is called "efficient". A more explicit definition was proposed by Malkiel (1991):

> *A capital market is said to be efficient if it fully and correctly reflects all relevant information in determining security prices. Formally, the market is said to be efficient with respect to some information set…if security prices would be unaffected by revealing that information to all participants. Moreover, efficiency with respect to an information set… implies that it is impossible to make economic profits by trading on the basis of [that information set].*

The first sentence of Maikiel's definition has no much difference from Fama's definition. The second and third sentence extended Fama's definition of the EMH in terms of testing it theoretically. According to Campbell et al. (1997), the second sentence of Maikiel's provides a theoretical but non-practicable testing method by 'revealing information to market participants and measuring the reaction of security prices'. The market is efficient only if prices do not react to the particular information that revealed. Campbell et al. (1997) inserted that the third sentence of Maikiel's definition provides two alternative methods to evaluate the EMH, which almost all the empirical literature regarding validity of the EMH are based on. The first way used by many scholars is that measuring the profits earned by market professionals. The EMH implies that no one can 'make economic profits by trading on the basis of [the information set] possessed by market professionals'. Thus, if market professionals could make superior returns after adjusting risk premium, the market is not

efficient. Campbell et al. (1997) concluded that such method 'has the advantage that it concentrates on real trading by real market participants, but it has the disadvantage that one cannot directly observe the information used by the managers in their trading strategies' (Campbell et al., 1997).

The alternative approach implied by Maikiel's definition is by evaluating whether excess returns could be made when implementing a 'hypothetical trading based on an explicitly specified information set' (Campbell and Cochrane, 1995). In order to implement this approach, a specific information set must be chosen first. Hence, taxonomy of information set should be defined first. Then, a model of "normal" returns should be specified, and finally 'abnormal return of a security is computed as the difference between the return on a security and its normal return'. The final step is to forecast the abnormal returns constructed using the chosen information set. A market is efficient only if the abnormal return of the security is unforecastable, and in this sense 'random' (Campbell et al., 1997). Thus, the information set used in this approach must be defined first, which is usually refers as taxonomy of the EMH and discussed hereafter.

1.2.2 The efficient markets hypothesis taxonomy

The classic taxonomy of information set used by Fama (1970) was first introduced by Roberts (1967).

> ***Weak-form Efficiency.*** *The information set includes only the history of prices or returns themselves.*
>
> ***Semi-Strong-Form Efficiency.*** *The information set includes all information known to all market participants (publicly available information).*
>
> ***Strong-Form Efficiency.*** *The information set includes all information known to any market participant (private information).*

Fama (1991) redefined and expanded the EMH taxonomy. He asserted that the weak-form test 'concerned with the forecast power of past returns' and covers the more general area of *tests for return predictability'*. As in weak-form efficient market, the current price fully reflects information contained in the past history of prices only. Thus, no one can earn abnormal returns by analysing past prices.

The semi-strong-form of efficient markets hypothesis says that all public available information, which contains not only past prices of the company, but also all the financial information reported by the company, as well as the financial situation of the company's competitors, are fully included in the current price of a company's price. Even more, the public information in the semi-strong-form of EMH is not exclusively refers to the financial information regarding with the company and its competitors.

The semi-strong-form of efficient markets hypothesis implies that no one could make profits through the information everyone else knows. However, the required skills of the market participants who try to make abnormal profits are much higher than they are as in the weak-form. As the contents of the information defined in the semi-strong-form are much wider than in the weak-form of efficiency. The information defined in weak-form is only historical prices, but as in semi-strong-form efficiency, it is all the relevant information known to the public. The complexity of the information requires the market participants who try to use the information to make abnormal profits are not only able to comprehend the implication of numerous financial information and macroeconomics, but are adepts understanding the industry the company belongs to or have the ability to use experts who understand the industry. Thus, the acquirement and processing such information is difficult and costly.

The assertion of strong-form efficiency implies that the current price of a company fully reflects all the public and private information, thus, even insiders cannot earn profits trading on private information. According to Clarke et al. (2001), 'the rationale for strong-form market efficiency is that the market participates, in an unbiased manner, future developments and therefore the stock price may have incorporated the information and evaluated in a much more objective and informative way the insiders'.

The EMH is associated with the idea of random walks, which usually used by financial researchers to describe a series of price movements that all subsequent price movements departure randomly from previous prices. As Malkiel (2003) pointed out the idea of prices' random walk is that 'if the flow of information is unimpeded and information is immediately reflected in stock prices'. Thus, future prices only reflect the information available in the future and will be independent of the price change happening now.

To conclude by quoting Shleifer (2000), 'an average investor-whether an individual, a pension fund, or mature fund- cannot hope to consistently beat the market, and the vast

resources that such investors dedicate to analysing, picking, and trading securities are wasted'. The best strategy to manage one's fund is to passively hold market portfolio rather than actively management, 'if the EMH hold, the market truly knows best'. However, there are some assumptions for the EMH to hold in reality, which will be discussed in the next sub-section.

1.2.3 The theoretical foundations of the EMH

The validity of the EMH are based on three arguments. Shleifer (2000) summarised as:

> *'First, investors are assumed to be rational and hence to value securities rationally. Second, to the extent that some investors are not rational, their trades are random and therefore cancel each other out without affecting prices. Third, to the extent that investors are irrational in similar ways, they are met in the market by rational arbitrageurs who eliminate their influence on prices.'*

The concept of rationality has received a long debate among economists and philosophers. Rationality defines what a 'rational man' should think and do on issues that are often a matter of value judgement (Gilboa, 2014). Based on the review of Gilboa and Schmeidler (1993) and Gilboa and Schmeidler (2001), in the early 20th century, rationality is defined as 'behaving in a way that is sufficiently coherence to allow certain formal representation, such as utility maximisation, expected utility maximisation, and the like'. In terms of the EMH, rationality refers to rational expectations. Usually, there are two basic forms of rational expectations. One is weak-form rational expectations, which is defined as when forming one's expectations, individual makes optimal use of whatever information he/she has. The strong-form of rational expectations says individuals have access to all relevant available information and they make optimal use of such information to form their expectations, thus, their expectations will be corrected up to unsystematic errors. It implies that individuals immediately update their expectations once there is a change in the information determining their expectations.

In the EMH, rationality implies that 'if investors are rational, they value each security for its fundamental value: the net present value of its future cash flows, discounted using their risk characteristics' (Shleifer, 2000). If investors are rational, they should quickly response to the information regarding fundamental values of the securities. If the news is good they should bid up price and vice versa. Consequently, prices should immediately incorporate all the available information and adjust accordingly to new level of net present values of future cash

flows. Therefore, according to Fama (1970), such process of prices adjusted implies that 'successive price changes (or more usually, successive one-period returns) are independent'. Therefore, Fama (1970) argued that prices should follow random walks giving that price changes are independent in addition to the assumption that successive changes are identically distributed.

Inconsistent with the argument of Fama (1970), Samuelson (1965) and Mandelbrot (1966) proved that in competitive markets with rational risk-neutral investors, returns of securities are unpredictable following martingale movement rather than random walks. This assertion is later proved to be a better application for stock market than random walks. Cox and Ross (1976), Lucas Jr (1978) and Harrison and Kreps (1979) claimed that as in practise, investors are risk averse rather than risk neutral, thus, they demand a positive expected return to compensate for the time value of money and systematic risk. Hence, in stock market, price changes follow a submartingale. In addition, LeRoy (1973) and Lucas Jr (1978) showed that a random walk is neither a necessity nor sufficiency of the EMH.

However, the framework of EMH will not collapse even if rationality of investors does not hold in reality. This is the point that the second sentence in the quotation of Shleifer (2000) intends to make. The efficient market hypothesis is predicted to be valid even if when some of the investors are not rational. According to the EMH, irrational investors trade in the market randomly, rather than trade in the same direction. Thus, when there are a large number of irrational market participants trading in the market, their trading strategies are uncorrelated and their trading activities are random, which leads to that their trading activities cancel each other out. Eventually, prices are not affected by these irrational market participants, and prices of securities are close to fundamental values.

Obviously, the success of this argument is based on the uncorrelated trading strategies of irrational market participants. Therefore, one would simply challenge the situation when trading strategies of irrational market participants are correlated. Such argument is linked with a concept called Bayesian updating. Generally, the Bayesian approach holds that uncertainty should be quantified by probabilities (Gilboa 2014). According to Gilboa (2014), Bayesian approach suggests that 'in the absence of objective, agree-upon probabilities, each person formulate her own probabilities, reflecting her subjective beliefs'. Referring to Gilboa (2014), the Bayesian updating process is described as follows. The Bayesian updating process usually begins with a so called state space of worlds, which provides all the relevant matters to the decision makers and provide 'a truth table specifying the truth value of any proposition of

interests'. Thus, the 'entire history and future of the decision problem' is provided by each state, which is used by decision makers to formulate a probability measuring their subjective beliefs before getting any information. Then, at the arrival of new information the prior probability is updated by Bayes' rule to produce a 'posterior', which, in turn, is the prior of the next period. In another way to say, Bayesian updating describes the decision making process that market participant formulates the possible reactions by maximising his/her expected utility relative to his/her subjective beliefs before any new information arrives. At the arrival of the new information, he/her updates the possible reactions by Bayes' rule to maximising his/her expected utility to generate his/her reactions, which, in turn, are the prior of the next period.

Hence, according to Bayesian updating in terms of the EMH, irrational investors formulate their possible reactions according to their own subjective beliefs under uncertainty, or saying, before the new information arrives. Then at the arrival of new information they update their possible reactions according to their own subjective beliefs rather than objective beliefs, which is then used as the prior in the next decision making period. Therefore, the beliefs of irrational investors are uncorrelated leading to the results that their trading activities would cancel each other out.

Notably, validity of the EMH still holds by introducing the idea of arbitrage as offered by Friedman (1953) and Fama (1965), even in the cases where beliefs of irrational market participants are correlated. A formal definition of arbitrage is defined by Sharpe et al. (1990) as 'the simultaneous purchase and sale of the same, or essentially similar, security in two different markets at advantageously different prices'. Considering the situation in a market when a stock becomes over-priced relative to its fundamental value as a result of bidding up by irrational investors. Obviously, rational investors or saying arbitrageurs would sell or short sell this over-priced stock and simultaneously purchase securities with similar risk to hedge their risks. In an ideal market where the substitutes are available for trading, such trading will probably guarantee a profit, as they are shorting the over-priced securities and longing the same or similar, but cheaper securities. Consequently, the price of over-priced security will be brought down to its fundamental value by the arbitrage trading. If arbitrage is quick enough and the substitute securities are available, the price of a security will never deviate far from its fundamental value, as arbitrageurs are competing each other to earn profits. Once the price of the prior over-priced security deviates far beyond its fundamental value, arbitrageurs will bid it up by purchasing the undervalued security and short selling essentially similar securities to

hedge their risk. Thus, as long as arbitrage is effective, the process of arbitrages will always keep a security in line with its fundamental value, even when there are irrational market participants and their trading activities are correlated.

Besides the process mentioned above, arbitrage has another approach to make market efficient. Considering that irrational investors buying over-priced and selling under-prices securities, consequently, they will lose money eventually, compared to rational investors. Thus, according to Friedman (1953), they cannot lose money forever, as they must become much less wealthy and eventually be forced out from the market. Hence, even if arbitrage cannot eliminate the influence of irrational investors, market will force them out by eliminating their wealth in the long run. Therefore, in the long run, market will be efficient due to competition among investors and arbitrage activities.

Besides the assumptions of the EMH mentioned, there are some conditions of market which are sufficient conditions of the EMH. Fama (1970) discussed these sufficient conditions of the EMH in his critical review paper. First, 'there are no transaction costs in trading securities'; second, information is costless to obtain for market participants; third, 'all agree on the implications of current information for the current price and distributions of future prices of each security'. Fama (1970) pointed out that fortunately, these market conditions are sufficient conditions for the EMH but not necessaries. For example, obviously, if the information is costless to obtain for investors, they can update their expectations according to new information immediately without paying any additional cost. However, it does not mean that costless information is not necessarily sources of market inefficiency. Grossman and Stiglitz (1980) argued that one must be financial motivated to obtain information if it is costly. However, such financial motivation would not exist if the information is already fully incorporated in the securities' prices. Thus, a more economically realistic version of the hypothesis was offered by Jensen (1978) as 'prices reflect information up the point where the marginal benefits of acting on the information do not exceed the marginal costs of collecting it'.

It is impressed with the power of theoretical arguments for the EMH. As we can see when investors are rational, market is efficient purely by its definition. When some of the investors are irrational, their uncorrelated trading activities cancel each other out and they have little influence on the market efficiency. Even if their trading activities are correlated, other rational investors will eventually bring prices of stocks in line with fundamental values by taking

advantages of arbitrage opportunities. Plus, prices' adjustments of miss-priced securities, caused by competition between arbitrageurs, could keep prices not deviating from their fundamental values too much. And finally, irrational investors will earn relative lower returns than their rational peers, thus, eventually they are forced out from market, which leading to efficiency of the market.

1.2.4 Challenges to the Efficient Market Hypothesis from behavioural finance

After properly discussion of the theoretical foundation of the EMH, it will be easier to understand the theoretical challenges to the EMH, which advanced the perfection of the EMH itself as well as the building and development of behavioural finance. The foundation and development of behavioural finance is built on the challenges to the EMH. This section tries to lay out several theoretical challenges in terms of the three foundation of the EMH discussed in the previous section.

To begin with, it is worthy to recall the three theoretical foundations discussed in short. First, market participants are rational; second, irrational investors have uncorrelated views towards a security, therefore, their irrational trading activities will cancel each other out; third, even if trading activities of irrational investors cannot cancel each other out, effective arbitrage can eliminate the influence of their activities; and moreover, competition in the market will eventually drive irrational investors out as they will lose money in the long run.

The first theoretical attack on the EMH is rationality assumption of investors. As Black (1986) pointed out that irrational investors trade on noise, which is the irrelevant information to form their demand for securities. Summarised by Shleifer (2000), many investors 'hardly pursue the passive strategies expected of uninformed market participants by the efficient market theory'. More in details, many investors 'fail to diversify, actively traded stocks and churn their portfolios, sell winning stocks and hold on to losing stocks, …, buy and sell actively and expensively managed mutual funds, follow stock price patterns and other popular models'. Kahneman and Riepe (1998) summarised that people deviate from the decision making model of maximising economic rationality in the terms of attitudes toward risk, non-Bayesian updating of belief and sensitivity of decision making.

First, when assessing risk, people do not assess the levels of final wealth they can obtain but the gains and losses relative to some reference point, which varies from case to case and coherent to loss aversion. The preference described here was first presented and modelled by Kahneman and Tversky (1979). They found two kinds of phenomenon: one is that investors

selling stocks that lose value reluctantly, due to loss aversion (Odean, 1998). The other one is that investors' aversion to hold stocks, which is usually knowns as the equity premium puzzle (Mehra and Prescott, 1985).

Second, according to Tversky and Kahneman (1973), market participants systematically violate Bayes' rule and other maximisation of probability theory in the belief updating under uncertainty. As they pointed out that when predicting future outcomes, people often rely on short recent information more than it should represent to. It is very nature for people to do that as it will save efforts to process data and as well as computation, if they rely more on the recent past history rather than looking at the whole picture.

The last summarised by Shleifer (2000) is that 'individuals make different choices depending on how a given problem is presented to them'. For example, as Benartzi and Thaler (2001) found out that people prefer stocks over bonds when they are presented with an 'impressive history of long-term returns relative to those on bond' than if they are 'only presented with volatile short-term stock returns'. The term used to describe the investors' preferences and beliefs, which are consistent with heuristics and violate Bayesian rationality, is often called 'investor sentiment'. And the investors whose activities are not following normative economic model is called noise traders (Kyle 1985 and Black 1986).

If the EMH is built entirely on the existence of rationality of investors, then the challenges imposed by violation to Bayesian irrationality would be fatal to the EMH. However, recall the second line of defence of the EMH, even if many of the investors are irrational, their beliefs toward security might be uncorrelated and they trade randomly, thus, trading activities can cancel each other. Nevertheless, as found by Tversky and Kahneman (1973) that investors do not deviate from Bayesian 'rationality randomly, but rather most deviate in the same way'. Shiller et al. (1984) revealed that noise traders do not trade randomly according to their uncorrelated beliefs and preferences towards securities. Instead, they often try to buy or sell the same securities at the same time, especially when they 'behave socially and follow each other's mistakes by listening to rumours or imitating their neighbours'. The correlated investors' sentiment has imposed a serious challenge to the EMH not only from the aspect of individuals but also from professional managers. Professional managers of pension funds and mutual funds are themselves individuals but also agents who manage others' wealth, thus, the delegation problem will twist their decision makings in addition to distortion imposed by irrationality as discussed for individuals (Lakonishok et al., 1992). For instance, professional

managers prefer to choose portfolios performing close to benchmark to minimise the risk of underperforming the benchmark. Besides, Scharfstein and Stein (1990) showed that professional managers would like to herd and select portfolios which are selected by their peers to reduce the possibility of falling behind by their peers. Moreover, Lakonishok et al. (1991) found evidence supporting window-dressing by pension fund managers. When getting to end-of-year report, they would add recently well-performed securities to their portfolios and sell securities that recently done bad to make their financial reports look better.

The irrationality of market participants and correlated investors' sentiment put the last defence of market efficiency based on arbitrage on front line. According to the argument of the EMH, if unsophisticated investors' sentiment is correlated, rational arbitrageurs will eliminate the effects of noise traders by taking the opportunities of arbitrage and eventually bring the prices of securities in line with their fundamental values. The arguments against the EMH in terms of the failure of arbitrage focus on three aspects: the lacking of substitutes of securities; systematic risk exposed to arbitrageurs; unpredictable risk from future resale relating to arbitrage trading.

Shleifer (2000) discussed that 'the effectiveness of arbitrage relies crucially on the availability of close substitutes for securities whose price is potentially affected by noise trading'. To hedge the risk, arbitrageurs who sell or short sell overpriced securities must be able to buy not-overpriced securities bearing similar risk. Although, for derivations of stocks, such as future and options, the availability is always possible. But in many cases, the substitutes are not always available. This argument is supported by Figlewski (1979) and Campbell and Kyle (1993) providing the evidence that 'arbitrage does not help to pin down price levels of, say, stocks and bonds as a whole'. A perfect arbitrage is to short sell the overpriced securities and buy substitute portfolios. In the cases that substitutes are unavailable, the arbitrageurs simply sell or reduce the amount of the overpriced securities to lock down a relative above-market return. Thus, in such case, the arbitrage is no longer riskless, especially, considering that the returns of overpriced securities are relevantly high. Therefore, if arbitrageurs are risk-averse, their motivation in such arbitrage will be limited. Hence, the aggregated ability of arbitrageurs to bring prices of securities back to their fundamental values are limited.

Additionally, there are two other kind of risks will weaken the effect of arbitrage. Shleifer (2000) pointed out 'fundamental risk remains a significant deterrent to arbitrage'. For example, in the case that stocks of Microsoft are considered to be over-priced relative to those

of Facebook and Amazon. The general risk of IT industry can be reduced, if one short sells Microsoft and buy in Facebook and Amazon. However, there is possible risk that Microsoft performing well while Facebook and Amazon do surprisingly poorly, or even in the case that all of the three doing surprisingly poorly in the future due to crisis of IT industry. Another source of risk, that arbitrageurs face, comes from the unpredictability of the future resale price, or saying, 'the possibility that the mispricing becomes worse before it disappears' (Shleifer, 2000). It is to say even when two securities are fundamentally identical, there is possibility that the overpriced securities become even more overpriced, and the under-priced ones become more under-priced. If the prices of the two securities can approach with possibility one, the trade may cause losses for arbitrageur. If the arbitrageur can maintain his/her positions through such losses, he/she can eventually gain possible return from arbitrage activities. However, in the cases that the arbitrageurs cannot maintain his/her position when price divergence[3] become worse, again arbitrage is limited. Such risk is named as 'noise trader risk' by De Long et al. (1990). Additionally, they showed that such arbitrage, which seems nearly perfect, is quite risky in reality and therefore is limited.

So, the argument that noise traders would eventually be forced out from the market by competition in the long run is not always valid, as long as we recognise that arbitrageurs and noise traders are both bearing risks. Because, in such case, the expected returns of these two kinds of market participants depend on the amount of risks they bearing and on the compensations for the risks that the market reward. Hence, even if in the long run, arbitrageurs do earn superior return compared to noise traders. So, the latter are not necessarily the ones who vanish in the long run. Supported by Merton and Samuelson (1974), in many cases, similar to arbitrageurs, noise traders may maintain a certain level of wealth in the long-run, simply due to the superior amount of risk they bearing from the perspective of survival. So, the last baseline of the defence on the EMH in terms of arbitrage may not always be valid.

By far, I have discussed the theoretical challenges to the efficient markets hypothesis from behavioural finance. In short, these challenges are from three perspectives: firstly, rationality assumption of market participants. Investors violate rationality from many perspectives such as the attitudes toward risk, systematically violation of Bayesian, expectation formation and sensitivity of decisions making to the framing of problems. Secondly, unsophisticated

[3] The case that over-priced securities become more expensive and under-priced securities become even cheaper.

investors do not deviate from rationality randomly, but often in the same way. Last, arbitrage in many cases are not riskless, resulting in the failure of the arbitrage mechanism. In the next sub-section, the definition of momentum and its drivers will be discussed briefly.

1.2.5 Momentum definition and its drivers

Momentum effects refers to market anomaly that investing strategy of buying past winners and in the meantime shorting past losers will guarantee an excess return. Simply put, momentum strategy is a strategy that you long the amount of securities performing well in in the past while you short the same amount of securities performing badly in the same period. According to the EMH, such zero cost portfolio shall not give you abnormal return after risk adjusting. However, in the pioneering work of Jegadeesh and Titman (1993), they have found significant abnormal returns generated by momentum strategies they tested. In their research, they ranked all the stocks listed on the NYSE and AMEX from 1965 to 1989 and allocated them into ten groups according to their past 3, 6, 9 and 12 months of cumulative returns. Then the group with the highest past returns were called the 'winners' and the ones with the lowest past returns were called the 'losers'. The 'winner' minus the 'losers' portfolios were then constructed and been adjusted and re-balanced according the past cumulated returns monthly and held for another 3, 6, 9 and 12 months. The findings of their research revealed evidence of significant abnormal excess returns made by such strategies, which is inconsistent with the prediction of the EMH. As Beechey et al. (2000) summarised, one of the predictions of the EMH is that 'new information is rapidly incorporated into asset prices, and currently available information cannot be used to predict future excess returns'. Obviously, the momentum anomaly imposed a threat to the EMH, especially a violation to the weak-form of efficiency.

The evidence of potential sources of momentum has pointed to underreaction to information and slow incorporation of information into prices (Jegadeesh and Titman 1993, Chan et al. 1996). The underreaction indicates that securities' prices underreact to news. If the new is good, prices react to the news by increasing but cannot fully adjust themselves to the level of prices it should be. Then prices keep trending up after the initial adjustment. If the news is bad, prices keep trending down after the initial depression. Jegadeesh and Titman (1993) examined the cross-section of momentum returns over six-month period, the momentum returns are positively autocorrelated, thus they attributed short-run momentum profits to 'underreaction to information and slow incorporation into prices (Chan et al., 1996).

The underreaction to information is suspected due to a psychological bias called conservatism. Conservatism was firstly identified by Edwards (1968) as 'individuals are slow to change their beliefs in the face of new evidence'. If individuals are subject to conservatism, they are unlikely to fully response to new information, as they 'believe that this number contains a large temporary component and still cling at least partially to their prior estimates of earnings' (Shleifer, 2000). Consequently, they would only adjust their expectation of securities' returns partially in respond to arrival of new information. Shleifer (2000) summarised such phenomenon as a 'failure to properly aggregate the information in the new earnings number with investors' own prior information to form a new posterior earnings estimate'.

Nevertheless, in more recent researches about momentum, it is found that besides the intermediate-term price momentum, momentum strategies are also found to reverse in the long-run (Jegadeesh and Titman, 2001a). Jegadeesh and Titman (1993) found that over longer periods, for example three to five years, returns of momentum strategies reverse, which means in the post-holding periods momentum strategies have negative returns. Such mean reverse of momentum strategies is supportive of overreactions which is linked to an important phenomenon called representativeness heuristic.

Representativeness heuristic bias is defined by Tversky and Kahneman (1974) as 'a person who follows this heuristic evaluates the probability of an uncertain event, or a sample, by the degree to which it is (i) similar in its essential properties to the parent population, (ii) reflects the salient features of the process by which it is generated'. Representativeness heuristic bias also leads to another bias called the 'last of small numbers' (Rabin, 2002). It describes the phenomenon when describing properties of the parent population given that people do know the data-generating process, even thought, they are likely to use very small samples to reflect the parent population. This is caused by a belief bias that people fail to take the size of the sample into account 'when judging the likelihood that a data set was generated by a particular model' (Barberis and Thaler, 2003). If people do not know the data-generating process, they are likely to form the conclusion only based on past incidents happened before.

Inspired by the psychological biases and prices continuation in the intermediate-term but reversal in the long-run, researchers have tried to find uniform models to explain momentum. The models presented by Barberis et al. (1998), Daniel et al. (1998) and Hong and Stein (1999) are the most widely accepted behavioural models so far. These three models will be

discussed in Chapter 2 in detail. Another issue associated with the representativeness is anchoring, which refers to the belief updating process that people start with some initials and then insufficiently adjust away from them (Tversky and Kahneman, 1974). Representativeness and anchoring are believed to cause investors to systematically violate Bayes' Rule when forming their expectations (Tversky and Kahneman, 1973, Tversky and Kahneman, 1974, Grether, 1980).

From the perspective of the prediction of the EMH, momentum effects violate the prediction of weak form efficiency that 'new information is rapidly incorporated into asset prices, and currently available information cannot be used to predict future excess returns'. As momentum strategies are found to make significantly positive returns. Considering the psychological bias discussed above, rationality of investors and Bayesian updating are seriously challenged by momentum effects.

In this section, definitions of the efficient markets hypothesis and its three forms are discussed. Following this, the theoretical assumptions of the EMH are discussed from three perspectives: rationality, investors' sentiment and the mechanism of arbitrage. Then, the theoretical challenges from behavioural finance in terms of such three perspectives are discussed. Last, the definition of momentum and how momentum runs counter to the EMH is briefly debated. In the next section the literature of momentum around the world will be presented.

1.3 Overall View of Momentum Effects around the World

Early in the middle of the 1980s, academic researchers started to study market overreactions, which then led their attention to market anomalies. The term 'overreaction' carries with it an implicit comparison to reaction that is considered to be an appropriate one. According to De Bondt and Thaler (1985), 'one class of tasks which have a well-established norm are probability revision problems for which Bayes' rule prescribes the correct reaction to new information'. It is believed that Bayes' rule is not a proper characterisation of how individuals actually respond to new information. The rule-of-thumb goes against the basic statistical principle that the extreme nature of predictions requires one to be moderate in the consideration of predictability. Investors' beliefs that individuals tend to overweight recent information and underweight past data can then be seen as overreaction.

One of the most influential articles written in line with this research - De Bondt and Thaler (1985) - reveals that, 36 months after their formation, the loser outperform the winner-portfolios about 25%, which is consistent with the assumptions of overreaction hypothesis. However, the results found in this article are debated in terms of the influences of risk, seasonality and size on overreactions. De Bondt and Thaler (1987) further examine the overreaction phenomenon in the US market and confirm that the overreactions are not related to the effect of risk, size and seasonality.

Nevertheless, these two articles are widely controversial. It has been argued that systematic risk and size effect have explanatory power according to the conclusion of De Bondt and Thaler (1985). For example, Zarowin (1990) demonstrates that losers over a prior 3-year period were outperforming the winners over the same period in the subsequent 3-year period, which can be explained by size effect rather than overreactions. It was then found that losers outperform winners if the size of 3-year losers is smaller than that of winners, while winners outperform losers if the size of 3-year winners are smaller than losers.

Moreover, it is also believed that the predictability of stock prices is related to risk. According to Chan (1988), the estimated abnormal returns may be sensitive to the market-risk premium, as it appears that the risks of winners- and losers- portfolios are not constant over time and the risk of the contrarian strategy is found to be correlated with the level of the expected risk premium. Besides, Chan (1988) also illustrates that measurement errors in the betas, which are estimated from the period of contrarian strategy formation, have a significant impact on estimated abnormal returns.

Although the conclusion of De Bondt and Thaler (1985) is controversial, it suggests a further direction of research about overreaction. Based on the previous study, it is now generally accepted that overreaction exists in the capital market. Chopra et al. (1992) have conducted a comprehensive evaluation of the overreaction hypothesis, seeking innovative improvements of the methodology to study the abnormal performance over long-horizons. First, they use the empirically determined price of beta risk, rather than those that are assumed by a specific highly structural model. It is indicated above that these non-constant betas have a significant impact on estimating abnormal returns. Second, abnormal returns are calculated adjusting for size to eliminate the effect of size discrepancies. Third, as abnormal returns over long periods are sensitive to the benchmark used, abnormal returns over the short-horizon are examined, instead.

With the three innovations in the methodology, Chopra et al. (1992) demonstrate that an economically-significant overreaction effect exists in the stock market after adjusting for size and risk and such an overreaction effect cannot be contributed to risk measurement bias.[4] However, the January effect[5] is also presented in the return patterns, but according to Chopra et al. (1992), it is not merely a manifestation of tax-loss selling effects. To address this issue, the authors examine the returns of portfolios formed based on prior one-year performance. Such portfolios of winners and losers exhibit momentum, rather than immediate return reversals. Another significantly important article about contrarian profits is the one by Jegadeesh and Titman (1995). In this article, they reveal the contribution of overreaction and underreaction to return patterns in contrarian strategies. They indicate that the price of stock underreacts to common factors, but overreacts to firm-specific information. Although, both underreaction and overreaction contribute to the profitability of the contrarian strategy, underreaction itself cannot be exploited by the contrarian strategy. It has also been revealed that the reversal on the firm-specific component in returns mainly contributes to the contrarian profits.

Although the literature on overreaction and contrarian strategy is not directly related to momentum profitability, the methodology used to calculate the expected return of portfolio is similar to the method used to estimate the expected returns on momentum strategies. Moreover, the discussion about the effect of size, risk and seasonality on contrarian strategies helps us to understand the sources of momentum profitability.

Along with the previous studies about long-term return patterns, a variety of research studies have discovered that abnormal returns are present with momentum effect over the intermediate period, as well as an underreaction effect, when trying to address the measurement bias over a long-term period. In the article of Jegadeesh and Titman (1993), in which momentum phenomenon is initially introduced, they point out that the profitability gained by this strategy cannot be attributed to the systematic risks or delayed stock price

[4] Interestingly, the overreaction effect is substantially stronger for small firms, which are predominantly held by small individuals. Only weak evidence of the overreaction effect has been discovered among the largest firms, which are predominantly held by large institutions. The authors suggest the reason for the difference of overreaction between the sizes may be due to the fact that individuals overreact while institutions are more rational.
[5] The January effect is a calendar-related anomaly in the financial market where financial security prices increase in the month of January. This generates an opportunity for investors to buy stock for lower prices before January and sell them after their value increases.

reactions to common factors. Furthermore, they also find that stock patterns can be predicated on seasonal earnings announcements.

The evidence found in the above article suggests that return reversal is consistent with common interpretation of overreaction and return persistence can be seen as the evidence of underreaction. Although Jegadeesh and Titman (1993) do not provide possible explanations of the return movements observed, they successfully point out a direction for the study of momentum and suggest that more sophisticated models about investors' behaviour are required to explain the patterns observed in their article.

Chan et al. (1996) use the data of New York Stock Exchange (NYSE), American Stock Exchange (AMEX) and National Association of Securities Dealers Automated Quotation (NASDAQ) covered on both Center for Research in Security Prices (CRSP) and COMPUSTAT, from January 1977 to December 1993 in their study. They hence find evidence of patterns in future returns over the intermediate interval that are predictable, with each momentum variable being explained separately in future returns. It has been found that previous returns and earnings surprises have marginal predictive power in terms of post-formation changes in the returns. Chan et al. (1996) contribute to the literature with a comprehensive analysis of different momentum strategies on a common set of data. The comparisons with some of the explanations given in the literature and their cross-sectional regressions help to disentangle the relative power of past returns and surprise earnings for future returns. In this article, the authors also provide evidence of risk-adjusted performance of the price and earnings of momentum strategy.

Momentum profitability has widely been examined in developed stock markets outside the US to eliminate the possibility of data snooping. Rouwenhorst (1998a) examined 12 European stock markets using monthly data from 1980 to 1995. He found that an internationally diversified relative strength portfolio, which in buying past the winners and selling the past losers, generates approximately 1% per month. Furthermore, this momentum profitability is not limited to any particular market, but is present in all 12 of the markets examined. The momentum profitability holds after adjusting for size and beta. The European evidence found in this article is remarkably similar to the findings for the US market and eliminates the possibility of data snooping in the U.S. market.

Chan et al. (2000) examined 23 international stock markets including developed and emerging markets from 1980 to 1995[6]. Similarly, the evidence they provide indicates that momentum profits are statistically and economically significant, especially for short holding periods[7]. Lui et al. (1999) have conducted a comprehensive examination of momentum profitability in the UK stock market using the methods introduced both by Lehmann (1990) and Jegadeesh and Titman (1993) over the period from 1977 to 1998. Their analysis provides statistically significant evidence of momentum profitability exhibited in the UK stock market over the sample period. In line with the study of Lui et al. (1999), Hon and Tonks (2003) also produce evidence of momentum profitability in the UK stock market over the period from 1955 to 1996.

Although, significant empirical evidence of momentum profitability in the US market and European markets have been documented, the empirical evidence of momentum phenomenon in emerging markets is ambiguous. Rouwenhorst (1999) examined 20 emerging stock markets to test their return premiums and to provide a possible interpretation of return factors in emerging stock markets. It was found that emerging markets qualitatively exhibit similar return factors, which are documented in developed markets. In general, momentum is presented in emerging markets; that is, small stocks outperform large stocks and over-valued stocks outperform growth stocks.

No significant evidence has been found to support the proposition that excess expected returns are related to firm risk and liquidity, which is consistent with the conclusion found by Rouwenhorst (1998a) in European markets, that momentum profit and risk and size are not significantly related. Interestingly, there is significant evidence that average returns are attributable to liquidity estimated by share turnover. However, it has also been found that stocks with high risk, small market capitalisation, good past intermediate performance or high Book-to-Market ratio (B/M) present higher turnovers on average than stocks with low risk, small market capitalisation and poor previous intermediate returns or low B/M. The conflict between the above two findings thus introduces a valuable question: whether liquidity itself contributes to the abnormal return observed, or if the individuals' attitudes and reflections on stocks with different expectations of future growth contribute to the abnormal return.

[6] The data sample periods vary from different stock markets due to the data limitations.
[7] Different to the previous study, they also scrutinise the impact of exchange rates on momentum profit. They discover that exchange rate information increases the momentum profit; however, such an effect is insignificant. They therefore conclude that momentum profits arise from individual stock indices.

Inconsistent with the findings of Rouwenhorst (1999), Hameed and Kusnadi (2002) state that they cannot find significantly empirical evidence of momentum returns from 6 Asian stock markets (Hong Kong, Malaysia, Singapore, Thailand, Taiwan and South Korea). The suggestion is that they fail to find underreaction in these Asian stock market, or other risk factors, which drive price momentum differently across markets.

Kang et al. (2002) have examined the Chinese stock market for both contrarian and momentum strategies using weekly data in A-share stocks over the period of January 1993 to January 2000 and demonstrated statistically significant evidence of positive returns generated from both momentum and contrarian strategies over different ranges of formation and holding periods. They find that momentum profits are less distinctive than in the US stock market, which they attribute the reason to be the overreaction effect rather than the positive combined effect of the cross-sectional variance in individual mean returns and the lead-lag structure in stock returns. Interestingly, they also find that the lead-lag effect of China's stock markets increases momentum profits.

Furthermore, Wang and Chin (2004) have also scrutinised the effectiveness of momentum strategy based on trading volume in the Chinese stock market using the data of the Shanghai Stock Exchange (SHSE) and the Shenzhen Stock Exchange (SZSE) from July 1994 to December 2000. They discover that low-volume stocks perform better than stocks with high-volume. However, the momentum effect from low-volume stocks occurs persistently while high-volume stocks experience strong return reversals, which, they assert, is consistent with behavioural finance. They attribute this to the dominant unsophisticated individual investors, which also implies that the Chinese stock markets are more prone to behavioural models.

Differently, Wu 2011 fails to find significant evidence of abnormal return of pure momentum strategies using the daily data of all A-share stocks listed on SHSE from 12th December 1990 to 31st December 2001. However, he succeeds in documenting the excess return of combined strategies of momentum and contrarian strategies. Such inconsistencies in the literature provide the need for further research about momentum profitability in the Chinese stock market.

Explanations about the momentum profitability mainly fall into two catalogues: one is risk-related (traditional finance); the other is related to behavioural finance. Fama and French

(1995) successfully demonstrated that HML can explain why covariance in returns related to relative distress is not captured by the market return, but is compensated in average returns.

Similarly, they demonstrated that covariance in returns related to relative distress is not captured by the market return but is compensated in average returns can be explained by SMB. Fama and French (1996a) indicated that their three-factor model seems to capture much of the cross-sectional variances in the average returns of securities. Fama and French (1993) demonstrated that the excess returns of portfolios formed based on size and BE/ME, can be explained well by the three-factor model. Moreover, according to Fama and French (1997), the three-factor model has explanatory power in terms of portfolio returns based on industry. Fama and French (1996b) demonstrated that their three-factor model could explain the long-interval reversal phenomenon, with regard to earnings/price, cash flow/price and sales growth as well as book-to-market factor.

However, the three-factor model has no strong explanatory power on the inter-mediate interval momentum profitability documented in the literature. Fama and French (1996a) pointed out that stocks which have low short-term past returns tend to load positively on HML while stocks which have high short-term past returns tend to load negatively on HML. In a three-factor model, this pattern in the HML slopes requires returns reversal, rather than continuation in the future; yet momentum profitability is widely presented in a post-holding period in the literature. This finding makes momentum profitability a significant puzzle in the efficient market hypothesis. Numerous studies have then tried to explain the reasons for momentum profitability from different perspectives.

Conrad and Kaul (1998) tested a data sample covering all stock traded in NYSE and AMEX from 1926 to1989 to demonstrate that momentum profitability could be partially attributed to sample cross-sectional variances in the returns of individual stocks. Lee and Swaminathan (2000) have also scrutinised the interactions between the past trading volume and past stock returns when predicting future stock returns using the monthly data of NYSE and AMEX over January 1965 to December 1995.

Jegadeesh and Titman (1993) have also provided similar evidence, although they have found a reversal of excess returns from Year 3 to Year 5. Empirical evidence has found that past trading volume can be useful in explaining the inter-mediate underreaction and long-term overreaction. Contrary to the liquidity explanation, Lee and Swaminathan (2000) also find

that securities with higher (lower) volume perform better (worse) on average returns in each of the five years prior to portfolio formation. Consistently, by analysing data from January 1983 to December 2002 on NYSE and AMEX, Hvidkjaer (2006) also finds that low-turnover losers present selling pressures during a formation period, while high-turnover losers show strong buying pressure during a formation period.

Some researchers believe that momentum profitability is related to industrial or macroeconomic factors. For example, Moskowitz and Grinblatt (1999) tested momentum strategies based on securities listed on NYSE and AMEX from 1963 to 1995 to claim that momentum profitability can be primarily explained by industrial factors due to following reasons:

- Industrial momentum strategies present statistically significant profits even after adjusting for size, book-to-market equity, individual stock momentum, cross-sectional dispersion in mean returns and the potential microstructure influences;
- Momentum returns are insignificantly profitable once the momentum strategy is controlled by random industry;[8]
- Momentum portfolios based on industrial strategy are significantly more profitable than those based on individual strategy.

Grundy and Martin (2001) have examined stocks traded on NYSE and AMEX from 1926 to 1995, to find that momentum strategies have presented remarkably stable profits over sub-periods of the entire post-1926 after adjusting for dynamic risk exposure. They also confirm that momentum strategies are based on winner-loser information on firm-specific return components rather than being based on total returns, and that these are significantly more profitable. On the contrary, Lewellen (2002) has conducted tests on all stocks traded on NYSE, AMEX and Nasdaq from 1941 to 1999. He reveals that size and B/M portfolios which contribute o momentum profits are as strong as that for individual stocks and industries, which suggests that momentum profitability is a common feature of returns and cannot be attributed to firm-specific returns.

Contrary to previous arguments about the sources of momentum profits, many studies support the argument that momentum profits cannot be attributed to the factors mentioned above. For

[8] The strategy in the study is to buy past winning stocks and sell past losing stocks using random industry strategy.

example, in the study of momentum profitability in the UK stock market, Lui et al. (1999) also inspected the possible sources of momentum profit which they find in the UK stock market. Their findings present the size, price, book-to-market and cash earning-to-price effect in UK stock market, but they still pointed out that momentum profits cannot be attributed to these effects because momentum profits are not caused by cross-sectional variances in the unconditional mean returns in individual securities. They also proved that neither serial correlation in common factors nor delayed price reaction to common factors can explain the momentum profitability. This conclusion is supported by Hon and Tonks (2003): neither beta-risk nor firm size has explanatory power in terms of the momentum profits.

Among the articles indicating that momentum profitability cannot be explained by size, risk, trading volume and industrial effect etc., an article by Jegadeesh and Titman (2001a) is one of the most significant studies. Following their previous research (Jegadeesh and Titman 1993), Jegadeesh and Titman (2001a) evaluated various explanations for the momentum profitability previously documented in 1993. They examined the data 8 years subsequently to the original (Jegadeesh and Titman 1993) sample period and pointed out that the momentum profits are similar to the profits found in the earlier time period, which assures that the momentum profitability is not entirely due to data-snooping bias. They also assert that the risk-adjusted returns based on Capital Asset Pricing Model (CAPM) could not explain the momentum profitability, which also confirms the standpoint of Fama and French (1996b). They have partially attributed momentum profitability to behavioural finance models introduced by Barberis et al. (1998), Daniel et al. (1998), Hong and Stein (1999) and Grinblatt and Han (2002).

Barberis et al. (1998) demonstrate that investors suffer from “conservatism bias” and “representativeness heuristic”. Therefore, in combination such biases may drive the observation of underreaction to initially good news and then overreaction to fundamentals of the firm. Daniel et al. (1998) suggest that irrational investors experience two psychological biases: “self-attribution” and “over-confidence”. Under their model, investors attribute the good performance of individual stocks to their own skills, while blaming poor performance on bad luck. Consequently, they overestimate the precision of their own interpretation of new information while underreacting to public information. In combination, momentum strategies generate abnormal returns in an intermediate horizon and mean reversion in the long-term.

Hong and Stein (1999) assumed two groups of investors to exist: the "news watchers" and the "trend followers". Although both groups of investors are rational, the "news watchers" trade based on all potential information, while "trend followers" trade based mainly on past information and overestimate the fundamentals. As information is only partially incorporated into market prices, "trend followers" underreact to information causing momentum profits in intermediate interval, followed by price reversals to fundamentals in the long-term. Grinblatt and Han (2002) have started to explain the momentum effect in terms of a "disposition effect", which is the phenomenon that investors prefer to sell winners too quickly while hold losers too long. They argue that this disposition effect leads to a drift in the aggregate demand of a stock, then its price will be higher (lower) due a price drop (increase). Such drift in demand will induce underreaction to information, assuming that the demand function for the stock is not perfectly elastic, and finally leads to momentum.

Momentum effects are widely found in most developed stock markets, except for Japan. However, they are not to be found in most emerging stock markets, especially in Asian stock markets. In regards to the momentum in the Chinese stock market, several papers find evidence of significant momentum, but the evidence is not solid due to limitations on data samples, the methods used to select stocks and the methods used to form momentum portfolios. The literature about momentum in the Chinese stock market will be discussed in detail in Section 1.3.

1.4 Literature Review on Momentum Effect in the Chinese Stock Market

1.4.1 Major features of momentum studies in the Chinese stock market

The literature on momentum in China adopts a variety of approaches, rendering the resulting findings difficult to compare. These studies differ in terms of the sample period investigated, data frequency, stock exchanges and stock types (A and B shares) considered, either jointly or separately where applicable, the stated methodology, portfolio formation methods and horizons, inclusion of post-IPO data, and other filters employed on the data.

Most papers analyse the early period of the Chinese stock market history, defined here as ending around year 2001: from twelve papers reviewed here, seven investigate exclusively this early sample period, while another two (Zhou et al, 2010, and Pan et al, 2013) analyse the early period as one of their subsamples. In contrast, only two papers (same as cited above)

report results on the profitability of momentum strategies in China in the post-2001 era. In addition, only five papers provide evidence on a longer period, encompassing the 1990s and 2000s, with the most up-to-date sample ending in 2010 (Chen et al., 2012). Hence, the evidence on the pre-2001 period is much richer than for the whole and especially for the post-2001 period. If momentum/contrarian profits are largely time-invariant, one would prefer to rely on those studies utilising longer sample periods; if, however, momentum profits vary over time, a more likely scenario, a sub-sample or a more sophisticated of analysis allowing for this time variation to be captured would be preferred.

Most studies employ data with monthly frequency, in line with seminal papers by De Bondt and Thaler (1985) on momentum and Jegadeesh and Titman (1993) on contrarian strategies: whereas ten papers provide evidence on momentum profits using monthly data, with two among them conducting the analysis om both weekly and monthly data separately (Chen et al., 2010, and Pan et al., 2013), only one study (Wu, 2011) uses daily and one exclusively weekly (Kang et al., 2002) returns. The underlying assumption appears to be that momentum and/or contrarian effects are of a sufficiently long-term character to be captured by monthly data. In addition, the most common choice appears to be to investigate jointly A-type stocks listed on both the Shanghai (SHSE) and Shenzhen (SZSE) stock exchanges, although some studies provide results separately for SHSE and SZSE (Wu, 2011, Wang and Chin, 2004), investigate the Shanghai exchange only (Naughton et al., 2008), or provide evidence for B-type stocks as well (Zhou et al., 2010). Some studies are not explicit as to which exchange was considered (Griffin et al., 2004 and Gupta et al., 2010). Separating A and B shares is largely justified as, firstly, effectively only A shares are available to the domestic investors, whereas foreign investors almost exclusively trade in B shares, hence these two share types are not substitutable and in reality only A shares can be thought of as the Chinese domestic market (For details refer to Section 1.5.1); secondly, trading in B shares corresponds to only a small fraction of trading in A shares; and thirdly, several firms issued both A and B shares, hence, analysing them jointly could create a problem of double-counting firms, etc. Separating SH from SZ could be justified based on the fact that firms listed on SZSE have different characteristics (on average smaller, not former SOEs, in specific industries), however, leaving out one of these locations would miss out a substantial part of the Chinese market, as they are comparable in size. In addition, one can control for firm characteristics in a more formal and efficient way than by splitting SH- from SZ-listed firms, by splitting all stocks (SH and SH) into subgroups according to the preferred feature (size, industry, ownership structure, etc.).

There are several methodological variations present in the literature on momentum in China. Most studies refer explicitly to Jegadeesh and Titman (1993) as their basis for the portfolio formation method. Identification of a winner and a loser portfolio appears to vary substantially, the most common approach being to form five equally-sized portfolios (six studies), with further three studies forming ten portfolios, and the remaining papers adopting still different approaches. The number of portfolios is clearly important as a higher number of portfolios implies that the highest (winner) and the lowest (loser) one will contain more extreme observations/stocks, but fewer of them. Hence, a higher number of portfolios will tend to result in more pronounced results if the momentum or contrarian strategy works (see, e.g., Gupta et al., 2013, for an international, including Chinese, evidence), but returns on small portfolios will be measured with lower level of efficiency and those portfolios will be more likely affected by idiosyncratic risk. Furthermore, most studies (nine) investigate equally-weighted (EW) portfolios, whereas only a few also analyse value-weighted (VW) portfolios which minimise the potential bias on portfolio returns induced by the presence of numerous but small stocks.

Empirical studies further differ in relation to the maximum length of the portfolio formation (J) and holding (K) periods. A formation period of up to 6 months is employed in five studies whereas a period of up to 12 months has been adopted in other four studies. The shortest maximum formation period is one week (four studies), and the longest is 36 months (Zhou et al., 2010). As for the holding period, six and 12 months is adopted as the maximum length in four studies each, and holding periods range from one day (Wu, 2011) to 48 months (Naughton et al., 2008). Clearly, this heterogeneity in holding and formation period lengths renders many results difficult to compare to each other and should be expected to generate a mix of conclusions regarding the existence of momentum and reversal effects in stock prices in China. For instance, the choice of a formation period can affect whether a transitory or a more persistent trend in prices is being detected, with consequences for its future behaviour (continuation or reversal) and the magnitude of it. In addition, the length of the holding period will affect the final findings, as certain effects (continuations or reversals) may only be observable over sufficiently short or long horizons.

The literature on momentum/reversal has long recognised that empirical results can be affected by the bid-ask spread, price pressure, and lagged price reactions (Jegadeesh and Titman, 1993). Hence, it recommends leaving a time gap between the end of the formation

and the start of the holding period. Again, studies on the Chinese market largely vary in the extent to which this recommendation is being implemented. The most popular approach is to skip one month (six papers), but five of the reviewed papers do not leave out any gap between formation and holding periods. Kang et al. (2002) skip one day, and Chen et al. (2012) skip one week as a robustness check for weekly data. As issues of bid-ask spread, price pressure, and lagged price reactions can affect the Chinese stocks to a considerable extent, skipping would appear advisable; however, skipping as much as one month could result in the analysis failing to capture short term price effects, a phenomenon likely to be of relevance on such as a volatile market where many individual, inexperienced traders suffer from psychological biases and are driven by short-term profit and loss considerations. It might be impossible to determine *a priori* an optimal skipping period, hence caution should be taken when interpreting empirical results, especially where no robustness checks, as is the case with most of the literature here, have been conducted on the impact of the skipping period length.

Yet another feature of the Chinese stock market is that the IPOs are typically extremely underpriced (Su and Brookfield, 2013), resulting in substantial post-IPO price drifts. Hence, to avoid an apparent overestimation of returns for those portfolios which contain newly listed stocks, several studies advocate an exclusion of a certain number of post-IPO observations from the analysis. Four of the revived papers exclude as much as six months of initial price observations, with another one (Kang et al., 2002) excluding one week of initial data. On the other hand, three studies appear to include initial post-IPO prices, with another four remaining silent on their treatment of this issue. Whether one agrees with post-IPO exclusion or not (after all, an investor following a momentum or contrarian strategy would have the opportunity to invest in newly listed firms as much as in those established ones, potentially benefiting from the initial price drift), the approach varies across papers and could generate substantial differences in returns if strong and relevant.

In addition, the reviewed studies also differ in a number of other filters which are being applied to the data. For instance, several papers explicitly state that certain types of securities, such as banks, closed-end- funds, real estate companies, investment companies, ADRs, etc. have been excluded from their analysis (Wang, 2004, Zhou et al, 2010, Griffin et al, 2008, Gupta et al., 2010, 2013 and Wang and Chin, 2004). Others include all securities, while some papers exclude stocks firstly listed in the later part of their sample (Kang et al., 2002), firstly form portfolios after a third of their sample time has passed (Wu, 2011), exclude those stocks whose prices hit the 10% limit in the previous trading day (Pan et al., 2013), or impose a

minimum number of observations in the formation period for a security to be included (Li et al., 2011). Furthermore, most studies remain silent on whether they account for the potential survivorship bias by including, e.g., delisted stocks, with some exceptions (e.g., Griffin et al., 2003, Gupta et al, 2010, 2013). Needless to say, variations across studies in terms of survivorship bias and of the types of securities included in the analysis make direct comparisons of results rather difficult.

1.4.2 Comparison of results

As momentum effects could vary over time, our first level of analysis is the sample period investigated. We begin with studies focusing on the early part of the Chinese stock market's modern history, from its inception in 1990-1 to around year 2001. To start with, analysing monthly returns is the most popular approach. Most studies in this category report significant reversals in prices, mostly in medium and longer-term (Wang, 2004, Zhou et al, 2010 and Griffin et al., 2003, except for the first 6 months of the holding period, and Wang and Chin, 2004, for high-volume portfolios only), Contrary to these studies, Pan et al. (2013) finds no significant effects, however, this study differs from those cited above in that it does not exclude a one-month skipping period. On the other hand, Gupta et al. (2010, 2013) report significant price continuations, except in small stocks where they find reversals; their sample period, however, is much shorter than those of the remaining papers and ends in 1997. Therefore, the difference in results could be revealing prevalence of momentum effects in the very early years of Chinese stock market existence. As for higher frequency returns, Kang et al. (2002) uses weekly data and finds short term contrarian (up to 12-16 weeks) but medium-term momentum (16-26 weeks) profits, but these results are not supported by those obtained by Pan et al. (2013) for weekly data: the latter paper only finds momentum for J, K of 2-3 weeks and reversals for the 1-1w strategy, maybe because post-IPO prices are excluded for six months from their study, compared to just one-week exclusion in Kang et al. (2002). This could indicate that short-term price trends following IPOs are a significant driver of momentum/reversal effects: Wu (2011) employs daily data while not excluding post-IPO observations and reports contrarian effects lasting between one day and one week, but momentum effects in 9-12 months holding periods for SHSE stocks only. This indicates that the post-IPO price drift can be an important factor behind medium-term momentum effects. Overall, however, most studies on the pre-2001 period use monthly data and find significant reversals in prices, mostly in medium and longer-term.

In contrast to the first decade of stock market development in China, only two papers (Zhou et al, 2010, Pan et al, 2013) analyse the profitability of momentum strategies in the post-2001 era. Both find significant reversals for up to 6 months, whereas Zhou et al. (2010), who allow for much longer holding periods, report significant momentum profits in the longer run (18-36 months holding periods for A shares and 9-36 months for B shares). This is the exact opposite of what the literature reported for the pre-2001 period, as reviewed above.

Lastly, several studies conducted their analysis on longer sample periods, which include observations from the pre- and post-2001 subsamples. Given our conclusion above that these periods were showing contrasting results when it comes to prevalence of momentum and reversal effects, one can anticipate that studies incorporating both sub-periods to a varying extent will vary with respect of their overall findings, depending on how much of the pre- vs post-2001 data has been utilised. This is indeed what we find: whereas Naughton et al. (2008) report a pronounced pattern or momentum effects over a wide range of formation and holding periods of 1 to 48 months, Zhou et al. (2010) report significant reversals for A shares at various holding periods from 3 to 36 months, whereas Chen et al. (2012) and Pan et al. (2013) find only a few incidents of rather short–term (generally, 1-3 months) reversals in weekly and monthly data. In contrast, Li et al. (2011) finds no significant effects when using non-risk-adjusted returns, but short-term reversals for CAPM-adjusted returns. Even if reversals seem prevalent in these studies, Pan et al. (2013) further add to the confusion by reporting that, when the interval ranking method is used to identify past winners and losers, numerous instances of significant momentum profits can be found in up to 52 weeks of the holding period.

Overall, the available body of empirical evidence on China appears to be providing mixed results, but some conclusions can be drawn. Firstly, the sample period investigated appears to be important, as in the first decade of the modern Chinese stock market history significant reversals in prices in mostly medium and longer-term were found, whereas post-2001 studies, albeit less numerous, indicate the opposite result, i.e., shorter-term reversals and longer-term momentum effects. Secondly, features such as data frequency, stock exchanges and stock types (A and B stocks) considered, portfolio formation methods, inclusion of post-IPO observations, and other filters employed on the data appear to affect the results as well. However, precise statements as to how exactly are the momentum/contrarian profits affected by each of these features separately are not possible, as studies typically differ in more than one respect, rendering direct comparison difficult if not impossible.

A summary of the literature reviewed in this section is given in Table 1.1. In this table, I provide a sample period of the research, a sample frequency, exchanges covered by the paper, the main method used to construct the momentum portfolio and the ranking method used to sort the stock, formation, holding and skipping gap, whether excluding IPOs and other filters, rather than the IPOs used to select stocks and main findings.

Table 1.1 Summary of Literature Regarding Momentum in the Chinese Stock Market

Paper	Sample Period	Sample Frequency[9]	Exchange[10]	Methodology	Ranking, Methods[11]	Formation(J)-Holding(K), skipping gap (S)	IPOs[12]	Other filters
Kang et al. (2002)	Jan/93-Jan/00	Weekly	SH, SZ jointly A	Lo and MacKinlay (1990); Jegadeesh and Titman (1995)	Five equal-size quintile portfolios, EW and VW	J, K=1, 2, 4, 8, 12, 16, 20, 26 week S=1 day	1 week	Exclude stocks firstly listed in or after 1995
	Main Findings: EW: Significant short-term contrarian (1-1, 2-8, 2-16, 4-4, 4-8, 4-12, 8-1, 8-2, 8-4, 8-8, 8-12, 8-16, 12-4, 12-8 weeks) Significant medium-term momentum (12-26, 16-20, 16-26, 20-16, 20-20, 20-26, 26-12, 26-20, 26-26 weeks) VW: weaker sig. short-term contrarian than EW (1-1, 2-16, 4-8, 8-1, 8-4, 8-8, 8-16, 12-4, 12-8 weeks) stronger significant medium-term momentum (12-26, 16-20, 16-26, 20-16, 20-20, 20-26, 26-12, 26-16, 26-20, 26-26 weeks) **Further Findings:** Results robust to skipping 1 week except for 1-1 strategy. Profits not due to differences in beta risk between winners and losers. overreaction to firm-specific information is the single most important source of short-term contrarian profits; the negative cross-correlations contribute to momentum profits.							
Wang (2004)	Jul/94-Dec/00	Monthly	SH, SZ jointly A	Rouwenhorst (1998a): monthly rebalancing; Jegadeesh and Titman (1993)	Five equal-size quintile portfolios, EW	J, K=3, 6, 9, 12, 18, 24 m S=1 m	6 months	Excluded banks, close - end funds, real estate, investment companies, stocks with less than 12 months of data in the formation period; stocks must have accounting data;
	Mains Findings: Sig. medium- and long-term reversals (3-24, 6-18, 6-24, 9-12, 9-18, 9-24, 12-9, 12-12, 12-18, 12-24, 18-3, 18-6, 18-9, 18-12, 18-18, 18-24, 24-3, 24-6, 24-9, 24-12, 24-18, 24-24 months); **Further Findings:** Results not due to bid-ask spreads Results driven by more risky losers (small cap, high BM ratios); betas do not appear to be associated with average stock returns. No significant results from test based on returns adjusted by FF three-factor model.							

[9] Data sample Frequency used.
[10] The data sample covers only Shanghai Stock Exchange (SH), only Shenzhen Stock Exchange (SZ), Shanghai and Shenzhen Stock Exchange jointly (SH, SZ jointly).
[11] How the stocks are ranked according to their past returns: quantile or decile. How momentum strategies are constructed: equally-weighted or value-weighted.
[12] Exclude IPOs or not and how long of IPOs are excluded

Table 1.1 Continued

Paper	Sample Period	Sample Frequency	Exchange	Methodology	Ranking, Methods	Formation(J)-Holding(K), skipping gap (S)	IPOs	Other filters
Naughton et al. (2008)	1995-2005	Monthly	SH only, A	Jegadeesh and Titman (1993); Lee and Swaminathan (2000)	Five equal-size quintile portfolios, EW; Three groups based on volume	J=1,3,6,9,12 m K=1,3,6,9,12,24,36,48 months S=0	N/A	N/A
	Mains Findings: Significant and clear pattern of momentum (all strategies were significant); **Further Findings:** No strong links between past trading volume and momentum returns. Momentum returns decline over holding horizon.							
Wu (2011)	Dec.12, 1990 to Dec.31, 2001 (SH) Jul. 3, 1991 to Dec.31, 2001 (SZ)	Daily	SH, SZ separately, A	Jegadeesh and Titman (1993)	Deciles, EW	J=1 week, 1,3,6,9,12 months K=1 day, 1 week, 1,3,6,9,12 months; S=0	included	All available stocks included; Portfolios formed from 1/3 of the sample on (July 15, 1994).
	Mains Findings: 'Little' evidences of pure momentum or contrarian profits: SH: Significant contrarian (1w-1d, 1w-1w, 3m-1d, 9m-1d, 12m-1d), sig. momentum (1w-9m, 1w-12m, 1m-12m, 3m-9m, 3m-12m); SZ: 8 contrarian results (1w-1w, 3m-1d, 3m-1w, 3m-1m, 6m-1d, 9m-1d, 9m-1w, 12m-1d) **Further Findings:** Combining mean reversion and momentum generates excess returns higher than those from both pure momentum and pure contrarian strategies. This result not fully driven by beta risk, bid-ask spreads, transaction costs, or the number of portfolios.							
Zhou et al. (2010)	Jan/93-Jun/08; Pre/post Feb/2001	Monthly	SH, SZ jointly, A, B separately	Similar to Lo and MacKinlay (1990), Jegadeesh and Titman (1993, 1995)	Portfolio weighted based on stock return in formation period relative to EW market portfolio	J=K=1,3,6,9,12,18,24,36 months S=1month	6 months	Excluded banks, close - end funds, real estate, investment companies
	Mains Findings: Full sample: A shares: reversals for J=K= 3, 12, 18, 24, 36); B shares: reversals for J=K=18, 24, 36; Pre-Feb2001: A shares: reversals for J=K=12, 18, 24, 36 m; B shares: reversals for J=K=12, 18, 24, 36 m. Significant momentum profits for J=K=6m. Post-Feb2001: A shares: reversals for J=K=6, significant momentum profits for J=K=18, 24, 36m. B shares: reversals for J=K=3, significant momentum profits for J=K=9, 12, 18, 24, 36m. **Further Findings:** For all trading horizons that yield significant returns, time series predictability dominates the cross-sectional variation component.							
Li et al. (2011)	Jan/94-Dec/07	Monthly	SH, SZ jointly A	Jegadeesh and Titman (1993)	Deciles EW	J, K=1,3,6,9,12 m S=0	N/A	Stocks must have 36 observations in the past 48 months prior to formation
	Mains Findings: Using raw (non-risk-adjusted) returns: no sig. results; Using CAMP for risk-adjustment: significant short-term reversals (1-1, 1-3, 3-1, 3-3, 6-1, 6-3, 9-1 month). **Further Findings: N/A**							

Table 1.1 Continued

Paper	Sample Period	Sample Frequency	Exchange	Methodology	Ranking, Methods	Formation(J)-Holding(K), skipping gap (S)	IPOs	Other filters
Chen et al. (2012)	Monthly data: Jan/95-Dec/09; Weekly data: Jan/95-Apr/10	Weekly And monthly	SH SZ jointly, A	Jegadeesh and Titman (1993); De Bondt and Thaler (1985, De Bondt and Thaler (1987); Cooper et al. (2004): (market states)	Deciles EW	Monthly data: J=1,3,6 months K=1,3,6,9 months S=0 Weekly data: J=1,2,4,8,12, 16,24 weeks K=1,2,4,8,12,16 weeks S=0,1	N/A	S=0, 1
	Mains Findings: Monthly data: reversals (1-1, 1-3, 3-1m); S=0; Weekly data: reversals (1-1, 1-8, 1-12, 1-16, 2-1, 2-8, 2-12, 4-1, 4-2, 4-8, 4-12, 4-16, 8-1, 8-2, 8-4, 8-8, 8-12, 12-1,12-2, 12-4, 12-8, 16-1,16-2,16-4, 24-1 weeks); S=0							
	Further Findings: Weekly data, S=1wk: fewer sig. reversals (2-16, 4-2, 4-4, 4-8, 4-12, 4-16, all J=8, 12, 16, 24, K=1, 2, 4, 8, 12, 16 weeks). Momentum (1-1, 1-2 weeks)							
Pan et al. (2013)	Jan/95-Dec/09	Monthly and weekly	SH SZ jointly, A	Jegadeesh and Titman (1993)	Quintiles, Interval ranking; EW	J, K=1,2,3,4,5,6,9,12 m J=1 to 10 w K=1,2,3,4,5,10,16,26,52 w S=0	First 6 months excluded	Exclude a-stock period which hit the 10% limit imposed by the regulation in the last trading day.
	Mains Findings: Monthly: reversals only (2-1, 2-2) in the full sample; 1995-2001: no significant profits; 2002-2009 sig. short-term reversals (1-1, 1-2, 1-3, 1-4, 1-5, 2-1, 3-1). Weekly: sig. short-term reversals for whole sample period (1-1, 1-2, 2-1, 5-1, 6-1, 7-1, 7-4, 7-5, 8-1, 8-2, 9-1, 9-2, 10-1); 1995-2001: one reversal (1-1), more momentum (2-2, 2-3, 3-2, 3-3 weeks); 2002-2009: more numerous reversals (J=1 to 10, K=1 to 5, most for J+K<12).							
	Further Findings: For interval ranking: significant numerous momentum in the whole sample and both subsamples, momentum profits up to 52 weeks of the holding period, strongest when formation period and holding periods from 1 to 3 weeks.							
Griffin et al. (2003)	June/94-Dec/2000	Monthly	Not stated	Not stated	Top (winner) and bottom (loser) 20% of stock returns, EW	J=K=6m, S=1m	Not stated	Real estate trusts and investment companies are excluded. Delisted stocks are included.
	Mains Findings: Insignificant profits for K=6, *t-t+5* holding period; Significant reversals for holding periods: *t+6-t+11*, *t+12-t+17, t+18-t+23*, increase in magnitude over distance from formation period *t.*							
	Further Findings: N/A							

Table 1.1 Continued

Paper	Sample Period	Sample Frequency	Exchange	Methodology	Ranking, Methods	Formation(J)-Holding(K), skipping gap (S)	IPOs	Other filters
Gupta et al. (2010)	Jan/93-Jul/97	Monthly	Not stated	Jegadeesh and Titman (1993): All values converted to USD	Three portfolios. An industry-neutral individual momentum strategy (loser and winner portfolios formed within the same industry)	J=K=6m, S=1m	Not explicitly stated but text indicates not excluded.	REITs and ADRs excluded. Delisted stocks are included.
	Mains Findings: Significant momentum returns. **Further Findings:** Significant momentum returns from industry momentum and 52-week high momentum strategies.							
Gupta et al. (2013)	Jan/93-Jul/97	Monthly	A shares	Jegadeesh and Titman (1993): All values converted to USD.	Five portfolios, VW and EW	J=K=6m, S=1m	Not stated	real estate investment trusts, preferred and convertible stocks, stocks with restricted voting rights are not included. Delisted stocks included
	Mains Findings: Significant momentum overall. Significant reversals in small stocks and momentum in large stocks. **Further Findings:** No substantial difference between CAR and BH returns; between USD and local currency returns; when extreme losers/ winners excluded. Momentum stronger for VW portfolios, when focus is on more extreme winners/losers (more portfolios), Momentum weaker when log rather than simple returns used with the CAR method; when no skipping,							
Wang and Chin (2004)	Jul/94-Dec/00	Monthly	SH SZ jointly and separately, A shares	Jegadeesh and Titman (1993); Lee and Swaminathan (2000)	Five portfolios, independent sorts on past returns and past trading volume.	J, K =3, 6, 9, 12m, S=1m	Stocks listed no more than 6 months prior to the formation Period excluded	Exclude banks, close-end funds, real estate, and investment companies.
	Mains Findings: Reversals' in 9-3, 9-6 high volume portfolio. Risk-adjusted returns (four factor model): momentum in 3-3, 3-6, 3-9, 3-12 6-3, 6-9, 6-12, 9-6, 9-9, 9-12, 12-3, 12-6, 12-9, 12-12 low-volume portfolios, 6-9, 6-12 high-volume portfolios **Further Findings:** Risk-adjusted returns for SH only: momentum for low-volume portfolios for all J, K except J=K=12. Risk-adjusted returns for SZ only: momentum for low-volume portfolios for all J, K except J=K=3. Risk-adjusted returns for large stocks: momentum for low-volume portfolios for all J, K.							

1.4.3 Literature using whole sample period (1991-2012) data

In this section, I will discuss the results of momentum in the Chinese stock market using data sample period of 1991-2012 or periods close to 1991-2012. Li et al. (2011) obtained monthly data from DATASTREAM for A-shares in both Shanghai Stock Exchange (SHSE) and Shenzhen Stock Exchange (SZSE) from January 1994 to December 2007. They used stocks listed for at least 4 years prior to the formation date, but they did not disclose whether they had excluded IPOs. They constructed 25 different decile strategies over 1, 3, 5, 9 and 12 months of formation periods and holding periods. Using the raw data (return without adjustment for risk), they found none of the strategies were significant. Although no statistically significant results were found in detail, when using raw data and including IPOs, the returns on P10 (the portfolio with highest past returns) were usually lower than P9 (the portfolio with second highest past returns) with only a few exceptions. However, they did reveal significantly negative profits - profits generated by contrarian strategies - over short interval strategies when returns were adjusted for risk using CAPM. Thus, 7 out of 25 strategies were with significantly negative profits when holding periods were less than 9 months. (1-1, 1-3, 3-1, 3-3, 6-3, 6-1, 9-1 month). In general, they concluded that they did not reveal any evidence of momentum profits, but evidence in favour of short-term (holding period less than 3 months) contrarian profits.

Chen et al. (2012) used monthly and weekly returns without adjusting for market risk of A-shares for both SHSE and SZSE from January 1995 to December 2009 to examine momentum in the Chinese stock market. They presented significant contrarian profits for strategies of 1-1, 1-3 and 3-1 (months), which are inconsistent with the findings of Li et al. (2011) using raw monthly returns without adjusting for risk, but confirming the findings of Li et al. (2011) when the CAPM model is used. An interesting result was revealed: when they used weekly data from January 1994 to April 2010, 25 short-term contrarian strategies were significant out of 42 decile strategies and such profits gradually decreased when formation periods were over 16 weeks. More contrarian profits were found when the data frequency changed from monthly to weekly. They attributed the differences in results between monthly data and weekly data to the feature that most investors in the Chinese stock market were interested in short-run speculation.

Pan et al. (2013) have used the same frequency, stock types and markets of data, but a sample window by four months shorter (January 1995 to December 2009) than Chen et al. (2012) and

excluding the returns of the first 6 months after IPOs[13]. Pan et al. (2013) did not discover any significant momentum profits when using the traditional method following Jegadeesh and Titman (1993). But, to scrutinise their results in detail, they only found 13 significantly negative profits (all the significant profits were negative) out of 90 quintile strategies using weekly data, while Chen et al. (2012) found 25 out of 42. The contrarian profits were strongest amongst those strategies with a holding period of 1 week. They also found 3, 1 and 1 significantly negative strategies with holding period of 2, 4, 5 weeks respectively. Their findings were consistent with the findings of Chen et al. (2012) and again confirmed the opinion that the fact that most of the investors in the Chinese stock market were interested in short-run speculation might be the cause of such a phenomenon. They also documented stronger contrarian effects for the subsample from 2002 to 2009, while for a subsample from 1995 to 2001, contrarian profits completely disappeared. Unfortunately, they did not give the reason why they split the whole sample period at the end of 2001.

Besides the traditional method used by Jegadeesh and Titman (1993), they also examined the data using a different method called interval ranking. They used the distance between the best and worst performing stocks in the ranking period; specifically, return intervals were computed by the distance between the highest past returns and lowest past returns in the formation period, rather than using cumulative returns as the ranking criterion. The pattern of momentum effect then changed dramatically, -significant (positive) momentum profits were presented for the whole sample period and both of the subsample periods when an interval ranking was employed. Moreover, the momentum profits existed for up to 52 weeks of holding period, but the strongest momentum profits were still exhibited when formation period and holding period were from 1 to 3 weeks. As the formation and holding periods increased, momentum profits gradually decreased, which is also consistent with the assumption that most of investors in the Chinese stock market were interested in short-run speculation.

The research of Zhou et al. (2010) is slightly different from the three papers discussed above. Besides the A-share markets normally used in most of the researches, they also examined B-share stocks in the Chinese stock market. Two Chinese stock exchanges, Shanghai Stock Exchange and Shenzhen Stock Exchange, both have A-share and B-share markets. The main difference is that the A-share market is traded in domestic currency: Chinese Renminbi, while

[13] They also excluded the returns if the stock hit the limit of 10% increase or decrease in the last trading day.

the B-share market is traded in foreign currencies: US dollars in Shanghai and Hong Kong dollars in Shenzhen. A-share markets were not open to foreign investors until 2003 and B-share markets were not open to domestic investors until 2001. Thus, Zhou et al. (2010) tested the sub-sample periods of pre-2001 and post-2001 also the whole sample period. In this section, I will only discuss the findings of the whole sample period found in this article. They constructed contrarian and momentum strategies following the method of weighted relative strength strategies introduced by Lehmann (1990) and Lo and MacKinlay (1990), skipping 1 month between formation and holding period for A-share and B-share respectively. All of their strategies are equal-weighted portfolios where J=3 only and K=1 week, 1, 3, 6, 9, 12, 16, 24 and 36 months. For A-share markets of Shanghai and Shenzhen for the whole sample period (January 1993-June 2008), they found 6 significantly negative momentum returns out of 9 strategies tested.

It is very clear that for the whole sample period of 1991-2012 or sample periods similar to that (1991-2012), no momentum was found in the Chinese stock market. Instead, strong significant contrarian effects exist in the Chinese stock market.

1.4.4 Literature using pre-2001 data

The first paper specifically focused on Chinese markets about momentum and contrarian strategies was published by Kang et al. (2002). They collected weekly prices of A-shares for both Shanghai Stock Exchange (SHSE) and Shenzhen Stock Exchange (SZSE) covering the period of January 1993 to January 2000 from DATASTREAM. They excluded IPOs for the first week and those stocks listed in or after 1995. To make sure there were enough data to implement momentum strategies they only included stocks, which had been listed for at least 4 years prior to January 2000. Based on the information given out by Pan et al. (2013), there should be 176 and 288 A-share stocks in SHSE and SZSE. Apparently, the sample of Kang et al. (2002) was not inclusive for 1993 and 1994. They excluded the stocks in and after 1995, based on the fact that their longest formation and holding period was 26 weeks, which made the longest strategy span 12 months (they skipped 1 day between formation and holding periods). Four years was a much longer period than the formation and holding periods their strategies needed. The reason why they did this is however, not given.

As I have mentioned, the above study examined momentum and contrarian strategies for short-to-median horizons, which is up to 6 months. The most common testing horizon for momentum strategies is 3-12 months. Although their sample was limited and momentum strategies tested were as common as others were, they did find significant momentum profits,

especially for the value weighted portfolio strategies. In detail, they found statistically significant contrarian profits for 14 strategies out of 64 strategies in total, whereas 10 momentum strategies were statistically significantly profitable among 64 total strategies. Nevertheless, I question their method of calculating the return on value-weighted portfolios. The return of value-weighted portfolio was computed as the return of the *i*th stock over the holding period multiplied by 'the ratio of the *i*th firm's average market value (over the entire sample period) to the total market value of the quintile portfolio'. It would be more reasonable to use the firm's market value (at the time of the formation period) to the total market value of the specific quintile portfolio.

Kang et al. (2002) suspected that the momentum profits found by their research were due to four different factors: measurement error, time-varying market risk, overreaction to firm-specific information and lead-lag structure in stock returns. Therefore, they tested these four factors to examine the possible sources of contrarian and momentum profits revealed by their study. First, they constructed two more panel strategies by skipping one day and one week between portfolio formation and holding periods to eliminate the effect of bid-ask spread, which is related to measurement error. The original strategies - skipping 1 day and skipping 1-week strategies - produced nearly identical results, except for 1-1 contrarian profit. Hence, they affirmed the contrarian and momentum profits found by their study were not biased by measurement errors. Second, they applied a robustness test for time-varying market risk to their sample following the model of Chan (1988) in order to inspect the role of time-varying market risk in explaining the contrarian and momentum profits. The theory underpinning the test is to decompose portfolio returns, contrarian and momentum returns into three parts using a CAPM model, in which β is the market risk premium. The results presented show that none of the betas was significant which suggests that the time-varying market risk was not an explanatory factor of the contrarian or momentum profits they found.

Third, they tested the factors of overreaction to firm-specific information and lead-lag structure in stock returns. If overreaction to firm-specific information were the main source of contrarian profits, the overreaction would result in negative own-serial correlations. If negative own-serial coefficients dominate in own-serial correlation coefficients matrices, then overreaction to firm-specific information can be considered as a main source of contrarian profits. Their results showed in total 45 own-serial correlation coefficients, 19 significantly negative own-serial coefficients out of 38 negative ones weighed out 3 significant positive own-serial coefficients out of 7 positive ones. Hence, they claimed 'the relative dominance of

the negative own-serial coefficients' indicated 'an overall negative own-serial correlation among individual stock returns', which implied an overreaction of stock prices to firm-specific information was a source of the profitability of contrarian strategies in short term.

Following Lo and MacKinlay (1990), they then examined the effect of lead-lag structure to contrarian profits, which can be observed by positive cross-serial correlation coefficients. According to their results, only 33 correlation coefficients are positive out of a total of 180 cross-serial correlation coefficients, of which only 2 were significant. Whereas 147 negative cross-serial coefficients were found, of which 82 were significant. Hence, they asserted that the size-related lead-lag structure they found in their study would contribute to momentum profits rather than contrarian profits.

In the last section of their study they decomposed contrarian and momentum profits following Jegadeesh and Titman (1995). They found the average cross-sectional autocovariance of the idiosyncratic component in stock returns (the second component in the decomposition equation) to be negative for all the contrarian and momentum strategies they estimated, which indicated that overreaction to firm-specific information was the main source of contrarian profits. Moreover, this component weakened momentum profits, suggesting overreaction to firm-specific information did exist in China's stock market, but it was not the source of momentum profits; to wit, the other two components outweighed the overreaction in the market.

More specifically, the decomposition equation has three components. The first is the cross-sectional variance of expected returns; second is the average cross-sectional auto-covariance of the idiosyncratic component in stock returns; and the third is the cross-sectional variance of the common factor's unexpected realisation times, the cross-sectional average of individual stock's cross-serial covariance of contemporaneous and lagged sensitivities to common factor realisation, which is a proxy for the lead-lag structure. A positive coefficient for the first component contributes to momentum profits, as higher returns of stocks should experience higher-than-average returns during formation and formation periods. The second component is related to a firm-specific information proxy for overreaction to firm-specific information. If investors in the Chinese stock market overreact to firm-specific information, then it will be negative. As prices should overreact then correct the overreactions, the own-serial-covariance will be negative. If it is negative, then it increases the contrarian decreases the momentum

effect. If the coefficient of the third component is negative, then the lead-lag effect contributes to contrarian effects; if it is positive, the lead-lag effect contributes to momentum effects.

For the three strategies they tested, the coefficients of the first and third components are significantly positive; the second is significantly negative. Thus, the first component contributes to momentum profits, the second component contributes to contrarian profits, and the third contributes to momentum profits. They found the dominant component in the decomposition that they tested is the second one. The first and third components are very weak. Thus, they asserted that overreaction does exist in the Chinese stock market. However, it might be that the effects of the combination of the first and third component outweigh the second, thus, overall, momentum effects found to exist in the Chinese stock market. This finding is important if it confirms the existence of overreactions in the Chinese stock market, but the two other sources outweigh the effect of overreactions.

Wang (2004) fails to find any significantly positive momentum profits over the intermediate- and long-term horizons in the Chinese stock market (3 months to 24 months). There were several differences between the research design and sample used in their papers comparing to Kang et al. (2002). First, the samples used in these two studies are different. Data frequency in Wang (2004)'s research involved monthly data rather than weekly data and the sample period was from 1995 to 2000. Although they both excluded IPOs, Wang (2004) excluded prices 6 months right after IPOs while Kang et al. (2002) only excluded 1 week. As Wang (2004) implies but does not point out directly, excluding the first 6 months after IPOs might be more reasonable as other research about IPOs in China might have agreed that IPOs are usually underpriced in the first 6 months (Mok and Hui, 1998). Wang (2004) also eliminated stocks from banks, closed-end-funds, real estate and investment companies following Fama and French (1996a) and Fama and French (1993), But in the research of Jegadeesh and Titman (2001a) and Jegadeesh and Titman (1993) they did not eliminate these stocks from their sample.

Another difference, which I mentioned might affect the results of Kang et al. (2002), was that Wang (2004) only required stocks to be available at least 12 months priced prior to the formation periods, even if they implemented strategy up to 24-24 months. Second is that the research designs were different. Wang (2004) employed longer formation and holding periods than Kang et al. (2002) did. Another slight difference was that they skipped one month between the formation and holding period whereas Kang et al. (2002) skipped only one day in

their research. One improvement of Wang (2004)'s work was that he expanded the robustness test of risk adjusted returns of relative strength portfolios from single time-varying market risk to Fama and French's three-factor models. The results for all the strategies tested were negative but insignificant, therefore, 'the results that past losers outperform past winners over the intermediate- and long-horizons in China's stock market is not inconsistent with rational risk-based asset pricing theories.'

In general, they found 21 significant strategies with negative returns for portfolios of buying past winners and selling past losers out of 36 strategies tested.[14] For a similar holding period, the significant returns over different formation periods became lower when the formation period increased except for K=24. To wit, for a similar holding period, portfolios generated a larger loss when the formation period increased. For a similar formation period, which was shorter than 9 months, the returns decreased when holding periods have increased. However, when the formation periods were longer than 9 months, the similar lowest returns shifted from 24 months gradually to 9 months. The findings suggested that past winners became losers in the future, while past losers became winners in the future.

Wang (2004) then conducted analysis controlling for security characteristics. According to his findings, past losers outperforming past winners in the future were likely associated with higher risk (smaller size and higher BM ratio) borne by past losers rather than past winners. To scrutinise this hypothesis, Wang (2004) tested a 12/12 relative strength strategy for firm size and BM respectively. He affirmed the size effect in the Chinese stock market, as evidence showed that small firms generated higher returns than larger firms. Regarding the impact of BM, he pointed out that it had a weaker impact on the performance of relative strength strategies in the Chinese stock market comparing it to the size effect.

Wang (2004) paper is the first research considering the risk factors associated with the performance of relative strength strategies in the Chinese stock market. Furthermore, he performed risk adjustments to test relative strength strategies based on Fama and French (1993) three-factor model, which has filled the gap in the literature about primary Chinese evidence. his results were largely consistent with the findings of Fama and French (1993). The results of the regression were also analogous with those of Fama and French. Hence, they affirmed that the three-factor model had 'significant explanatory power in cross-sectional

[14] Strategies tested were J=3, 6, 9, 12,18, 24, and K=3, 6, 9, 12, 18, 24.

variation in average stock returns in China'. Additionally, they tested abnormal returns of relative strength strategies after adjustment according to Fama-French three-factor model.

The signs of average abnormal returns to relative strength strategies were similar with the results using raw data. Nevertheless, none of the results were significant after checking for risk using Fama and French's three-factor model. Hence, they asserted that 'the predictable returns over intermediate- and long-horizons in China's stock market' were 'entirely attributable to risk'. Following this, they implemented an analysis of factor loadings to help reach a better understanding of the exposures of relative strength portfolios to various dimensions of risk. According to their findings, generally speaking, beta was not the main attribution of significant predictive patterns found using raw data, while the firm size and BM effects were largely explanatory in regard to the mean reversal found in the Chinese stock market.

The main findings of Wang (2004) research were inconsistent with Kang et al. (2002). In my opinion, Wang (2004) findings were more convincing than Kang et al. (2002), as the data implemented in the former study was more complete than the latter. Wang (2004) also filled the gaps in literature by analysing the returns of relative strength strategies adjusting for risk, based on Fama and French three-factor model. Yet, the strategies analysed in their study only cover J/K=3, 6, 9, 12, 18, 24; therefore, some evidence between these strategies might not been revealed.

Considering the interaction between the two stock exchanges, Wu (2011) has conducted a research using daily data for all A-shares without any screening criteria for both SHSE and SZSE separately from the very beginning of the process to 31 December, 2001. They had 1140 stock shares on 12 December 2001, while my data sample has 1137 stocks for the same date. Their trading strategy was followed by Jegadeesh and Titman (1993) grouping all the eligible stocks into deciles. Their formation periods varied from 1 week, to 1, 3, 6, 9 and 12 months and holding periods varied from 1 day, 1 week to 1, 3, 6, 9 and 12 months, without skipping any period between formation and holding periods. For SHSE, they only found 5 significantly negative returns (positive contrarian profit) out of 42 strategies and 5 significantly positive returns (positive momentum profits) out of 42 strategies at the 10% level, which implied that neither contrarian nor momentum profits existed in SHSE.

For SZSE, they found 8 significantly negative returns (positive contrarian profits) of the portfolios out of 42 strategies, but no significantly positive returns. It seems supportive to the argument that I mentioned that the contrarian effects exhibited in SZSE might weaken the momentum effect for China's stock market, even though Wu (2011) results did not support the contrarian effect in SHSE. Furthermore, they examined the momentum effect by verifying the possible mean reversion, which might compromise the momentum effect in the Chinese stock market. Following Balvers et al. (2000), from 1/3 of all their data onwards[15], they used 'rolling regression parameter estimates to forecast the expected return for the upcoming period for each stock', so the mean reversal can be controlled.

In detail, they decomposed the price of a stock into a fundamental part and a temporary part. They used the value-weighted market index as a proxy for the fundamental part. Then, the temporary part is regressed using its unconditional mean, 1st lagged part, the cumulative differences of J-lagged returns and a random error which was white noise and uncorrelated with regressors. Generally, they exhibited a strong mean reversal in both the SHSE and SZSE and momentum effects controlling for mean reversal was stronger than without controlling for the latter; therefore, they asserted that a strong mean reversal existed in both SHSE and SZSE which might interfere with intermediate term momentum profits. However, in my opinion, their research might be flawed for two reasons. First, using the data from the very beginning, means that only a limited number of stocks were available when grouping them into deciles, which means that not enough stocks existed in each decile in the first few years.[16] Second, using a regression parameter estimate expected returns - as the ranking returns to construct the momentum strategies obviously - is subject to estimation bias (for more detail about estimation bias see the discussion of "bad model" in Fama (1998).

Another paper favouring momentum in the Chinese stock market is that of Naughton et al. (2008). The data they used is from 1995 to 2005, slightly longer than 2001, but it is still placed in this section, as the data they used is short and only 4 years after 2001. Naughton et al. (2008) has employed a longer span of data (1995-2005), but a more limited pool of A-share stocks (only Shanghai Stock Exchange) to examine the interaction between past returns and past trading volume in terms of momentum strategy. Although their research was mainly

[15] The beginning 1/3 of the time series data used in "rolling regression parameter estimates" is actual data collected from DataStream, the remaining time series data is a forecast on the expected returns.
[16] Most of the research about China used data from 1995, and some from 1993, Wu's research is the only one including the data from the commencement of China's stock markets.

focused on momentum strategy based on different trading volumes, they provided evidence based on simple pure momentum strategies, which revealed a significant and clear momentum effect for all the different formation periods (J=1,3,6,9,12,) lasting up to 12 months after formation, although profits of momentum exhibited a reversal pattern from 24 months onwards. Although their research has only used A-shares in Shanghai Stock Exchange, it has provided an interesting point for conducting further research. One question that can be posed is whether the contrarian profits exhibited on both of the Chinese stock exchanges[17] as a whole are due to the contrarian effect in Shenzhen Stock Exchange outweighing the momentum effect, which might only exist in the Shanghai Stock Exchange?

Zhou et al. (2010) used a longer period of data from January 1993 to June 2008 and applied the same screen criteria by excluding IPOs for the first 6 months and also stocks from banks, closed-end-funds, real estate and investment companies but with both A and B-shares. They constructed contrarian and momentum strategies following the method of weighting relative strength strategies introduced by Lehmann (1990) and Lo and MacKinlay (1990) skipping 1 month between formation and holding period for A-shares and B-shares respectively. As their research considered B-shares, they split the data period as pre-Feb 2001 and post-Feb 2001, when the policy of limitation for domestic investors investing in B-shares was abolished.

In this section, the main findings related to the findings using data prior to 2001 is reviewed thereafter. One of the differences in the methods used by Lo and MacKinlay (1990) and Jegadeesh and Titman (1993) is that when using Lo and MacKinlay (1990) method, the formation periods are always equal to holding periods. For the pre-Feb-2001 period, all the strategies involved in holding periods of K=1 weeks, 1, 3, 6, 9, 12, 16, 24, 36 months yielded negative returns for the A-share markets. However, only the returns of strategies of inter-mediate and long horizon were significant[18], which indicated that contrarian strategies were profitable. Additionally, when holding periods increased, returns decreased. The K=36 equal-weighted strategy yielded a considerable -29.4328% return per month. For A-share market, they further asserted the findings of Wang (2004), that momentum strategies generated significantly negative profits over varying trading spans.

[17] More evidence will be discussed in the following section.
[18] The significant strategies were K=9, 12, 18, 24, 36 months.

For B-share market[19], the returns of most strategies were negative, except for the strategies K=1, 3, 6 months (holding period). Considering the significant results, momentum strategies yielded significantly negative returns for those holding periods equal and longer than 12 months, while momentum strategy yielded a significantly positive return for a holding period of 1 month.

No significant results were found for all 64 strategies tested in the sub-sample period of 1995-2001 conducted by Pan et al. (2013). However, they found two significantly negative returns out of 64 strategies tested for whole sample period of 1995-2009.

As I have seen the findings of the literature using pre-2001 data are ambiguous. Two papers found momentum effects but the other ones did not. However, the data used by the papers which found momentum effects is either of a small sample covering a short period[20] (Kang et al. (2002): 1995-2000) or only containing stocks in one of the two markets in the Chinese stock markets (Naughton et al. (2008): only stocks in SHSE). As for contrarian effects, Kang et al. (2002) also found contrarian profits when formation and holding periods vary from 1 week to 3 months. Additionally, Wang (2004) found strong inter-mediate and long-term contrarian profits when formation and holding periods are between 3 to 24 months.

1.4.5 Literature using post-2001 data

Not many studies in the literature use post-2001 data. All of the research reviewed in this section is part of the research conducted reporting findings that used post-2001 data as a sub-sample for research. This is the reason why only two papers are reviewed in this sub-section.

For results using data post-2001, evidence provided by Zhou et al. (2010) shows that buying winners and selling losers strategies were only significant and negative at 3 months, but were inverted to be significantly positive for 12-12, 18-18, 24-24 and 36-36 months strategies. The profits of momentum strategies post-2001 increased when formation and holding periods increased. Although the sign of average return of momentum strategies post-2001 is the opposite of that in the pre-2001 subsample period, Zhou et al. (2010) assert that the profits from the momentum strategies exhibited structural change. However, there is no evidence

[19] Research about momentum and contrarian profits using B-share stock market is limited, hence only this paper is discussed here.
[20] For strategies equivalent to when formation and holding periods are between 3-6 months.

suggesting structural change is related to the change from momentum profits to contrarian ones.

For the B-shares market[21], momentum strategies exhibited significantly negative profits over intervals of and longer than 12 months. Interestingly, they revealed that momentum strategies generated significantly positive profits at and beyond 12 months. For B-shares, similar to the A-shares market, momentum strategies exhibited significantly negative profits pre-Feb2001, while they yielded significantly positive profits at and after 6 months. Furthermore, Zhou et al. inspected whether the significant profits revealed could be attributed to time-series predictability or to the variation in the mean returns of individual securities, by using the decomposition of average profits following Lo and MacKinlay (1990).

Pan et al. (2013) found contrarian returns for the 2002-2009 sub-sample period that they tested. They tested 64 momentum strategies and found 8 are significantly negative, while the returns of all other strategies are insignificant. However, it is noticeable that they did not find strong evidence of contrarian or momentum profits for the whole sample period that they tested. In addition, they only found two significantly negative returns out of the 64 strategies they tested.

As there are only two papers using exclusively post-2001 data as part of sub-sample periods in their research, the conclusion about momentum and contrarian effects for sub-sample period of post-2001 is not clear. Zhou et al. (2010) found momentum effects for A-shares but Pan et al. (2013) found contrarian effects

1.5 Data and Methodology Used to Test General Momentum Effects in the Chinese Stock Market

In this section, the data and main methodology used in this research will be described. First, a briefly introduction to the Chinese stock market will be given out to provide an overall understanding to the Chinese stock market. A briefly history of Chinese stock markets and the unique two-share system in the Chinese stock market will be described in this part. Second, the data used in this research will be described. In this prat, how exactly the data are collected,

[21] The paper of Zhou *et al.* (2010) is the only research covering the B-shares market in Chinese stock market.

definitions of variables used in this research will be given out. The last part presents the main methodology used in this chapter.

1.5.1 An introduction to the Chinese stock market

The foundation of Chinese stock markets begins with the establishment of the Shanghai Stock Exchange (SHSE) on 19 December, 1990 and the Shenzhen Stock Exchange (SZSE) on 3 July, 1991 (Chen et al., 2001). One year later, the unique twin-share system (A-share and B-share) was formally established in the Chinese stock market by allowing 'some companies to issue a special type of stock, B-share, for trading by foreign investors' (Chen et al., 2001). Besides this unique feature of the Chinese stock market, a daily price limit of 10% movement implemented on 16 December, 1996. The B-shares are traded in U.S. dollars in SHSE and HK dollars in SZSE. Before 20 February, 2001, domestic investors are not allowed to trade B-share stocks, and foreign investors are not allowed to trade A-share stocks until 9 July, 2003 (Lin and Swanson, 2008). Although, domestic investors are allowed to trade B-share stocks after February 2001, there are still restrictions on trading A-share stocks by foreign investors and B-share stocks by domestic investors. For example, domestic investors are allowed to trade B-share stocks only if they have appropriate foreign currency accounts (U.S. dollars or HK dollars). However, the foreign currency quota for each individual per annual is 50,000 U.S. dollars[22]. Even for domestic institutions trading B-share stocks, they are also subject to strict regulations regarding foreign exchange in China. As for foreign investors trading A-share stocks, only international investors under the Qualified Foreign Institutional Investor (QFII) or Renminbi Qualified Foreign Institutional Investor (RQFII) rules are allowed to trade. These institutional investors 'must be approved by SRC[23] to invest in China's securities market and are granted investment quotas by the State Administration of Foreign Exchange' (Lin and Swanson, 2008).

Separating A and B shares is largely justified as, firstly, effectively only A shares are available to the domestic investors, whereas foreign investors almost exclusively trade in B shares, hence these two share types are not substitutable and in reality only A shares can be thought of as the Chinese domestic market; secondly, trading in B shares corresponds to only a small fraction of trading in A shares; and thirdly, several firms issued both A and B shares,

[22] 'The administration of total annual amount shall apply to individual settlement and domestic individual purchase of foreign exchange. The total annual amount shall be the value equivalent to USD 50,000 for each person every year'. (the Detailed Rules for the Implementation of the Measures for the Administration of Individual Foreign Exchange (No.1 [2007] of the State Administration of Foreign Exchange).)

[23] SRC refers to the (China) Securities Regulatory Commission (SRC).

hence, analysing them jointly could create a problem of double-counting firms, etc. The restrictions on domestic investors trading on B-share and foreign institutional investors trading on A-share are one reason why this research is only focus on A-share stocks in the Chinese stock market. Due to these restrictions it is difficult to determine how much percentage of total investing amount should be allocated to B-share stocks. More specifically, as individual investors' and institutional investors' trading volumes are limited by their foreign exchange quotas, thus, in a specific momentum strategy, it is difficult to allocate the amount to invest in A-share stocks and B-share stocks. Besides, the trading activities of B-share stocks in both SHSE and SZSE are extremely low compared to A-share stocks. The percentage of trading values of B-share to total trading values in the market is 0.25%, 0.70% and 0.38% for SHSE, SZSE and the overall market of the SHSE and SZSE respectively in 2012[24]. Another reason is that most of the researches about the momentum effects on the Chinese stock market only focus on the A-share stocks, thus, using only A-share stocks in Chinese stock markets can make this research comparable with previous studies. So, this research only focusses on the A-share stocks in the Chinese stock market.

There are several reasons why this research is focused on the Chinese stock market. First, although, momentum phenomenon has been examined and researched for many years, the analysis and explanations that related to such profitability beyond the US market have been paid limited attention to. Based on the work of 1993, Jegadeesh and Titman (2001b) evaluate alternative explanations of momentum profitability using the data from U.S. market. Outside the U.S. market, Rouwenhorst (1998b) also verified the existence of the momentum profit in the European market[25]. Nevertheless, detailed analysis using non-U.S. data is essential to be performed to evaluate the robustness of the U.S. market findings against data-snooping bias, and to gauge alternative explanations of momentum phenomenon, especially for the emerging markets. Additional, findings in the previous researches showed that momentum profits do not exist in most of the Asian stock markets (McQueen et al. 1996, Patel and Sarkar 1998, Chui et al. 2000 and Chui et al. (2010). It will be valuable to conduct a thorough examination of the momentum profits in the largest stock market in the Asian counties and the second largest one in the world.

[24] According to Shanghai Stock Exchange Statistics Year Book, the trading values are 16,404,738 million and 41,348 million RMB for A-share stock and B-share stocks respectively in 2012 in SHSE. According to Shenzhen Stock Exchange Statistics Year Book, the trading values are 6,447,167.68 million and 45,465.01 million RMB for A-share stock and B-share stocks respectively in 2012 in SZSE.

[25] He finds significant momentum profits of 1% per month from a sample of 12 European stock markets over the horizon from 1980 to 1995. He also obtains that international momentum profits are correlated to those in the US market, which suggest that exposure to a common factor may force the profit globally.

Second Chinese stock market is one of the fastest growing economies in the world and one of the few countries negatively related with the U.S. stock market (Kang et al., 2002). In 2012, the total negotiable/tradable capitalisation of the SHSE and SZSE is 0.34 times as the total nominal GDP[26]. This makes the Chinese stock market ahead of most EU ones in terms of significance of the stock market to the economy.

Third, the proliferation of the individual noise traders in the Chinese stock market motivate to examine the momentum phenomenon in that market. Ng and Wu (2007) pointed out that 99.5% of the investor accounts were individual account and 0.5% were institutional accounts. Given the short history of the Chinese stock market, the experiences of investment and the level of sophistication of individual investors in the Chinese stock market are limited, thus, they are unlikely to be as sophisticated as their peers in the developed market. Mok and Hui (1998) presented 289% returns of IPOs on the first day in Chinese stock market. Su and Fleisher (1999) discover evidence of mean returns of more than 900% indicating that Chinese investors were very passionate in investing in stock market.

Last, although only international investors under the Qualified Foreign Institutional Investor (QFII) or Renminbi Qualified Foreign Institutional Investor (RQFII) rules are allowed to trade B-share stocks and they are subject to approval by the China Securities Regulatory Commission and trading quotas, the Chinese government has been proposing to further opening its stock market to international investors. For example, on 10 April, 2014, a programme called Shanghai-Hong Kong Stock Connect is approved by the Chinese government. The Shanghai-Hong Kong Stock Connect is 'a mutual market access program, through which investors in Hong Kong and Mainland China can trade and settle shares listed on the other market respectively via the exchange and clearing house in their local market'.[27] Through this programme, domestic investors can access to listed stocks in Hong Kong Stock Exchange, and international investors can trade A-share stocks listed in SHSE, which makes the Chinese stock market easier to trade for internationally investors. A similar programme called Shenzhen-Hong Kong Stock Connect is also under proposal to allow investing stocks listed in SZSE for international investors and investing stocks listed in Hong Kong Stock Exchange for domestic

[26] According to Shanghai Stock Exchange Statistics Year Book, the negotiable capitalization is RMB 13,429,445 million by 2012. According to Shenzhen Stock Exchange Statistics Year Book, the negotiable capitalization is RMB 4,736,380.92 million by 2012. And according to National Bureau of Statistics of China the total nominal GDP is RMB 54,036,740 million by 2012.

[27] Refer to http://english.sse.com.cn/investors/shhkconnect/introduction/definition/.

investors. It can be seen, the linkage of Chinese stock markets and international stock markets will be stronger. Therefore, the research about the Chinese stock market can help international investors to have a better understanding to the Chinese stock market.

1.5.2 Data specification

Data definition

Monthly data of A-shares on Shanghai Stock Exchange (SHSE) and Shenzhen Stock Exchange (SZSE) stocks are collected from DATASTREAM. The data type used is a total return index of listed A-share stocks and the total return index of the last available trading day in each month is collected. For example, the last day of May 2009 is 31st but the last trading day in May 2009 is 29th, therefore the total return index on 29th May 2009 is used as the data for May 2009. One of the reasons for using monthly data is that most of the papers on momentum in the Chinese stock market use monthly data. Six out of the eight papers reviewed in Section 1.2 use monthly data to conduct their research; thus using monthly data will make the results of this thesis more comparable with the existing literature. Another reason is that data at a higher frequency might include more noise, and more frequent weekly momentum trading means higher transaction costs compared to a monthly trading strategy. Although it is argued that momentum effects might be covered up in monthly trading strategies due to frequent trading activities in the Chinese stock market, the evidence cannot be seen from the literature examining momentum in the Chinese stock market. There is a difference in the findings between tests using weekly data and monthly data in the literature reviewed in Section 1.2.

Definition of total return index

The total return indexes (RI) of the last available trading day in each month were collected from DATASTREAM. Sample period covers from January 1991 to December 2012.

According to a DataStream document, 'a return index (RI) is available for individual equities shows a theoretical growth in value of a share holding over a specified period, assuming that dividends are re-invested to purchase additional units of an equity at the closing price applicable on the ex-dividend date.' The RI on the base date is 100. Then RI is calculated as follows: From 1988 onwards (and from 1973 for US and Canadian stocks), the availability of detailed dividend payment data enables a more realistic method to be used in which the discrete quantity of dividend paid is added to the price on the ex-date of the payment.

$$R_{it} = R_{it-1} * \frac{P_t + D_t}{P_{t-1}}$$

Where:

R_{it} =return index on day t

R_{it-1} =return index on previous day

P_t = price index on day t

P_{t-1}= price index on previous day

D_t= dividend payment associated with ex-date t

'Gross dividends are used where available and the calculation ignores tax and re-investment charges. Adjusted closing prices were used throughout to determine price index and hence return index.'

Data collection process

To retrieve the correct data, an advanced criteria search in "securities" from data category is used in DATASTREAM. The criteria are as follows. The stock exchange was set as the Shanghai Stock Exchange OR Shenzhen Stock Exchange to limit the data as only coming from SHSE and SZSE. As both A-shares and B-shares (stocks traded in foreign currency rather than Chinese Yuan) are traded on SHSE and SZSE, then the currency was set as Chinese Yuan to exclude the B-shares traded in foreign currency. To exclude any other available securities rather than Equities, only equity was checked in the type of securities. By doing so, bonds, warrants and funds were excluded. The last inputs, "total return index" and "market value" were inputs in the data type criterion as, when using the value-weighted method, both total return index and market value are needed. VO[28] was also downloaded to crosscheck with total return index, so any suspended and dead stocks were deleted from the data sample.

Problems with data collected

A manual crosscheck was conducted against Yearbooks published by SHSE. I only manually checked the number of A-shares on SHSE, as the number of A-shares listed on SHSE is smaller than the number A-shares listed on SZSE, but the total market value is much larger

[28] VO is the number of shares traded for a stock on a particular day.

than it on SZSE. Hence, all the listed A-shares on Shanghai Stock Exchange were checked manually against my data sample.

After checking the definition of 'listed securities' (actually, it is simply defined as the number of securities listed on SZSE only in yearbooks from SZSE), I assume that the listed number of A-shares is the number of tradable A-shares, plus the number of suspended A-shares but excluding the number of delisted A-shares. Based on this assumption, I checked the number of listed A-shares on both SHSE and SZSE and crosschecked the number with figures from yearbooks. The results are presented in Table 1.2.

The largest difference is 23 in 2008, which only accounts for 1.4% of the total number of listed A-shares. Therefore, the difference may be considered as having no relevant or significant effect on the research, even though the number of listed A-shares is not the same as that obtained from the yearbook.

1.5.3 Methodology used to test momentum effects in the Chinese stock market

The method used to compute the average return of each momentum strategy follows by Jegadeesh and Titman (1993). In each month sample securities are ranked in ascending order by their past J-month (J=1, 2, 3…, 24) accumulated returns, and then divided into five groups according to the quintile return values. There are reasons why I should divide stocks into five groups rather than deciles as Jegadeesh and Titman (1993) did. First is that most of the research regarding the Chinese stock market uses the quintile method. To make the results comparable to them, I will divide my stocks into five groups. Second, I have implemented a large data sample: for those years before 1995, the number of total listed stocks is small, especially for the early years like 1991, 1992 and 1993. If I divide stocks into decile, each group would only consist of less than 10 stocks. After ranking stocks based on past J-month cumulated returns and dividing them into quintile, stocks will be selected based on their past J months returns and will be held for a period of K months (K=1, 2, 3, …, 24) in each strategy, which will form 576 strategies in total. The group with the highest returns will be called the 'winners' group and the one with the lowest returns will be called the 'losers' group. Zero-cost portfolios are then created by longing the winners group and shorting the losers group.

Specifically, in any given month *t*, the momentum strategies as a whole hold a series of portfolios which are selected in the current month and as well as in the previous K-1 months.

A J-month/K-month equal-weighted strategy is formed as follows: at the beginning of month *t*, all the securities are ranked in ascending order according to their past J-month accumulated returns. Based on these rankings, five portfolios are divided equally weighted. In each month t, the strategy buys the 'winners' and sells the 'losers', then holds this position for K months. In the meanwhile, the strategy closes out the position, which is formed in month *t*-K.

Another panel of strategies is then generated, weighted by market value. In detail, when computing the average return of each quintile portfolios at the formation time, the market value of stock *i* is divided by the total market value in this quintile portfolios rather than the total market value of the whole market. Therefore, in total two panels of 24×24 strategies, which contain equal weighted value weighted quintile strategies.

I have also examined sub-sample data. The whole sample period is then divided into five four-year-sub-sample periods to dissect the patterns of momentum strategy in the Chinese market. Again, both equal-weighted and value-weighted strategies have been examined in each sub-sample period with the longest formation and holding periods up to 12 months. If the formation and holding periods are expanded to 24 months as for whole sample period, the sample size of portfolios in each sub-sample period will be reduced to Nil. For each month, there is a return of momentum strategy, while the return of a given momentum strategy is the average of all the re-balancing portfolios. A 24/24 strategy will use a two-year period to form the portfolios and hold it for two years, so in total, four years are needed to record a return at the end. However, a sub-sample period is only four years. Thus, a 24/24 cannot be constructed in a four-year sub-sample period. Hence, the longest formation and holding period is set to 12 months.

In order to eliminate the bid-ask spread effect, and to find whether the lagged reaction effect documented by Jegadeesh (1990) and Lehmann (1990) has impact on momentum effects, strategies will be created by skipping a month between the portfolio formation period and the holding period, besides the original ones. In addition, I tested momentum strategy excluding first 6 months' data after IPOs and momentum profits. Then the results are compared to the findings revealed by Zhou et al. (2010), Chen et al. (2012) and Pan et al. (2013).

1.6 Results and Main Findings of Momentum Effects in the Chinese Stock Market

In this section, I will present the empirical results of momentum strategies. The returns of momentum strategies for formation periods and holding periods from 1 month up to 24 months for both equally weighted and value-weighted strategies are so tested. Hereinafter, a strategy presented as J-K means the strategies are to be constructed by sorting all the eligible stocks according to the past J month(s) accumulated returns in ascending order, and then dividing them into 5 groups. The top quintile is called losers and the bottom quintile is called winners. At the formation point, a J-K portfolio is implemented by longing winners and shorting losers either equally weighted or value weighted, and then holds this position for K month(s).

After K months, the return of this portfolio is computed using the returns of stocks originally eligible when generating this portfolio. If a stock is eligible at formation point but is not tradable due to delisting or suspending after K month(s) holding period, the stock is automatically eliminated from the portfolio after K-month holding period[29]. I have tested J, K=1, 2, 3... 24 month(s), which comprise the results of the whole sample period, containing 576 strategies in each panel and 1152 strategies in total. For a sub-sample period, I have divided the whole sample period into 5 sub-samples, in which each lasts for 4 years. Therefore, equally weighted and value-weighted J-K strategies were constructed, where J, K=1, 2, 3… 12 respectively. Therefore, 288 strategies for each sub-sample period have been tested.

In total, 1440 strategies have been tested for all five sub-sample periods. To test whether the returns of these strategies were significantly different from the returns of whole sample period, a non-parametric test was presented additional to the t-test. This was done when the formation period and holding period increases and the total number of observation gradually decreases to less than 36.

1.6.1 Results of the whole sample period of 1991 to 2012

Table 1.3 and 1.4 present the results of equal weighted quintile strategies from 1991 to 2012 up to 24-24-month (formation and holding periods up to 24 months)[30]. For all equally weighted strategies, I found very significant evidence of mean reversal existing in the Chinese

[29] The reason for excluding the non-tradable stocks at the end of the K-month holding period rather than excluding it when the strategy is generated is to eliminate the problem of data snooping. The rationale is that I cannot anticipate whether a specific stock can be traded or not until it really becomes non-tradable.
[30] Up to 24 months are needed to sort the stocks, thus, actually the first return available for momentum strategies is from January 1993.

stock market from 1991 to 2012. Returns to all the equally weighted strategies were negative, which suggests past losers outperformed past winners over time. In all 576 equally weighted strategies, 322 strategies were significant at least at the 10% significance level.

In detail, for formation period J=1 month, significant contrarian profits were present at 1-6, 8, 15-24 months. For other short formation periods J=2-6, significant contrarian profits only existed when the holding period was short - say up to 4 months - then gradually decreasing to 1 months. For J=2 contrarian profits were exhibited after 1 month of holding the position, then lasted for up to 4 months. Contrarian profits last for 2 months when the formation periods vary from 3 to 5 months. For a formation period of 6 months, contrarian profits exist at holding period of 1 month, then disappear from K=2-23 months; finally, it occurs again when the holding period is 24 months. When the formation period varies from 7 to 12 months, contrarian profits firstly exist after 23, 24 months of the holding period. Then the holding period needed for contrarian profits to first present themselves became shorter gradually from over 22 months to 12 months. To wit, the mean reversal became quicker when formation period varies from 7 to 12 months. For short interval formation periods (except 1-month formation period) up to 6 months, contrarian profits only exist in short interval holding periods, which suggests the mean reversal in the Chinese market is quick. For intermediate interval formation periods (J=7-12), contrarian profits presented themselves after at least 12 months holding periods.

For strategies with a long formation period (13-24 months), contrarian strategies can yield significant profits for most of the holding periods with only a few exceptions. The patterns of formation period of 13 to 16 months are similar. First, contrarian strategy earned positive profits immediately (1 month) after the strategy has being constructed, then contrarian profits become insignificant for several months, after holding periods increase to 2, 3, or 4 months. As holding periods increase, contrarian profits yield significantly positive returns again.[31] When formation period increases to longer than 17 months, contrarian profits yield significant profits in most of the various holding periods, with only 1 to 3 exceptions in each group of strategies with the same formation period. In particular, for J=23, 24, all the momentum strategies are significantly negative; to wit, all the contrarian strategies can make significant positive abnormal profits over all the holding periods.

[31] There is an exception of the 16-5 strategy in all strategies with J=16 months.

Another clear pattern of the contrarian profits revealed is that contrarian profits for the same very short formation period (1 to 6 month(s)) decrease gradually when holding period increase. For example, when J=1, the highest contrarian return yielded at 1-1 strategy for 15.01908% (simply annualised by multiple by 12) per year, then gradually decreases to 2.51904% per year at 1-8 strategy. The highest contrarian profit was generated by the 2-1 strategy, which created an excess return of 18.105% per year if longing losers and shorting winners. However, for longer formation periods varying from 13 months to 24 months, the contrarian profits earned are appropriately more stable than for the returns found in short formation periods. For example, for formation periods equal to 23 months, the highest contrarian returns yielded for the 23-1 strategy with a positive return of 13.50816% per year, then contrarian profits stabilised around 9.6% per year when holding periods vary from 6 to 24 months. The pattern for J=24 is similar. The highest return yielded at 24-1 with a positive contrarian return of 12.06348%, then the return of all the remaining contrarian strategies remained stable.

The finding is partially consistent with the findings of Pan et al. (2013) and Li et al. (2011). These two papers found significantly positive contrarian in short holding periods of less than 6 months, although they only tested strategies up to 12 months. Besides, the findings in my research are consistent with Wang (2004)'s. Wang (2004) found 3-24, 6-18, 6-24, 9-12, 9-18 , 9-24, 12-9, 12-12, 12-18, 12-24, 18-3, 18-6, 18-9, 18-12, 18-18, 18-24, 24-3, 24-6, 24-9, 24-12, 24-18, 24-24 were significantly positive. They tested strategies for J, K= 3, 6, 9, 12, 18, 24. For all the strategies they tested, the different returns are only for 3-24, 6-18, 9-12, 9-18, 12-9,12-12. For all the strategies J=18, 24, they tested they found all the results are significant, which is very much the same story as that of the study.

Table 1.2 Average Returns of Equal-weighted Momentum Strategies: Whole Sample 1993-2012

J/K	1	2	3	4	5	6	7	8	9	10	11	12
1	-0.0125**	-0.0111***	-0.0066***	-0.0048**	-0.0039**	-0.0026*	-0.0015	-0.0021*	-0.0005	-0.0016	-0.0012	-0.0010
	(-3.24)	(-3.70)	(-2.95)	(-2.53)	(-2.49)	(-1.92)	(-1.20)	(-1.77)	(-0.35)	(-1.51)	(-1.27)	(-1.06)
2	-0.0151***	-0.0090***	-0.0058**	-0.0043*	-0.0032	-0.0015	-0.0011	-0.0012	-0.0011	-0.0010	-0.0005	-0.0008
	(-3.53)	(-2.76)	(-2.07)	(-1.79)	(-1.60)	(-0.80)	(-0.66)	(-0.72)	(-0.70)	(-0.71)	(-0.36)	(-0.57)
3	-0.0126***	-0.0075**	-0.0047	-0.0033	-0.0017	-0.0010	-0.0005	-0.0010	-0.0006	-0.0006	-0.0006	-0.0006
	(-3.07)	(-2.16)	(-1.57)	(-1.26)	(-0.74)	(-0.47)	(-0.27)	(-0.54)	(-0.30)	(-0.34)	(-0.32)	(-0.34)
4	-0.0104**	-0.0061*	-0.0040	-0.0019	-0.0009	-0.0002	-0.0002	-0.0004	0.0002	-0.0002	-0.0001	-0.0008
	(-2.53)	(-1.75)	(-1.31)	(-0.71)	(-0.36)	(-0.08)	(-0.09)	(-0.16)	-0.0800	(-0.11)	(-0.05)	(-0.40)
5	-0.0083**	-0.0057*	-0.0024	-0.0011	-0.0005	-0.0005	-0.0004	-0.0002	-0.0004	-0.0003	-0.0009	-0.0008
	(-2.16)	(-1.68)	(-0.78)	(-0.39)	(-0.20)	(-0.18)	(-0.15)	(-0.08)	(-0.16)	(-0.12)	(-0.40)	(-0.37)
6	-0.0085**	-0.0042	-0.0020	-0.0008	-0.0008	-0.0004	-0.0001	-0.0007	-0.0005	-0.0012	-0.0011	-0.0016
	(-2.23)	(-1.24)	(-0.61)	(-0.25)	(-0.26)	(-0.16)	(-0.04)	(-0.25)	(-0.19)	(-0.49)	(-0.44)	(-0.68)
7	-0.0056	-0.0034	-0.0011	-0.0008	-0.0008	0.0020	-0.0007	-0.0008	-0.0014	-0.0013	-0.0017	-0.0022
	(-1.46)	(-0.97)	(-0.34)	(-0.25)	(-0.25)	-0.5400	(-0.23)	(-0.27)	(-0.50)	(-0.48)	(-0.64)	(-0.84)
8	-0.0055	-0.0033	-0.0017	-0.0011	-0.0005	-0.0007	-0.0008	-0.0017	-0.0015	-0.0021	-0.0025	-0.0021
	(-1.40)	(-0.92)	(-0.50)	(-0.35)	(-0.15)	(-0.23)	(-0.25)	(-0.58)	(-0.51)	(-0.73)	(-0.91)	(-0.78)
9	-0.0054	-0.0033	-0.0016	-0.0006	-0.0010	-0.0009	-0.0017	-0.0019	-0.0024	-0.0029	-0.0025	-0.0034
	(-1.44)	(-0.93)	(-0.47)	(-0.19)	(-0.29)	(-0.28)	(-0.55)	(-0.62)	(-0.80)	(-0.99)	(-0.86)	(-1.23)
10	-0.0055	-0.0036	-0.0017	-0.0018	-0.0015	-0.0023	-0.0022	-0.0030	-0.0033	-0.0027	-0.0037	-0.0036
	(-1.43)	(-0.97)	(-0.47)	(-0.51)	(-0.44)	(-0.70)	(-0.68)	(-0.94)	(-1.04)	(-0.88)	(-1.27)	(-1.23)
11	-0.0057	-0.0032	-0.0027	-0.0022	-0.0031	-0.0030	-0.0035	-0.0041	-0.0034	-0.0043	-0.0041	-0.0043
	(-1.45)	(-0.86)	(-0.75)	(-0.62)	(-0.90)	(-0.88)	(-1.04)	(-1.26)	(-1.06)	(-1.39)	(-1.33)	(-1.42)
12	-0.0047	-0.0045	-0.0032	-0.0038	-0.0035	-0.0038	-0.0042	-0.0037	-0.0046	-0.0043	-0.0044	-0.0050
	(-1.20)	(-1.20)	(-0.88)	(-1.05)	(-0.99)	(-1.09)	(-1.20)	(-1.10)	(-1.43)	(-1.34)	(-1.42)	(-1.64)

Table 1.3 Continued

J/K	1	2	3	4	5	6	7	8	9	10	11	12
13	-0.0076*	-0.0056	-0.0050	-0.0043	-0.0048	-0.0051	-0.0044	-0.0054	-0.0049	-0.0051	-0.0055*	-0.0056*
	(-1.94)	(-1.46)	(-1.35)	(-1.18)	(-1.35)	(-1.43)	(-1.26)	(-1.61)	(-1.50)	(-1.57)	(-1.74)	(-1.78)
14	-0.0075*	-0.0072*	-0.0052	-0.0053	-0.0053	-0.0046	-0.0056	-0.0052	-0.0053	-0.0058*	-0.0058*	-0.0056*
	(-1.90)	(-1.88)	(-1.38)	(-1.41)	(-1.43)	(-1.29)	(-1.60)	(-1.51)	(-1.56)	(-1.76)	(-1.77)	(-1.73)
15	-0.0087**	-0.0071*	-0.0061	-0.0060	-0.0049	-0.0056	-0.0053	-0.0055	-0.0060*	-0.0060*	-0.0056*	-0.0057*
	(-2.19)	(-1.82)	(-1.61)	(-1.59)	(-1.32)	(-1.58)	(-1.50)	(-1.58)	(-1.76)	(-1.78)	(-1.74)	(-1.71)
16	-0.0085**	-0.0078**	-0.0070*	-0.0056	-0.0062*	-0.0055	-0.0057	-0.0064*	-0.0059*	-0.0060*	-0.0058*	-0.0065*
	(-2.14)	(-2.00)	(-1.82)	(-1.47)	(-1.67)	(-1.52)	(-1.61)	(-1.83)	(-1.69)	(-1.75)	(-1.70)	(-1.96)
17	-0.0099**	-0.00890**	-0.0054	-0.0066*	-0.0059	-0.0058	-0.0066*	-0.0066*	-0.0062*	-0.0059*	-0.0067*	-0.0069**
	(-2.52)	(-2.30)	(-1.27)	(-1.74)	(-1.60)	(-1.60)	(-1.83)	(-1.86)	(-1.77)	(-1.71)	(-1.96)	(-2.04)
18	-0.0108***	-0.0081**	-0.0070*	-0.0062	-0.0062	-0.0066*	-0.0065*	-0.0063*	-0.0060*	-0.0068*	-0.0070**	-0.0078**
	(-2.61)	(-2.06)	(-1.80)	(-1.64)	(-1.65)	(-1.79)	(-1.77)	(-1.74)	(-1.68)	(-1.92)	(-1.99)	(-2.28)
19	-0.0089**	-0.0079**	-0.0063	-0.0061	-0.0067*	-0.0066*	-0.0062*	-0.0061	-0.0068*	-0.0070*	-0.0079**	-0.0077**
	(-2.18)	(-1.99)	(-1.62)	(-1.60)	(-1.78)	(-1.76)	(-1.68)	(-1.65)	(-1.88)	(-1.95)	(-2.25)	(-2.21)
20	-0.0094**	-0.0078*	-0.0067*	-0.0071*	-0.0069*	-0.0063*	-0.0061	-0.0070*	-0.0072*	-0.0082**	-0.0080**	-0.0080**
	(-2.29)	(-1.95)	(-1.70)	(-1.85)	(-1.80)	(-1.65)	(-1.61)	(-1.88)	(-1.96)	(-2.26)	(-2.22)	(-2.23)
21	-0.0093**	-0.0078*	-0.0076*	-0.0071*	-0.0062	-0.0060	-0.0069*	-0.0073*	-0.0082**	-0.0080**	-0.0081**	-0.0079**
	(-2.27)	(-1.97)	(-1.96)	(-1.81)	(-1.61)	(-1.54)	(-1.82)	(-1.92)	(-2.22)	(-2.17)	(-2.19)	(-2.18)
22	-0.0094**	-0.0090**	-0.0079**	-0.0067*	-0.0063	-0.0071*	-0.0074*	-0.0085**	-0.0083**	-0.0083**	-0.0081**	-0.0080**
	(-2.30)	(-2.27)	(-1.99)	(-1.70)	(-1.61)	(-1.84)	(-1.92)	(-2.26)	(-2.22)	(-2.22)	(-2.19)	(-2.16)
23	-0.0113***	-0.0093**	-0.0073**	-0.0068*	-0.0077*	-0.0079**	-0.0090**	-0.0089**	-0.0090**	-0.0087**	-0.0086**	-0.0086**
	(-2.69)	(-2.29)	(-1.83)	(-1.71)	(-1.97)	(-2.02)	(-2.35)	(-2.34)	(-2.35)	(-2.30)	(-2.26)	(-2.28)
24	-0.0101**	-0.0080**	-0.0068*	-0.0073**	-0.0077*	-0.0086**	-0.0086**	-0.0087**	-0.0086**	-0.0084**	-0.0085**	-0.0088**
	(-2.45)	(-1.99)	(-1.70)	(-1.85)	(-1.93)	(-2.22)	(-2.20)	(-2.25)	(-2.21)	(-2.17)	(-2.19)	(-2.26)

Table 1.3 Continued

J/K	13	14	15	16	17	18	19	20	21	22	23	24
1	-0.0013	-0.0013	-0.0016*	-0.0014*	-0.0017**	-0.0016**	-0.0014*	-0.0014*	-0.0013*	-0.0014*	-0.0016**	-0.0016**
	(-1.39)	(-1.45)	(-1.86)	(-1.68)	(-2.15)	(-2.00)	(-1.85)	(-1.86)	(-1.73)	(-1.90)	(-2.15)	(-2.20)
2	-0.0009	-0.0014	-0.0014	-0.0017	-0.0018	-0.0012	-0.0014	-0.0014	-0.0014	-0.0006	-0.0017	-0.0015
	(-0.67)	(-1.10)	(-1.14)	(-1.40)	(-1.51)	(-1.02)	(-1.22)	(-1.26)	(-1.30)	(-0.49)	(-1.61)	(-1.41)
3	-0.0012	-0.0011	-0.0016	-0.0018	-0.0015	-0.0015	-0.0015	-0.0016	-0.0018	-0.0019	-0.0018	-0.0017
	(-0.74)	(-0.69)	(-1.02)	(-1.17)	(-1.02)	(-1.00)	(-1.02)	(-1.13)	(-1.31)	(-1.40)	(-1.29)	(-1.24)
4	-0.0010	-0.0014	-0.0018	-0.0013	-0.0017	-0.0016	-0.0017	-0.0020	-0.0020	-0.0018	-0.0018	-0.0021
	(-0.50)	(-0.75)	(-0.97)	(-0.74)	(-1.00)	(-0.93)	(-0.99)	(-1.19)	(-1.22)	(-1.14)	(-1.11)	(-1.33)
5	-0.0014	-0.0018	-0.0015	-0.0021	-0.0020	-0.0020	-0.0023	-0.0024	-0.0022	-0.0021	-0.0025	-0.0026
	(-0.67)	(-0.86)	(-0.72)	(-1.07)	(-1.02)	(-1.03)	(-1.24)	(-1.30)	(-1.18)	(-1.15)	(-1.42)	(-1.47)
6	-0.0021	-0.0017	-0.0024	-0.0023	-0.0025	-0.0027	-0.0028	-0.0026	-0.0025	-0.0029	-0.0030	-0.0034*
	(-0.90)	(-0.77)	(-1.08)	(-1.08)	(-1.15)	(-1.30)	(-1.34)	(-1.26)	(-1.21)	(-1.47)	(-1.53)	(-1.75)
7	-0.0018	-0.0026	-0.0025	-0.0027	-0.0031	-0.0030	-0.0028	-0.0027	-0.0032	-0.0033	-0.0038*	-0.0036*
	(-0.71)	(-1.08)	(-1.08)	(-1.17)	(-1.36)	(-1.33)	(-1.27)	(-1.23)	(-1.50)	(-1.55)	(-1.82)	(-1.74)
8	-0.0030	-0.0030	-0.0031	-0.0037	-0.0018	-0.0033	-0.0032	-0.0037	-0.0038	-0.0043*	-0.0041*	-0.0041*
	(-1.15)	(-1.16)	(-1.25)	(-1.48)	(-0.67)	(-1.39)	(-1.33)	(-1.61)	(-1.64)	(-1.90)	(-1.85)	(-1.86)
9	-0.0033	-0.0035	-0.0041	-0.0041	-0.0039	-0.0036	-0.0041*	-0.0042*	-0.0048**	-0.0045*	-0.0046*	-0.0043*
	(-1.24)	(-1.32)	(-1.55)	(-1.59)	(-1.51)	(-1.41)	(-1.68)	(-1.74)	(-2.00)	(-1.93)	(-1.96)	(-1.89)
10	-0.0038	-0.0044	-0.0044	-0.0042	-0.0039	-0.0044*	-0.005*	-0.0052**	-0.0049*	-0.0049**	-0.0030	-0.0045*
	(-1.34)	(-1.57)	(-1.60)	(-1.55)	(-1.47)	(-1.71)	(-1.77)	(-2.05)	(-1.97)	(-1.99)	(-1.11)	(-1.89)
11	-0.0049*	-0.0050*	-0.0048*	-0.0046	-0.0051*	-0.0051*	-0.0057**	-0.0055**	-0.0054**	-0.0051**	-0.0050*	-0.0049*
	(-1.67)	(-1.72)	(-1.68)	(-1.61)	(-1.86)	(-1.87)	(-2.12)	(-2.08)	(-2.07)	(-1.99)	(-1.96)	(-1.95)
12	-0.0052*	-0.0051*	-0.0049	-0.0055*	-0.0055*	-0.0060**	-0.0057**	-0.0057**	-0.0054**	-0.0052*	-0.0052*	-0.0054**
	(-1.72)	(-1.69)	(-1.63)	(-1.90)	(-1.93)	(-2.14)	(-2.08)	(-2.08)	(-2.01)	(-1.96)	(-1.96)	(-2.04)

Table 1.3 Continued

J/K	1	2	3	4	5	6	7	8	9	10	11	12
13	-0.0055*	-0.0053*	-0.0060**	-0.0061**	-0.0066**	-0.0063**	-0.0062**	-0.0060**	-0.0058**	-0.0057**	-0.0060**	-0.0059**
	(-1.78)	(-1.74)	(-2.01)	(-2.06)	(-2.30)	(-2.21)	(-2.20)	(-2.16)	(-2.10)	(-2.08)	(-2.17)	(-2.16)
14	-0.0056*	-0.0063**	-0.0064**	-0.0070**	-0.0067**	-0.0065**	-0.0063**	-0.0061**	-0.0061**	-0.0063**	-0.0062**	-0.0060**
	(-1.74)	(-2.02)	(-2.08)	(-2.33)	(-2.24)	(-2.20)	(-2.16)	(-2.13)	(-2.11)	(-2.19)	(-2.17)	(-2.11)
15	-0.0064**	-0.0066**	-0.0073**	-0.0070**	-0.0068**	-0.0065**	-0.0049	-0.0064**	-0.0065**	-0.0064**	-0.0063**	-0.0064**
	(-2.01)	(-2.07)	(-2.34)	(-2.26)	(-2.23)	(-2.17)	(-1.52)	(-2.14)	(-2.19)	(-2.17)	(-2.13)	(-2.20)
16	-0.0068**	-0.0075**	-0.0073**	-0.0071**	-0.0068**	-0.0066**	-0.0066**	-0.0068**	-0.0067**	-0.0065**	-0.0067**	-0.0068**
	(-2.05)	(-2.33)	(-2.27)	(-2.26)	(-2.19)	(-2.12)	(-2.14)	(-2.23)	(-2.20)	(-2.15)	(-2.23)	(-2.26)
17	-0.0077**	-0.0075**	-0.00739**	-0.0071**	-0.0069**	-0.0068**	-0.0070**	-0.0069**	-0.0068**	-0.0069**	-0.0070**	-0.0065**
	(-2.34)	(-2.28)	(-2.27)	(-2.21)	(-2.15)	(-2.14)	(-2.22)	(-2.21)	(-2.15)	(-2.21)	(-2.24)	(-2.13)
18	-0.0077**	-0.0076**	-0.0074**	-0.0072**	-0.0071**	-0.0073**	-0.0072**	-0.0071**	-0.0072**	-0.0072**	-0.0069**	-0.0069**
	(-2.27)	(-2.27)	(-2.21)	(-2.16)	(-2.15)	(-2.21)	(-2.20)	(-2.18)	(-2.22)	(-2.25)	(-2.15)	(-2.21)
19	-0.0078**	-0.0076**	-0.0075**	-0.0074**	-0.0076**	-0.0074**	-0.0073**	-0.0075**	-0.0075**	-0.0071**	-0.0072**	-0.0071**
	(-2.26)	(-2.22)	(-2.18)	(-2.17)	(-2.24)	(-2.20)	(-2.18)	(-2.24)	(-2.27)	(-2.16)	(-2.22)	(-2.18)
20	-0.0079**	-0.0078**	-0.0077**	-0.0079**	-0.0078**	-0.0076**	-0.0078**	-0.0079**	-0.0074**	-0.0075**	-0.0073**	-0.0060*
	-2.2400	(-2.22)	(-2.20)	(-2.25)	(-2.23)	(-2.19)	(-2.26)	(-2.31)	(-2.17)	(-2.23)	(-2.19)	(-1.93)
21	-0.0079**	-0.0080**	-0.0081**	-0.0081**	-0.0079**	-0.0081**	-0.0081**	-0.0076**	-0.0077**	-0.0076**	-0.0062*	-0.0063*
	(-2.18)	(-2.20)	(-2.25)	(-2.23)	(-2.20)	(-2.26)	(-2.28)	(-2.17)	(-2.21)	(-2.18)	(-1.92)	(-1.97)
22	-0.0082**	-0.0085**	-0.0084**	-0.0083**	-0.0085	-0.0085**	-0.0079*	-0.0080**	-0.0078**	-0.0064*	-0.0065**	-0.0064**
	(-2.21)	(-2.28)	(-2.27)	(-2.25)	(-2.30)	(-2.32)	(-2.19)	(-2.23)	(-2.19)	(-1.94)	(-1.99)	(-1.99)
23	-0.0090**	-0.0089**	-0.0088**	-0.0090**	-0.0091**	-0.0083**	-0.0084**	-0.0083**	-0.0067**	-0.0068**	-0.0067**	-0.0053*
	(-2.38)	(-2.36)	(-2.33)	(-2.39)	(-2.42)	(-2.26)	(-2.29)	(-2.26)	(-2.00)	(-2.05)	(-2.03)	(-1.76)
24	-0.0089**	-0.0088**	-0.0090**	-0.0091**	-0.0085**	-0.0085**	-0.0083**	-0.0068*	-0.0069**	-0.0068**	-0.0054**	-0.0050
	(-2.29)	(-2.27)	(-2.33)	(-2.36)	(-2.23)	(-2.25)	(-2.21)	(-1.96)	(-2.01)	(-2.01)	(-1.74)	(-1.63)

*Note: Returns are computed using monthly data January 1991 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J month's accumulated returns, then divided into quintiles (5 groups) by their past cumulative returns. Then the group with the highest past returns are denoted as winners, while the group with the lowest past returns are denoted as losers. The figures in the table are average returns of portfolios of selling winners and buying losers equally-weighted. Figures in parentheses are t-values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at the 10%, 5% and 1% levels using T-test respectively.*

I have also tested value-weighted strategies. Extensive contrarian profits found in equally weighted strategies disappeared after the portfolio adjusting by market value of each stock. The number of all the significant returns reduced from 322 to 71 out of 576. Besides, most of the significant results are only significant at 10% level rather than 5% level for those significant ones in equally weighted strategies. The general pattern of contrarian profits remains similar compared to equally weighted strategies. For short formation periods, contrarian strategies can only make profits when the holding period is less than 2 months. For formation period longer than 13 months, contrarian strategies only yield profits when the holding period is longer than 13 months.[32]

Upon making a closer examination of value-weighted strategies, I found all the returns of the momentum strategies were negative. For a formation period of less than 1 year, the only significant results left were 1-1 1-2, 2-1, 3-1. For value-weighted contrarian strategies, 1-1 made annual return of 12.38% (simple annualised hereafter the same) and 1-2 strategy made a contrarian profit of 10.32% compared to the same equally weighted strategies (15.02% and 13.34% per year respectively). The results of 2-1 and 2-3 also indicate that the significant returns of contrarian strategies decreased after adjusting for market value, but the reduction was not very significant.

For formation period longer than 1 year, the pattern of value weighted contrarian profits is not as clear as for equally weighted strategies. Significant contrarian returns occur when formation periods are usually longer than 12 months with only two exceptions: 17-2 and 18-1. Moreover, when formation periods increase, the holding periods need to generate a significant contrarian decrease. As in Table 1.4, the pattern of significant contrarian profits shifted from right to left when formation periods increase. Thus, contrarian returns usually occur when either formation periods or holding periods are long enough at around about 20-24 months. Another difference is that the first significant returns in each group with the same formation periods usually gained the highest contrarian return while other strategies often yielded much smaller contrarian profits.

Although, adjusting portfolios according to value weighting calculations led most of the significant returns to be eliminated, contrarian strategies can still make abnormal returns, especially when formation periods are longer than 16 months and holding periods are longer

[32] The only exception is 17-2, and 18-1.

than 13 months. In particular, for all strategies with holding periods longer than 13 months, after adjusting portfolios according to market value, the returns of contrarian strategies did not decrease by very much. Hence, short-term reversals are mostly due to short-term stock's reversals, but long-term reversals (holding periods longer than 12 months) still exist after portfolios are adjusted to be value-weighted. However, all the literature regarding momentum in the Chinese stock market has only testing it for equal-weighted strategies. The only paper tested value-weighted strategies is Kang et al. (2002); the significant results they found there for value-weighted strategies were much fewer than the ones for equal-weighted strategies. Nevertheless, they found more momentum returns than contrarian returns. The fact that more contrarian profits are found for equal-weighted momentum strategies than for value-weighted ones indicates that contrarian effects are mostly present in smaller stocks than larger stocks.

Table 1.3 Average Returns of Value-weighted Momentum Strategies: Whole Sample 1993-2012.

J/K	1	2	3	4	5	6	7	8	9	10	11	12
1	-0.0103**	-0.0086**	-0.0040	-0.0026	-0.0025	-0.0015	-0.0005	-0.0011	-0.0005	-0.0002	0.0003	0.0006
	(-2.20)	(-2.51)	(-1.49)	(-1.10)	(-1.24)	(-0.89)	(-0.30)	(-0.74)	(-0.35)	(-0.14)	-0.2700	-0.4900
2	-0.0112**	-0.0060	-0.0027	-0.0021	-0.0019	-0.0010	-0.0004	-0.0002	0.0006	0.0011	0.0017	0.0012
	(-2.35)	(-1.56)	(-0.82)	(-0.70)	(-0.77)	(-0.47)	(-0.22)	(-0.08)	-0.3100	-0.6100	-1.0200	-0.7500
3	-0.0085*	-0.0035	-0.0013	-0.0007	0.0000	0.0003	0.0013	0.0015	0.0025	0.0025	0.0024	0.0019
	(-1.84)	(-0.86)	(-0.36)	(-0.24)	(-0.01)	-0.1200	-0.5000	-0.6200	-1.0700	-1.1500	-1.1600	-0.9400
4	-0.0054	-0.0029	-0.0023	-0.0009	-0.0002	0.0007	0.0013	0.0018	0.0028	0.0024	0.0022	0.0012
	(-1.13)	(-0.68)	(-0.63)	(-0.28)	(-0.07)	-0.2400	-0.4800	-0.6900	-1.0800	-0.9500	-0.9000	-0.5000
5	-0.0033	-0.0031	-0.0012	-0.0001	0.0005	0.0012	0.0016	0.0024	0.0024	0.0024	0.0017	0.0016
	(-0.72)	(-0.78)	(-0.35)	(-0.04)	-0.1700	-0.3700	-0.5400	-0.8400	-0.8400	-0.8700	-0.6700	-0.6100
6	-0.0066	-0.0036	-0.0017	-0.0002	0.0003	0.0011	0.0017	0.0017	0.0020	0.0014	0.0015	0.0005
	(-1.50)	(-0.93)	(-0.45)	(-0.05)	-0.0900	-0.3100	-0.5200	-0.5200	-0.6400	-0.4700	-0.5300	-0.1900
7	-0.0040	-0.0027	-0.0004	0.0007	0.0009	0.0020	0.0019	0.0022	0.0017	0.0019	0.0014	0.0004
	(-0.90)	(-0.64)	(-0.11)	-0.1700	-0.2400	-0.5400	-0.5400	-0.6400	-0.5200	-0.6000	-0.4600	-0.1500
8	-0.0029	-0.0017	0.0000	0.0012	0.0021	0.0019	0.0021	0.0016	0.0019	0.0012	0.0004	0.0006
	(-0.64)	(-0.39)	0.0000	-0.3100	-0.5400	-0.5000	-0.5900	-0.4700	-0.5800	-0.3700	-0.1400	-0.1900
9	-0.0020	-0.0003	0.0013	0.0025	0.0021	0.0019	0.0016	0.0017	0.0011	0.0004	0.0006	-0.0006
	(-0.46)	(-0.07)	-0.3100	-0.6300	-0.5500	-0.5200	-0.4500	-0.4900	-0.3300	-0.1100	-0.1800	(-0.18)
10	0.0000	0.0010	0.0024	0.0021	0.0019	0.0013	0.0014	0.0005	0.0000	0.0004	-0.0007	-0.0011
	(-0.01)	-0.2300	-0.6000	-0.5300	-0.5000	-0.3500	-0.3800	-0.1300	-0.0100	-0.1200	(-0.21)	(-0.33)
11	-0.0012	0.0007	0.0004	0.0007	0.0003	0.0002	-0.0005	-0.0011	-0.0005	-0.0012	-0.0013	-0.0015
	(-0.27)	-0.1700	-0.1100	-0.1800	-0.0800	-0.0600	(-0.13)	(-0.31)	(-0.14)	(-0.35)	(-0.38)	(-0.46)
12	-0.0003	-0.0013	-0.0006	-0.0005	-0.0001	-0.0010	-0.0015	-0.0010	-0.0017	-0.0015	-0.0016	-0.0022
	(-0.08)	(-0.31)	(-0.16)	(-0.12)	(-0.03)	(-0.26)	(-0.39)	(-0.27)	(-0.47)	(-0.41)	(-0.46)	(-0.65)

Table 1.4 Continued

J/K	1	2	3	4	5	6	7	8	9	10	11	12
13	-0.0043	-0.0029	-0.0020	-0.0011	-0.0018	-0.0024	-0.0019	-0.0025	-0.0022	-0.0022	-0.0026	-0.0029
	(-0.98)	(-0.70)	(-0.50)	(-0.27)	(-0.46)	(-0.62)	(-0.49)	(-0.69)	(-0.60)	(-0.62)	(-0.74)	(-0.85)
14	-0.0035	-0.0034	-0.0020	-0.0023	-0.0024	-0.0021	-0.0027	-0.0026	-0.0024	-0.0028	-0.0029	-0.0030
	(-0.81)	(-0.81)	(-0.49)	(-0.55)	(-0.60)	(-0.54)	(-0.72)	(-0.69)	(-0.65)	(-0.78)	(-0.82)	(-0.84)
15	-0.0044	-0.0039	-0.0040	-0.0039	-0.0029	-0.0034	-0.8131	-0.7930	-0.8833	-0.9334	-0.9133	-0.9434
	(-0.98)	(-0.91)	(-0.95)	(-0.94)	(-0.72)	(-0.82)	(-0.81)	(-0.79)	(-0.88)	(-0.93)	(-0.91)	(-0.94)
16	-0.0055	-0.0057	-0.0056	-0.0043	-0.0047	-0.0040	-0.0039	-0.0042	-0.0041	-0.0037	-0.0037	-0.0046
	(-1.23)	(-1.35)	(-1.33)	(-1.04)	(-1.16)	(-1.00)	(-0.99)	(-1.10)	(-1.08)	(-1.00)	(-1.00)	(-1.31)
17	-0.0074	-0.0074*	-0.0054	-0.0050	-0.0045	-0.0043	-0.0045	-0.0045	-0.0041	-0.0038	-0.0047	-0.0051
	(-1.65)	(-1.70)	(-1.27)	(-1.20)	(-1.10)	(-1.06)	(-1.14)	(-1.16)	(-1.06)	(-1.00)	(-1.28)	(-1.40)
18	-0.0089*	-0.0062	-0.0053	-0.0046	-0.0046	-0.0045	-0.0044	-0.0043	-0.0039	-0.0047	-0.0050	-0.0059
	(-1.89)	(-1.42)	(-1.24)	(-1.10)	(-1.11)	(-1.12)	(-1.11)	(-1.09)	(-1.01)	(-1.25)	(-1.34)	(-1.61)
19	-0.0072	-0.0059	-0.0048	-0.0047	-0.0050	-0.0047	-0.0043	-0.0040	-0.0047	-0.0050	-0.0059	-0.0058
	(-1.57)	(-1.35)	(-1.13)	(-1.13)	(-1.22)	(-1.16)	(-1.07)	(-1.01)	(-1.21)	(-1.29)	(-1.55)	(-1.54)
20	-0.0067	-0.0060	-0.0051	-0.0053	-0.0052	-0.0043	-0.0041	-0.0048	-0.0050	-0.0059	-0.0058	-0.0059
	(-1.49)	(-1.38)	(-1.18)	(-1.25)	(-1.24)	(-1.04)	(-0.99)	(-1.18)	(-1.24)	(-1.48)	(-1.47)	(-1.50)
21	-0.0059	-0.0053	-0.0052	-0.0050	-0.0041	-0.0039	-0.0049	-0.0051	-0.0061	-0.0059	-0.0060	-0.0058
	(-1.31)	(-1.19)	(-1.18)	(-1.15)	(-0.96)	(-0.91)	(-1.17)	(-1.23)	(-1.48)	(-1.43)	(-1.46)	(-1.43)
22	-0.0065	-0.0062	-0.0057	-0.0044	-0.0041	-0.0049	-0.0052	-0.0064	-0.0062	-0.0061	-0.0058	-0.0058
	(-1.43)	(-1.39)	(-1.29)	(-1.01)	(-0.93)	(-1.15)	(-1.24)	(-1.53)	(-1.49)	(-1.47)	(-1.41)	(-1.43)
23	-0.0077	-0.0065	-0.0047	-0.0040	-0.0051	-0.0053	-0.0065	-0.0065	-0.0065	-0.0061	-0.0061	-0.0063
	(-1.63)	(-1.44)	(-1.05)	(-0.89)	(-1.16)	(-1.23)	(-1.53)	(-1.53)	(-1.54)	(-1.46)	(-1.45)	(-1.51)
24	-0.0071	-0.0050	-0.0043	-0.0050	-0.0053	-0.0064	-0.0065	-0.0066	-0.0063	-0.0061	-0.0063	-0.0070
	(-1.59)	(-1.14)	(-0.97)	(-1.13)	(-1.20)	(-1.49)	(-1.51)	(-1.53)	(-1.47)	(-1.43)	(-1.47)	(-1.63)

Table 1.4 Continued

J/K	13	14	15	16	17	18	19	20	21	22	23	24
1	0.0000	-0.0001	-0.0005	-0.0003	-0.0010	-0.0007	-0.0004	-0.0005	-0.0006	-0.0006	-0.0008	-0.0009
	-0.01	(-0.05)	(-0.49)	(-0.28)	(-0.93)	(-0.73)	(-0.43)	(-0.51)	(-0.62)	(-0.67)	(-0.87)	(-0.98)
2	0.0008	0.0002	0.0002	-0.0004	-0.0007	-0.0001	-0.0003	-0.0005	-0.0005	-0.0006	-0.0008	-0.0007
	-0.48	-0.13	-0.1	(-0.28)	(-0.48)	(-0.10)	(-0.25)	(-0.39)	(-0.39)	(-0.49)	(-0.62)	(-0.56)
3	-0.0012	0.0010	0.0003	-0.0001	0.0002	0.0002	-0.0001	-0.0001	-0.0003	-0.0004	-0.0004	-0.0005
	(-0.74)	-0.53	-0.15	(-0.05)	-0.12	-0.13	(-0.03)	(-0.08)	(-0.17)	(-0.25)	(-0.26)	(-0.32)
4	0.0007	0.0001	-0.0005	-0.0001	-0.0005	-0.0005	-0.0006	-0.0008	-0.0008	-0.0007	-0.0009	-0.0014
	-0.33	-0.06	(-0.23)	(-0.06)	(-0.27)	(-0.26)	(-0.28)	(-0.41)	(-0.43)	(-0.39)	(-0.45)	(-0.75)
5	0.0007	-0.0018	0.0002	-0.0005	-0.0007	-0.0006	-0.0009	-0.0010	-0.0008	-0.0008	-0.0015	-0.0016
	-0.27	(-0.86)	-0.1	(-0.24)	(-0.32)	(-0.27)	(-0.40)	(-0.46)	(-0.40)	(-0.39)	(-0.73)	(-0.78)
6	-0.0004	-0.0001	-0.0008	-0.0012	-0.0013	-0.0015	-0.0015	-0.0014	-0.0013	-0.0019	-0.0021	-0.0025
	(-0.14)	(-0.06)	(-0.33)	(-0.47)	(-0.53)	(-0.60)	(-0.61)	(-0.60)	(-0.55)	(-0.85)	(-0.92)	(-1.14)
7	0.0007	-0.0003	-0.0007	-0.0009	-0.0013	-0.0013	-0.0012	-0.0011	-0.0018	-0.0018	-0.0025	-0.0024
	-0.24	(-0.12)	(-0.24)	(-0.35)	(-0.51)	(-0.50)	(-0.47)	(-0.44)	(-0.72)	(-0.74)	(-1.02)	(-0.99)
8	-0.0006	-0.0009	-0.0011	-0.0018	-0.0018	-0.0015	-0.0013	-0.0021	-0.0021	-0.0027	-0.0041	-0.0028
	(-0.19)	(-0.30)	(-0.40)	(-0.63)	(-0.67)	(-0.55)	(-0.49)	(-0.80)	(-0.83)	(-1.09)	(-1.86)	(-1.12)
9	-0.0010	-0.0013	-0.0020	-0.0022	-0.0020	-0.0017	-0.0024	-0.0025	-0.0031	-0.0029	-0.0030	-0.0028
	(-0.32)	(-0.43)	(-0.66)	(-0.76)	(-0.69)	(-0.61)	(-0.88)	(-0.93)	(-1.16)	(-1.11)	(-1.15)	(-1.10)
10	-0.0014	-0.0020	-0.0023	-0.0021	-0.0020	-0.0027	-0.0028	-0.0034	-0.0032	-0.0032	-0.0030	-0.0030
	(-0.46)	(-0.66)	(-0.74)	(-0.71)	(-0.66)	(-0.93)	(-1.00)	(-1.24)	(-1.17)	(-1.18)	(-1.11)	(-1.11)
11	-0.0022	-0.0025	-0.0025	-0.0024	-0.0032	-0.0031	-0.0039	-0.0037	-0.0036	-0.0033	-0.0033	-0.0033
	(-0.68)	(-0.78)	(-0.79)	(-0.77)	(-1.05)	(-1.05)	(-1.32)	(-1.28)	(-1.26)	(-1.18)	(-1.17)	(-1.20)
12	-0.0026	-0.0025	-0.0025	-0.0035	-0.0036	-0.0041	-0.0039	-0.0039	-0.0036	-0.0035	-0.0036	-0.0039
	(-0.77)	(-0.77)	(-0.78)	(-1.12)	(-1.15)	(-1.34)	(-1.30)	(-1.30)	(-1.20)	(-1.19)	(-1.20)	(-1.33)

Table 1.4 Continued

J/K	13	14	15	16	17	18	19	20	21	22	23	24
13	-0.0031	-0.0031	-0.0041	-0.0043	-0.0050	-0.0047	-0.0046	-0.0043	-0.0043	-0.0042	-0.0046	-0.0047
	(-0.91)	(-0.93)	(-1.27)	(-1.36)	(-1.59)	(-1.52)	(-1.51)	(-1.43)	(-1.41)	(-1.40)	(-1.52)	(-1.57)
14	-0.0032	-0.0042	-0.0045	-0.0053	-0.0050	-0.0048	-0.0045	-0.0044	-0.0044	-0.0047	-0.0049	-0.0049
	(-0.91)	(-1.26)	(-1.35)	(-1.61)	(-1.55)	(-1.51)	(-1.42)	(-1.40)	(-1.41)	(-1.52)	(-1.56)	(-1.58)
15	-0.0045	-0.0048	-0.0057*	-0.0057*	-0.0054	-0.0050	-0.0049	-0.0049	-0.0052	-0.0053	-0.0053	-0.0055*
	(-1.29)	(-1.41)	(-1.68)	(-1.68)	(-1.62)	(-1.54)	(-1.52)	(-1.52)	(-1.61)	(-1.64)	(-1.65)	(-1.74)
16	-0.0051	-0.0061*	-0.0059*	-0.0059*	-0.0054	-0.0052	-0.0053	-0.0056*	-0.0056*	-0.0056*	-0.0058*	-0.0061*
	(-1.44)	(-1.75)	(-1.72)	(-1.73)	(-1.61)	(-1.57)	(-1.58)	(-1.69)	(-1.71)	(-1.69)	(-1.77)	(-1.86)
17	-0.0060*	-0.0060*	-0.0059*	-0.0055	-0.0054	-0.0053	-0.0056	-0.0057*	-0.0056	-0.0057*	-0.0060*	-0.0057*
	(-1.69)	(-1.69)	(-1.68)	(-1.60)	(-1.56)	(-1.55)	(-1.63)	(-1.68)	(-1.65)	(-1.69)	(-1.76)	(-1.69)
18	-0.0060	-0.0060	-0.0057	-0.0057	-0.0056	-0.0059*	-0.0060*	-0.0060*	-0.0060*	-0.0062*	-0.0060*	-0.0060*
	(-1.63)	(-1.64)	(-1.60)	(-1.60)	(-1.58)	(-1.66)	(-1.69)	(-1.69)	(-1.73)	(-1.78)	(-1.72)	(-1.76)
19	-0.0061	-0.0059	-0.0059	-0.0059	-0.0062*	-0.0062*	-0.0062*	-0.0064*	-0.0065*	-0.0061*	-0.0062*	-0.0061*
	(-1.61)	(-1.59)	(-1.59)	(-1.61)	(-1.69)	(-1.70)	(-1.70)	(-1.75)	(-1.80)	(-1.70)	(-1.72)	(-1.72)
20	-0.0058	-0.0059	-0.0059	-0.0063	-0.0063*	-0.0063	-0.0064*	-0.0066*	-0.0061	-0.0062*	-0.0062*	-0.0050
	(-1.50)	(-1.53)	(-1.53)	(-1.64)	(-1.66)	(-1.64)	(-1.68)	(-1.75)	(-1.63)	(-1.65)	(-1.66)	(-1.43)
21	-0.0059	-0.0061	-0.0065	-0.0066*	-0.0066*	-0.0067*	-0.0069*	-0.0064*	-0.0064*	-0.0065*	-0.0053	-0.0053
	(-1.47)	(-1.52)	(-1.63)	(-1.67)	(-1.66)	(-1.70)	(-1.76)	(-1.65)	(-1.66)	(-1.68)	(-1.44)	(-1.46)
22	-0.0062	-0.0068*	-0.0070*	-0.0071*	-0.0072*	-0.0073*	-0.0066*	-0.0067*	-0.0067*	-0.0054	-0.0055	-0.0057
	(-1.52)	(-1.67)	(-1.73)	(-1.76)	(-1.79)	(-1.83)	(-1.70)	(-1.70)	(-1.70)	(-1.46)	(-1.48)	(-1.53)
23	-0.0069*	-0.0072*	-0.0073*	-0.0076*	-0.0078*	-0.0070*	-0.0070*	-0.0071*	-0.0057	-0.0057	-0.0057	-0.0047
	(-1.66)	(-1.74)	(-1.77)	(-1.83)	(-1.88)	(-1.73)	(-1.71)	(-1.74)	(-1.48)	(-1.48)	(-1.50)	(-1.28)
24	-0.0074*	-0.0076*	-0.0078	-0.0080*	-0.0073*	-0.0071*	-0.0072*	-0.0058	-0.0058	-0.0059	-0.0048	-0.0044
	(-1.73)	(-1.78)	(-1.84)	(-1.89)	(-1.75)	(-1.72)	(-1.73)	(-1.47)	(-1.47)	(-1.51)	(-1.28)	(-1.20)

*Note: Returns are computed using monthly data January 1991 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J month's accumulated returns, then divided into quintiles (5 groups) by their past cumulative returns. Then the group with the highest past returns are denoted as winners, while the group with the lowest past returns are denoted as losers. The figures in the table are average returns of portfolios of selling winners and buying losers value-weighted. Figures in parentheses are t-values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at the 10%, 5% and 1% levels using T-test respectively.*

1.6.2 Results and main findings of sub-sample periods

Besides the whole sample period, I also divided the 20-year period into 5 sub-periods: 1993-1996, 1997-2000, 2001-2004, 2005-2008, and 2009-2012[33]. In each sub-period, momentum strategies of buying past winners and selling past losers have also been constructed up to 12-12 month. To ensure enough observations were included in each strategy, I did not test strategies longer than 12-12 months. In detail, in each sub-sample period, I had 48 months, therefore, for 12-12 strategy; I had only 25 observations, which is less than 36. Returns were computed for both equally weighted and value weighted portfolios. In each sub-period there were 144 portfolios for equally weighted and value weighted strategies respectively, which made 1440 portfolios in total. Analysing sub-periods could allow us to understand the features of momentum (contrarian) strategies in Chinese stock market in detail. For each return, I applied standard t-test to test whether results were statistically significant; additionally, non-parametric tests using Wilcoxon rank sum method were also conducted. The reason for doing so was that the total number of observations was less than 36, when J+K is larger than 13, in which the standard t test might not be accurate. I also tested whether the return of each strategy in a single sub-period is significantly different from the corresponding strategy in the whole sample period. For example, for 1-1 equally weighted strategy in sub-period of 1993-1996, the result was tested against 1-1 equally weighted strategy for whole sample period 1993-2012, while a 1-1 value weighted strategy in a sub-period was tested against 1-1 value weighted strategy in the whole sample period.

The results for the sub-period equally weighted momentum strategies from 1993 to 2012 are presented in Appendix A1. As I can see from Appendix A1, for all the strategies in sub-periods 1993 to 1996, none of the strategies is significant, and for sub-sample period 1997 to 2000, only two strategies out of 144 are significant; while for all strategies in whole sample period, 19 strategies are significant out of 144. If I examine sub-period 2005 to 2008 and 2009 to 2012, I discovered significantly negative returns of momentum strategies. There are 42 significantly negative strategies in sub-sample 2005 to 2008, while there are 21 significantly negative strategies in sub-sample 2009 to 2012. These findings suggest that the contrarian profits presented in the whole sample period can be attributed to the contrarian trading strategies for sub-sample periods of 2005 to 2008 and 2009 to 2012. Another interesting finding is that for the sub-sample period 2001 to 2004, most of the strategies gained positive returns, while in all other sub-sample periods and the whole sample period, momentum

[33] The reason for the beginning of the period being1993 rather than 1991 is that two years of data are used for sorting the stocks.

strategies yielded negative returns indicating contrarian trading is profitable in those sub-sample periods.

In summary, for the sub-sample periods of 2005-2008 and 2009-2012, momentum strategies generated negative returns, indicating that momentum effects do not exist in these two sub-sample periods, but contrarian trading can make abnormal profits. The significant contrarian returns usually occur in up to 12 months holding periods, when formation periods are shorter than 6 months. When the formation period is longer than 6 months, contrarian profits only exist when holding periods are shorter than 3 months. Thus, short-term reversal exists in the Chinese stock markets. For sub-sample period of 2001-2004, significant momentum usually occurs when holding periods are near 12 months; thus, long-term momentum exists for sub-sample period of 2001-2004. This finding from sub-sample of 2001-2004 is compatible with the findings of Naughton et al. (2008). They used data from 1995-2005 and found momentum for the strategies they tested. Although the momentum only exists for the sub-sample period of 2001-2004, almost no significant results were found for the sub-sample period of 1993-1996 and 1997-2000. Thus, the momentum found from Naughton et al. (2008) might be solely contributed to the sub-sample period of 2001-2004. Although the test for sub-sample of 1995-2004 has not been conducted, the argument can be said to be reasonable.

Besides testing equally weighted strategies in each sub-sample period, value weighted strategies in each sub-sample period have also been tested. All the returns of all the value-weighted strategies in each sub-sample period up to 12-12 and associated t-statistics are presented in Appendix A2. In general, the main findings still hold when portfolios are adjusted by market value. Returns of value weighted portfolios in sub-sample period 1993 to 1996 and sub-sample 1997 to 2000 are similar with the results shown in equally weighted strategies. The signs of strategies in sub-sample period 1993 1996 and 1997 to 2000 are still quite similar and the number of significant results does not change much. In sub-sample 1993 to 1996, zero strategies are significant for equally weighted portfolios, while one strategy is significant for value-weighted portfolios. Similarly, for sub-sample 1997-2000 there are only two significant results for equally weighted portfolios, while there are no significant results in value-weighted portfolios.

However, for sub-sample 2001 to 2004, some interesting findings can be revealed. For sub-sample period 2001 to 2004, there were 50 momentum strategies yielded significantly positive returns out of 144 for equally weighted strategies, while there are 100 momentum strategies making significantly positive returns for value-weighted strategies. When the

portfolio is adjusted according to market value, contrarian profits generated by equally weighted strategies are much less significant than those gained by equal-weighted portfolios. Nonetheless, momentum profits yielded by value weighted portfolios in sub-sample 2001 to 2004 are much more significant than momentum profit gained by equally weighted portfolios in the same sub-sample period.

For sub-sample period 1993 to 1996 and sub-sample 1997 to 2000, there is not much difference between the results for equally weighted and value weighted portfolios. For sub-sample period 2005 to 2008 and sub-period 2009 to 2012, most of the momentum strategies yielded negative returns for value-weighted portfolios, which is the same as for equally weighted portfolios. Moreover, the number of significant results does not change much. The number of significant results is 42 for equally weighted portfolios and 43 for value-weighted portfolios in sub-sample 2005 to 2008, while 21 for equally weighted and 7 for value-weighted portfolios in sub-sample 2009 to 2012.

In summary, the results of both equal-weighted and value-weighted momentum strategies suggest that for sub-sample 2001-2004, momentum exists in the Chinese stock market, while for the 2005-2008 and 2009-2012 sub-sample, contrarian effects exist. For the early stage, no significant results were found sub-sample 1993-1996 and 1996-2000. The findings are compatible with the work of Naughton et al. (2008) for sub-sample pre-2001 and compatible with Pan et al. (2013) using the post-2001 data reviewed in Section 1.2 but it is not consistent with the findings of Zhou et al. (2010) using post-2001 data.

1.7 Comparison of the Results with the Findings in the Literature using the Whole Sample Period: 1991-2012

The findings in respect to momentum profits in the Chinese stock market are ambiguous. The literature finds different results when different periods of sample data have been used to conduct the test. The findings from Section 1.4 reveal that the momentum effects at least exist during some periods (especially 2001-2004) in the whole sample period of 1991-2012. To make the examination carried out in Section 1.4 more robust, additional tests have been conducted using similar sub-sample periods and similar filters when selecting stocks as in Zhou et al. (2010), Chen et al. (2012) and Pan et al. (2013).

The research of Chen et al. (2012) and Pan et al. (2013) has used data from 1995 to 2009. The only reason to conduct a replication study is that they use the same data period of 1995-2009, but implementing different criteria to select their data or different method to construct momentum strategy. Chen et al. (2012) have tested equally weighted decile momentum strategy without skipping one-month and without any filters to select their data. Pan et al. (2013) have tested equally weighted quintile momentum strategy, excluding first 6-month data after IPOs without skipping one-month. Zhou et al. (2010) have used slightly different data, which is from 1993 to 2008 excluding first 6 months IPOs to test equally weighted momentum strategies, skipping one-month between formation and holding periods. Zhou et al. (2010) also tested two sub-sample periods prior 2001 and post 2001. Therefore, I have tested equally weighted, value weighted portfolios, and portfolios based on data excluded first 6 months IPOs, portfolios skipped one month between formation and holding period, plus, two sub-sample periods: prior 2001 and post 2001. All strategies are based on quintile division.

The results of trying to replicate the three papers mentioned above in literature are presented in Appendix A3. Column 1 shows the results of equal-weighted quantile momentum strategies without using any filter to select stocks for the period of 1995-2009. This momentum portfolio and period has been most tested in the three papers. Columns 2 and 3 in Appendix A3 present the sub-sample periods of 1995-2001 and 2002-2009 using the same portfolios as in Column 1. These two sub-sample periods have also been tested in the literature mentioned above. Then an additional value-weighted portfolio for period of 1995-2009 without using any filters to select stock is tested and the results are presented in Column 4. Value-weighted portfolios are not examined in the three papers mentioned. Nevertheless, it has been found that the contrarian effects become weaker when portfolios are constructed as value-weighted in Section 1.4. Column 5 gives out the results of momentum strategies for the period 1995-2009 excluding stocks in the first 6 months after IPOs. The last column shows the results of momentum strategies including all the stocks but the portfolios skipped one month between formation and holding period, both of the strategies in Columns 5 and 6 are equal-weighted quantile portfolios, as the three papers (Zhou et al. 2010, Chen et al. 2012 and Pan et al. 2013) have tested.

The results are similar compared to the findings of my own results reported in Section 1.4. Most of the momentum strategies in Column 1 yielded negative returns, which are consistent with main findings in Zhou et al. (2010), Chen et al. (2012) and Pan et al. (2013). All these three papers have found no significant momentum profits, but short-term contrarian profits

vary from 1 month to 9 months except for Pan et al. (2013), in which no significant profits are found. The results of two sub-sample periods are also similar with the findings revealed by sub-sample periods in Section 1.4.2. In section 1.4.2, the results showed that most of the significant returns are generated by the strategies in sub-sample 2005-2008 and 2009-2012, while nearly no significant returns are observed for sub-sample 1993-1996 and 1997-2000. As I can see in column 2, Appendix A3, for sub-sample 1995-2001, no significant returns exist, while significant returns in sub-sample 2002 to 2009 were exhibited at nearly the same point as for those in sub-sample 2005-2008 and 2009-2012.

The results of sub-sample 1995-2001 are inconsistent with Zhou et al. (2010): they found significant contrarian returns for K=3, J=9, 12 months for sub-sample of 1995-2001. However, this result is consistent with Pan et al. (2013). They did not find significant results for the sub-sample period of 1995-2001.The difference might be caused by the fact that the data sample period sub-sample used in Zhou et al. (2010) is from 1993 to 2001 rather than 1995 to 2001.

Another point needing to be emphasised is that in sub-sample 2001 to 2004 of the research in this Section 1.4.2, momentum strategies gained significant positive returns. The findings from Column 1, 2, 3 in Appendix A3 suggest that momentum effects (if they do exist) after 2001 might be covered and eliminated by strong contrarian profits in the same period. This suspicion is supported by Wu (2011). Wu (2011) employs a two-component model to capture momentum effect and long-term mean reversion and their interactions. He successfully finds a short-term momentum effect interacting with long-term mean reversion in the Chinese stock market. Based on this finding, they estimated a strategy using rolling-regression parameter estimates, which outperformed both the pure momentum strategy and the pure contrarian strategy. The idea of using a two-component model to isolate the momentum effect from the long-term mean reversion is helpful to identify the existence and interactions of momentum and contrarian effects, whereas I seriously doubt whether it is accurate to estimate a combined strategy using a rolling-regression parameter. The latter 2/3 of the data is based on estimation rather than data collected from database, which leaves the question of how reliable the model is and how much I should trust the estimates.

The strategies based on data excluding the stocks in the first 6 months after an IPOs[34] do not change the existence of significant returns much compared to equally weighted strategies including IPOs, whereas the significant returns generated by strategies excluding IPOs are less than those including IPOs. Furthermore, the strategies (excluding IPOs) generating significant returns are also the significant ones which are equally weighted including IPOs. The results of excluding IPOs are consistent with Pan et al.'s (2013) results in which stocks in the first 6 months are excluded after IPOs. They found no significant momentum returns for whole sample period, but short-term contrarian profits for the period 1995-2009. This is partially reconcilable with the findings of Zhou et al. (2010). They found that the 1-3, 9-3 12-3 strategies (out of 9 strategies with the same holding periods of 3 months) yielded significant contrarian profits. The results between the normal strategies and strategies excluding stocks in the first 6 months after IPOs are not significantly different. Thus, the findings of strategies excluding stocks in the first 6 months after IPOs indicate IPOs have no impact on contrarian or momentum profits in the Chinese stock market.

Finally, strategies involving skipping one month between formation and holding period reduce the number of significant results. Only one significant contrarian profit has been found for all the strategies tested. The only research with a similar data set skipping one-month between formation and holding period has been conducted by Zhou et al. (2010), but they also excluded first 6-month IPOs and they did not test strategies without skipping one month. Hence, the results from Column 6 in Appendix A3 cannot be compared directly with their results. They found 6 significant contrarian profits for the 9 strategies they tested. However, for the difference between skipping one month and not skipping one month between formation and holding period indicates that contrarian profits can be attributed to a bid-ask spread effect. This finding is in accordance with the findings of Kang et al. (2002). Using the decomposition analysis following Jegadeesh and Titman (1993), they found that the lead-lag effect contributes to momentum in the Chinese stock market, thus reducing contrarian effects. The results of strategies skipping one month between formations and holding periods in Column 6 Appendix A3 confirm the presence of a lead-lad effect.

In general, the results in this section correspond to the results revealed by the papers of Zhou et al. (2010), Chen et al. (2012) and Pan et al. (2013). First, contrarian effects vary between sub-sample periods. In some sample periods, contrarian profits exist while in some sub-

[34] The strategies excluding stocks in the first 6 months after IPOs are followed by Wang (2004), Zhou et al. (2010) and Pan et al. (2013).

sample periods contrarian profits disappear. Second, value-weighted portfolios will reduce contrarian effects, thus contributing to momentum. Third, IPOs do not affect momentum and contrarian effects in the Chinese stock market. Fourth, strategies skipping one month between formation and holding period reduce contrarian effects but contribute to momentum in the Chinese stock market, suggesting lead-lag effects exist in the Chinese stock market. This finding is in line with the finding of Kang et al. (2002) using decomposition, following the work of Jegadeesh and Titman (1993).

1.7.1 Summary of main findings

In this Section, momentum in the Chinese stock market is tested for the whole sample period of 1991-2012 and for five sub-sample periods. Momentum is also tested to find out whether IPOs and lead-lag effects can affect momentum and contrarian profits in the Chinese stock market. I found that momentum does not exist for the whole sample period and for 4 out of 5 sub-sample periods tested. Instead, strong contrarian profits are found for the whole sample period and for 4 out of 5 sub-sample periods, suggesting mean reversal exist in the Chinese stock market. Momentum in different sub-sample periods and strategies uses different filters to select stocks to be included in momentum strategies that are to be tested. I found the contradicting findings regarding momentum in the Chinese stock market are only due to different sample size and sample periods. Momentum is only found when sample periods are using data before 2001. When data post-2001 is included in the sample, momentum does not appear in the Chinese stock market, but strong contrarian effects exist. However, momentum does exist for certain sub-sample periods. Value-weighted strategies will reduce the contrarian profits found in the Chinese stock market. IPOs do not affect contrarian profits. Lead-lag effects will reduce the contrarian effects, thus contributing to momentum.

1.8 Summary and Conclusions of Chapter 1

In this chapter, momentum profits in the Chinese stock market have been examined. A comprehensive investigation regarding momentum profits in the Chinese stock market was therefore carried out. Equal-weighted and value-weighted momentum strategies are tested for the whole sample of 1991-2012 and for 5 sub-sample periods: 1993-1996, 1997-2000, 2001-2004, 2005-2008 and 2009-2012. I found that momentum profits only exist in the sub-sample period of 2001-2004. For the whole sample period and all other 4 sub-sample periods, strong contrarian profits are found in the Chinese stock market. When momentum strategies are

adjusted for value-weighted, the contrarian profits are reduced, but still exist in the Chinese stock market.

To find out why findings of momentum in the Chinese stock market are ambiguous, additional tests were carried out for different sub-sample periods and strategies using different filters to select stocks. I found that the ambiguous findings supporting momentum in the Chinese stock market are only due to limited data. If a more comprehensive data is used, the conclusion will be clear that no momentum exists in the Chinese stock market, but only contrarian effects exist. Additionally, IPOs will not affect momentum or contrarian in the Chinese stock market, but lead-lag effects do reduce contrarian and contributes to momentum in the Chinese stock market.

The evidence in this chapter suggests strong contrarian profits exist in the Chinese stock market rather than momentum profits, which is inconsistent with the findings respecting the momentum profitability in the developed stock market. Thus, it is worth examining why there exists no momentum in the Chinese stock market. Is it due to unique market features in the Chinese stock market? Or is it because the Chinese stock market is fundamentally different from developed stock markets? Chapter 2 and Chapter 3 will try to give an answer to this question.

Chapter 2 Momentum Effects in the Chinese Stock Market following Different Market States

2.1 Introduction

In Chapter 1, momentum effects are examined across different strategies and different sample periods in the Chinese stock market. It is found that momentum effects only exist for a certain sample period of 2001 to 2004. For the whole sample period of 1993 to 2012 and all other sub-sample periods, no significant momentum effects have been found in the Chinese stock market. Such findings raise the question of why there are no momentum effects in the Chinese stock market. Additionally, is the lack of momentum effects in the Chinese stock market due to the non-existence of overreaction in the Chinese stock market or due to other unique factors of the Chinese stock market?

To answer these questions, momentum effects following different market states will be examined in Chinese stock markets using the method suggested by Cooper et al. (2004). They divide the whole market into two market states: UP and DOWN, based on past value weighted market returns. By examining the returns of momentum strategies following UP or DOWN market states against the predictions of Daniel et al. (1998) and Hong and Stein (1999), the reasons behind how the momentum effect is driven can be revealed.

According to Cooper et al. (2004), Daniel et al. (1998) and Hong and Stein (1999), momentum profits should be higher following past UP market states than following past DOWN market states. In this chapter, momentum effects following different market states in the Chinese stock market are examined. Momentum effects following different market states are examined for the whole sample period from 1993 to 2012, and for each sub-sample periods of 1993-1996, 1997-2000, 2001-2004, 2004-2008 and 2008 to 2012, as well as for sub-sample periods from 1995 to 2010 to compare the results with the findings of Chen et al. (2012). In general, it is found that no absolute significant momentum profits follow UP market states, but more cases of relevant contrarian returns (less of momentum returns) are found when the market follows UP market states than follows DOWN market states.

The literature review in respect to momentum and contrarian effects following different market states is presented in Section 2.2. The methodology and data used in this chapter are explained in Section 2.3. The results of the momentum effect for the whole sample period

from 1993 to 2012 following different market states are presented in Section 2.4. The sub-sample period results of 1995 to 2010, compared to Chen et al. (2012), are in Section 2.5. Section 2.6 gives the results of the 4-year sub-sample periods.

2.2 Literature Review on Momentum Effects under Different Market States

Before reviewing the literature about momentum profits under different market states, a discussion about the behavioural models trying to explain the momentum effects is worth here. As they provide predictions to test the momentum profits under different market states[35]. The most accepted behavioural theories which have been developed to explain the momentum in stock returns and mean-reversal are the models proposed by Barberis et al. (1998) (BSV hereafter), Daniel et al. (1998) (DHS hereafter) and Hong and Stein (1999) (HS hereafter).

According to Barberis et al. (1998), momentum effects are due to the systematic errors made by investors when forming their expectations of future cash flows based on public information. Their model incorporates of the two updating biases: conservatism and representativeness. Conservatism refers to the behaviours that investors tend to underweight new information compared to the priors. Representativeness in their model refers to a particular version called the law of small numbers: the tendency to use 'short samples to reflect the properties of the parent population' (Barberis and Thaler, 2003).

In detail, on the release of good earnings, due to the conservatism, investors underweight the recent news of earnings, leading to insufficient reaction, thus, the price of the stock increases too little. As the price is too low relative to the good earnings, subsequent returns will be higher, resulting in generating the post-earnings announcement drift and momentum. Then, investors will overreact to a series of good earnings announcements, a compensation to insufficient reactions to prior news, pushing price up too high as a result of representativeness. Because investors believe the firm has a particular high earnings growth and forecast high earnings in the future. Due to the law of small numbers, in the long-run, the price has been pushed too high, the subsequent returns 'are too low on average, thereby generating long-term reversals' (Barberis and Thaler, 2003).

[35] Cooper et al. (2004) pointed out only DHS and HS can predict the momentum profits under different market states, but BSV cannot used to predict the momentum profits in different market states.

DHS suggest that irrational investors experience two psychological biases: “self-attribution” and “over-confidence”. According to Conrad and Kaul (1998), Fama (1998) and Galariotis (2014), under the model of DHS, investors attribute the good performance of individual stocks to their own skills and blame bad performance on bad luck (external unpredictable circumstances). Consequently, they overestimate the precision of their own interpretation of new information, while underreacting to public information. It can be implied that investors tend to be overconfident and overreact to good news, which initially generates momentum. In the long-term, overreaction in prices is eventually corrected by public information, which was underestimated by investors. Hence, in combination, momentum strategies generate abnormal returns in the inter-mediate horizon and mean reversion in the long-term. If the theory of DHS holds, then one can predict that momentum profits would be greater in the bull market rather than in a bear market, as aggregate overconfidence should be greater in a bull market rather than in bear market. In more detail, in the bull market, prices tend to increase rather than decrease; investors will attribute the gains to their skills, which will result in higher demand and greater overreaction than in a bear market. Therefore, the overreaction will be stronger following up markets rather than down markets, which generates greater momentum in the short term.

Following the discussion by Cooper et al. (2004), Du et al. (2009) and Galariotis (2014), it can be argued that in the theory of HS, momentum is driven by initial underreaction to information and subsequent overreaction. HS assume here that two groups of investors exist: the “news watchers” and the “trend followers”. Although both groups of investors are rational, the “news watchers” trade based on all the potential information, while the “trend followers” trade based mainly on past information and they overestimate the fundamentals. As information is only partially incorporated into the market, “trend followers” initially underreact but subsequently overreact to information, causing momentum profits in inter-mediate intervals following price reversal to fundamentals in the long term. Following their assumption, both groups of investor are rational; that is to say, they are both risk averse. HS also found decreasing risk aversion led to greater delayed overreaction, which increases momentum profits. Therefore, if risk aversion decreases, momentum becomes greater. According to Campbell and Cochrane (1995) and Barberis et al. (1998) risk aversion decreases as wealth increases. Hence, the model of HS predicts that momentum profits will be greater in the UP market.

The first publication researching market states and momentum is by Cooper et al. (2004). In this paper, they examine whether the state of the market is important to the profitability of momentum strategies in the US market. In doing so, they first defined two states: UP and DOWN. UP is 'when the lagged three-year market return is non-negative'. DOWN is 'when the lagged three-year market return is negative'. They used 'CRSP value-weighted index (including dividends) over 36-months prior to the beginning of strategy's holding period'. They tested strategies of 6-6, 6-12 months for momentum profits, and a post-holding period strategy of 6-12 months with post-holding period for 5 five years using raw, CAPM-adjusted returns and Fama-French adjusted series. These strategies were divided into two panels: 'UP' and DOWN', by adding a market states dummy variable into regression of the mean profits of momentum strategy. In general, all the momentum profits were significant in the 'UP' panel of 6-6 and 6-12 strategies. The average monthly return of 6-6-month momentum profit is 0.93% per month for raw data and 1.12% per month for CAPM adjusted series. The 6-12 month strategies yielded 0.72% per month and 0.87% per month for raw and CAPM adjusted respectively.

The results of these momentum strategies were different following DOWN market state. They failed to find evidence indicating momentum profits in the DOWN market state for the 6-6 strategy or 6-12 strategy using either raw data or CAPM adjusted series. They also examined the equality of the average momentum strategy between UP and DOWN market states. The results indicated that momentum profits were statistically greater following UP markets using both raw data and CAPM adjusted series than following DOWN markets, which was consistent with the overreaction theories. For the UP market state, an interesting result can be noticed: both strategies of 6-6 and 6-12 months yielded larger momentum profits using CAPM adjusted series than using raw data, which contradicted some of the researches (for example Wang and Wu (2011)) and indicated that those higher profits are not simply a compensation for higher risk.

Following the work of Cooper et al. (2004), Huang (2006) conducted an extended work to test whether the conclusions of Cooper et al. (2004) were valid in international markets. They used monthly stock indexes over 1969 to 1999 in 17 developed markets to construct momentum strategies of J, K=3, 6, 9, 12 months with skipping 1 month between formation (J) and holding (K) period. They constructed the strategies by buying indexes with the highest three returns and selling the lowest three returns. They found 18 out of 32 strategies are significantly positive. They then divided momentum strategies into two panels for UP markets

and DOWN markets following Cooper et al. (2004) according to the past 12-month market return and presenting the average returns of momentum strategies.

As discussed before, if the proposition of Daniel et al. (1998) and Hong and Stein (1999) is correct, the momentum profits in UP markets are expected to be greater than those in DOWN markets. As for the results from the UP market state, they found 23 out of 32 strategies yielded significantly positive average returns. To examine their results in detail, it can be found that all the average returns of momentum strategies following the UP market were higher than the average returns of momentum strategies following the DOWN market state. For the DOWN market state, the results were different compared to the UP market state. The average returns following the DOWN market state were insignificant and mostly negative. Twenty-four out of thirty-two momentum strategies generated negative momentum profits, i.e., positive contrarian profits.

They also conducted two additional tests based on a different definition of market state. When the UP/DOWN market state was defined as past 24-month market returns were non-negative/negative, and the results were similar to the results based on 12-month past market returns. Momentum strategies then yielded significantly higher returns in the UP market state than in the DOWN market state: 17 out of 32 strategies in the UP market state were significantly positive, while none of the strategies in the DOWN market state were significantly positive and 15 out 32 strategies yielded negative profits. However, when market states were identified by the past 36-month index returns the results became different. Momentum strategies yielded positive returns from both UP and DOWN market states in most strategies, and the average returns of DOWN market state became significant rather than insignificant (as for those tested using 12-month and 24-month past returns). The results of the DOWN market state using 36-month market returns to identify market state were inconsistent with the findings in Cooper et al. (2004). In summary, they concluded that the momentum profits were mainly generated by UP markets rather than DOWN markets, but that such conclusions are dependent on the definition of the UP and DOWN market. (i.e., the length of past market returns used to define UP and DOWN markets). They provided additional evidence that momentum profits come from the UP market rather than the DOWN market in the context of international experience.

The papers of Cooper et al. (2004) and Huang (2006) provided evidence that momentum profits come from UP markets in developed stock markets. Inspired by their works, Du et al. (2009) have provided a viewpoint to explain why momentum profits cannot be found in some of the developing markets. Namely it was found that momentum profits are usually weaker in emerging markets than in developed markets. Rouwenhorst (1998a) had found that momentum profits were insignificant in only one European market out of the 12 markets tested. In contrast, Rouwenhorst (1999) found that only 6 out of 20 emerging markets generated momentum profits. Furthermore, no evidence of significant momentum profits was revealed in all of the 6 Asian emerging markets tested by Chui et al. (2000). Du et al. (2009) have also pointed out that such difference between developed markets and emerging markets 'posed a serious challenge' to behavioural models; for example, DHS and HS when used to explain momentum. For the theory of DHS, cognitive investor biases are the main reason for the existence of momentum. If DHS is correct and the difference of momentum between developed markets and emerging markets does exist, it could then be implied that investors in emerging markets suffer less from cognitive biases.

However, Bohl and Siklos (2008) have revealed that feedback-trading strategies generate greater profits in emerging markets than in developed markets, which implies that investors in emerging markets are driven less by rational motives than those in developed markets. HS imply that gradual information diffusion could be attributed to the reason of momentum. Nevertheless, as Chan and Hameed (2006) demonstrate, emerging markets usually have a poorer information environment compared to developed markets, due to fewer regulations and poorer information disclosure either legislatively required or voluntarily.

Du et al. (2009) hypothesize that momentum strategies might yield stronger negative profits (positive contrarian profits) following DOWN market states in emerging markets if the DOWN market states are more severe. They argue that 'more severe DOWN markets reduce the level of investor overconfidence (DHS), and increase the level of investor risk aversion (HS) to a greater extent' As it has been argued before, less overconfidence will lead to less momentum, while a higher level of investor risk aversion will lead to less momentum. In other words, investors have weak overreaction/delayed overreaction during more severe DOWN market states, which may result in negative momentum (i.e., rapid mean reversals).

Du et al. (2009) have employed monthly data for Taiwan stock market over January 1981 to July 2006 to test their hypothesis. They have followed Jegadeesh and Titman (1993) in implementing decile 6-6 month momentum strategies by skipping 1 month between the formation and holding period. They have defined the UP and DOWN market states in the same manner as Cooper et al. (2004) and Huang (2006) have done. Here UP (DOWN) market state is where the cumulative value-weighted market return prior to strategies formation time is non-negative (negative) based on the past 12-month, 24-month and 36-month cumulative value-weighted market returns. They have found strong evidence supporting state-dependence of momentum in Taiwan stock market. The average momentum profit following DOWN market states was more negative compared to the US market; plus, more DOWN market states in the Taiwan stock market were found than in the US. They reveal that 35% of the Taiwan sample months were in DOWN market states, while only 16% of the US sample months belonged to DOWN market states. Hence, they assert that momentum strategies not yielding positive profit can be attributed to the combination of these two factors; that is, more negative momentum profits in the DOWN market and more frequent DOWN market states in the Taiwan stock markets.

Furthermore, they also found momentum following UP market states was stronger in the Taiwan stock market than in the US stock market. Such a finding does not support the viewpoint that investors in Taiwan stock market have experienced less overconfidence or cognitive biases as Chui et al. (2000) suggested, but favours the assertion of Patel and Sarkar (1998) that 'investors in emerging market' were 'not more rational'. Hence, Du et al. (2009) conclude that 'the unprofitability of momentum strategies in emerging markets may be due more to the state-dependence of momentum rather than to cultural differences'. Finally, they conclude that the behaviour of investors in emerging markets was not fundamentally different from that observed in developed markets. In both emerging and developed markets, strong momentum was driven by strong overreaction in UP market states, while weak momentum was exhibited in DOWN market states due to weak overreaction. Overreaction was eventually corrected and consequently, price continuation was always followed by a reversal. The difference between emerging markets and developed markets were due to the more frequent DOWN market states dominating the whole market rather than different investor behaviour. The weak momentum found in emerging markets was consistent with the behavioural models of DHS and HS when the state-dependence of momentum was taken into account.

With regards to evidence of the state-dependence of momentum in the Chinese market, only one paper has been published up until now. Chen et al. (2012) used weekly A-share stocks data in both Shanghai and Shenzhen exchange markets from January 1995 to April 2010. They found strong short-term (no more than 24 months) contrarian profits in the decile equally weighted strategies that they constructed without skipping interval between formations and holding periods. Based on these results, they tested state-dependence of momentum following Cooper et al. (2004). The only difference is that they used a short-run market condition to define the market state; that is, the past 13-weeks cumulative value weighted market returns, as the weekly data they used resulted in more frequent portfolio rebalancing (than would be possible with monthly data). They found that for contrarian strategies with the same formation and holding periods, the ones following DOWN market states were more profitable than the ones following UP market states, with the exception of the 1-1-week strategy. That is to say, for momentum strategies, the ones following DOWN market states were less profitable than the ones following UP market states, which is consistent with the previous studies of Cooper et al. (2004) in the US market, Huang (2006) in the international developed markets and Du et al. (2009) in the Taiwanese stock market.

In scrutinising the results, it can be observed that for most strategies with significant positive contrarian profit for the whole periods, the contrarian strategies were significantly positive for DOWN market states, while profits from contrarian strategies were insignificant for UP market states. Therefore, Chen et al. (2012) asserted that the significant contrarian profits for overall market states came from the contrarian profits yielded following DOWN market states rather than following UP market states. One shortcoming of their study regarding the market state-dependence of contrarian (momentum) effect is that they only tested the market state-dependence under one definition of UP and DOWN market states. The research of Cooper et al. (2004), Huang (2006) and Du et al. (2009) has already pointed out that the length of past cumulative value weighted market returns implemented in defining UP and DOWN market states would affect the results.

The difference of momentum and contrarian profits between developed and emerging markets has initially posed a severe challenge to the behavioural models of DHS and HS used to explain the momentum and contrarian profits. However, when market-state dependence is taken into account, the differences of momentum and contrarian effects between developed and emerging markets is consistent with those behavioural models. Moreover, the reason for

weak momentum (strong contrarian) effects exhibited in emerging markets might be attributed to its prevalence in the more frequent DOWN market states. Thus, it is worth testing whether momentum effects are in line with the theories of behavioural finance when market-state dependence is taken into account. Also the impact of frequent and dominant DOWN market states on momentum in the Chinese stock market should be considered.

2.3 Data and Methodology Used to Test Momentum Effects under Different Market States in the Chinese Stock Market

The methodology used in Cooper et al. (2004), Huang (2006), Du et al. (2009) and Chen et al. (2012) is described as follows.

The momentum profit is modelled as:

$$MOM_t = \pi_{UP} D_{UPt} + \pi_{DOWN} D_{DOWNt} + e_t \qquad (1)$$

where MOM_t is the time series of profits of the momentum strategy for a specific holding period (J) and formation period (K).

$$D_{UPt} = \begin{cases} 1, & if\ MKT_{t-1,t-k} \geq 0, k = 1, 2, \dots, L\ months \\ 0, & if\ MKT_{t-1,t-k} < 0, \end{cases}$$

$$D_{DOWNt} = \begin{cases} 1, & if\ MKT_{t-1,t-k} < 0, k = 1, 2, \dots, , L\ months \\ 0, & if\ MKT_{t-1,t-k} \geq 0, \end{cases}$$

where $MKT_{t-1,t-k}$ denotes the cumulative value-weighted market return from month $t-k$ to $t-1$. If $D_{UPt} = 1$, the market state is called the UP market; if $D_{DOWNt} = 1$, the market state is called the DOWN market. L denotes the length of UP/DOWN market states which can be e.g. 3, 6, 12 ,24 months, etc. The mean momentum profit following UP market state is thus $\hat{\pi}_{UP}$, and that following DOWN market state is $\hat{\pi}_{DOWN}$.

Market returns are constructed using monthly data of market value and the return index of each stock collected for Chapter 1. The process and details of the stock are explained in the section of methodology and data section in Chapter 1. Given that no market index exists of a combined Shanghai and Shenzhen stock exchanges for the period January 1991 to December 2012, my own market index is constructed by computing the overall market return weighted by market value of each individual stock and set the market index on day 1 as 100. The correlation between my market index and the market index of Shanghai and Shenzhen stock exchanges downloaded from DATASTREAM starting from May 1994 can be then computed. The reason why I did not use the market index available from DATASTREAM is that the market index computed by DATASTREAM only covers from the period May 1994 and does not cover all the stocks listed on the Shanghai and Shenzhen Stock Exchanges. The correlation between the two indexes is over 90% from May 1994 to December 2012. Figure 2.1 presents the time series behaviour of my value weighted market index of combined

markets of the Shanghai Stock Exchange and Shenzhen Stock Exchange. The index on the 01/01/1991 is 100.

The autocorrelation and heteroscedasticity for the time series used in the above regression is also tested. The method used to test the heteroscedasticity of the time series is White's general heteroscedasticity test. Additionally, the Durbin-Watson test is used to detect autocorrelation. For all the time series I used in my test, I found none of the time series is autocorrelated but there is heteroscedasticity in all the time series. Hence, standard errors are adjusted according to heteroscedasticity-consistent covariance matrix estimators using White's heteroscedasticity-corrected standard errors. The covariance matrix estimator used in this chapter is defined as $HC_3 = X'diag(\frac{e_i^2}{(1-h_{ii})^2})X(X'X)^{-1}$ in MacKinnon and White (1985). The reason is that it is recommended by Long and Ervin (2000) to use HC_3 when the sample size is less than 250 to provide the best performance of the three estimators introduced in the process of White's heteroscedasticity-corrected standard errors.

Besides the data used above, the average mean returns of the markets under UP and DOWN market states are computed for both the Chinese stock market and the U.S. ones. The UP and DOWN market states defined using the same method mentioned above in this section. The data used to compute the average mean returns of the stock market in the U.S. is obtained from the historical benchmark returns on the website of French (2014). According to the descriptions given on the website of French (2014), the historical benchmark returns include the three factors in the Fama-French Three-Factor Model: the excess return on the market, the performance of small stocks relative to big stocks, the performance of value stocks relative to growth stocks and the risk free rate. The excess return on the market is the market return minus risk free rate, thus, the market return is the excess return on the market plus the risk free rate. Then the market return is used to compute the cumulative market returns to define the market sates and also the average market returns of the U.S. stock market. The period of the historical benchmark returns of the U.S. market used in this thesis is the monthly data from the period of 1927 to 1995 which is the same period used in the research of Cooper et al. (2004).

Figure 2.1 Value Weighted Market Index of SHSE and SZSE: January 1991 to December 2012

2.4 Results of Momentum Effects Following Different Market States

An overview of the results of equally weighted monthly momentum returns following UP and DOWN markets defined by different horizons of cumulative total market returns is presented in each sub-section of this section. In each table, panel A presents the results of momentum returns following UP markets, while panel B presents the results of momentum returns following DOWN markets. Five hundred and seventy-six (576) (24×24) momentum strategies are tested for each UP and DOWN market with formation and holding periods up to 24 months. The market states have been defined by cumulative value-weighted total market returns of both Shanghai and Shenzhen stock exchanges 3, 6, 12, and 24 months prior to the formation month.

Before discussing the empirical results presented in the tables, I will explain definitions and notations in the tables. The J-K row presents the momentum strategy tested, where J is the formation period used to rank the stock returns while K is the holding period after the momentum strategy is generated. The momentum strategies tested are equally weighted monthly average returns without skipping any month between formation and holding period following the methods of Jegadeesh and Titman (1993), which is explained in the section of methodology Section 1.3.2 in Chapter 1. The detailed empirical results are presented in Appendix B1 to Appendix B4. N presents the number of strategies that belongs to UP or DOWN markets in a specific strategy. Mean is the average monthly return of equally weighted momentum strategies. *, **, *** indicates the mean return is significant at the 1%, 5% and 10% confident levels respectively.

2.4.1 Results and findings for UP and DOWN markets defined by prior 3 months' cumulative value weighted market returns

Table 2.1 shows an overview of the results of equally weighted momentum strategies following UP and DOWN markets defined by 3 months' cumulative market returns. In Panel A, I found that 66 strategies are significant at the 10% level of 576 (24×24 strategies) in UP markets. All the figures of average monthly returns of momentum strategies in Panel A are negative, which indicates positive contrarian profits. Generally, significantly negative momentum profits are usually exhibited when the holding period is less than 8 months with some exceptions when the formation periods (J) are longer than 15 months, which indicates short-term contrarian profits existing in the UP markets. When formation periods are less than 8 months, the patterns of significantly negative momentum profits are clear: the number of

significantly negative momentum strategies reduces as the holding period decreases for a given formation period.

In detail, for formation period J=1, the momentum strategies following UP markets generate significant returns are presented when holding periods are 2 to 8 and 17, 18 and 24 months. For formation period J=2, the significantly negative momentum profits following UP markets exist from the first month (K=1) and last for up to 7 months. For J=3, significantly negative momentum strategies only last for up to 5 months. When the formation periods increase, the month of holding period when the first significantly negative momentum profits presented themselves decreases.

For formation periods equal to 8 and 9 months, significantly negative momentum profits only last for 1 month; they then disappear when formation periods are longer than 10 months. No significant results were found for formation period between 10 to 14 months, and no clear patterns can be seen for formation periods longer than 10 months. In detail, most significantly negative momentum profits exist when the holding period is longer than 12 months for those formation periods longer than 14 months. Momentum strategies of 15-24, 16-22, 16-23, 16-24, 17-01, 17-02, 17-23, 17-24, 18-01, 21-01 are significantly negative. For formation periods of 23 and 24 months, significantly negative momentum profits exist at 1 month after momentum strategies created. Afterwards, they no longer exist for several months, and appear again after from about 7 to 17 months, with several exceptions (exceptions are 23-11, 23-12, 24-07, 24-12, 24-13 and 24-17).

For strategies with the same formation period, the lowest significant negative momentum return usually occurs at the shortest holding period, which is usually the strategy with a holding period of 1 month. Then the significantly negative momentum returns increase as holding period increases. However, no clear pattern of how momentum returns changes has been revealed across different formation periods with the same holding period. The largest absolute value of momentum strategy exhibits at 02-01 with the absolute value of 0.01776 per month, which is equivalent to 21.312% (simplified) annually.

Panel B shows the empirical results of average equally weighted monthly momentum profits following DOWN markets, defined by prior 3 months' cumulative total value weighted market returns. I found 63 significantly negative momentum returns out of 576 (24×24) negative momentum strategies tested, which indicates contrarian profits. Initially,

significantly negative momentum returns occur for quite a short window of time. For a formation period equal to 1 month, significantly negative momentum returns only exist for 3 months, then the window time of existence of significantly negative momentum returns is reduced to 2 months for a formation period of 2 months, then 1 month for a formation period of J=3 months.

Lastly, they disappear for formation periods equal to and longer than 4 months. For formation periods over 12 months, significantly negative momentum returns exist first from around 1 year (the first existence varies for different formation periods). Significantly negative momentum returns first exist at 17-12 and last for 2 months. For J=17, significant results are exhibited at 17-12, 17-13 and 17-15. For J=18, 19, significant results are 18-11, 18-12, 19-10, 19-11, 19-13. For formation periods equal and longer than 20 months, the pattern of existence of significantly negative returns changes. For J=20, 21, 22, 23 and 24, momentum strategies yielded significantly negative returns at holding period equal to 1 month (with exception of 21-01, which is insignificant); they no longer yield significantly negative momentum returns for holding periods longer than 1 month. Then, momentum strategies yield significantly negative returns when holding more than 12 months and usually last up to 24 months, with several exceptions (20-13, 20-15, 20-17, 20-18, 21-13,21-14, 21-16, 21-17, 21-18, 21-24, 22.13, 22-15, 22-16, 23-14, 23-15, 23-24, 24-13, 24-14 and 24-24).

Similar to the findings in Panel A, the largest absolute value of significant returns of momentum strategies with same formation holding periods, but different holding periods usually occurs at the shortest holding periods. Taking those formation periods equal to 20, 21, 22, 23 and 24 months, the largest absolute value of momentum return is yielded at the shortest holding period, K=01 which, in other words, is the most profitable contrarian strategy; that is to say, the least profitable momentum strategy within the same formation period is yielded at the shortest holding period.

I also found that the largest absolute value of significant returns presents it at the 01-01 strategy. That is to say, the 01-01 momentum strategy yields the lowest profit; in other words, the 01-01 contrarian strategy yields the highest profit among all strategies following DOWN markets. The largest absolute value is 0.01403 per month, which means a 01-01 contrarian strategy can earn abnormal return of 16.836% annually.

The difference between the results of following UP and DOWN markets defined by prior 3 months' cumulative value weighted market returns is discussed hereafter. More specifically, the general patterns where significant results exist are similar between UP and DOWN markets in Table 2.1. The only difference between the results of UP and DOWN markets is that, for UP markets, significant returns occur more often when formation periods are smaller than 9 months, while significant results appear more frequently when formation periods are equal or longer than 20 months. Hence, for short holding and formation periods, the momentum profits tend to be lower, not higher in UP markets (as they tend to be significantly negative in UP but not so much in DOWN markets), in contrast with the predictions by the behavioural models. However, for longer formation and holding periods, there are more cases of significant negative profits in DOWN rather than UP markets, so that the UP markets (where insignificance is more common) tend to have higher momentum profits (where significantly negative returns are more common), in line with behavioural models discussed previously.

Table 2.1 Average Monthly Momentum Profits Following Market-States Based on 3 Months' Cumulative Market Returns

Panel A: Average Monthly Momentum Profits Following 3-month UP Markets

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1		-	-	-	-	-	-	-									-	-						-	1
2	-	-	-	-	-	-	-																		2
3	-	-	-	-	-																				3
4	-	-	-	-																					4
5	-	-	-																						5
6	-	-																							6
7	-	-																							7
8	-																								8
9																									9
10																									10
11																									11
12																									12
13																									13
14																									14
15																								-	15
16																						-	-	-	16
17	-	-							-														-		17
18	-																								18
19																									19
20																									20
21																									21
22																									22
23	-						-	-	-	-			-	-	-	-	-								23
24	-						-	-	-					-	-	-									24

Note: Shaded areas indicate that the returns from momentum strategy are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K).

Table 2.1 Continued

Panel B: Average Monthly Momentum Profits Following 3-month DOWN Markets

J \ K	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	K \ J
1	-	-	-																						1
2	-	-																							2
3	-																								3
4																									4
5																									5
6																									6
7																									7
8																									8
9																									9
10																									10
11																									11
12																									12
13																									13
14																									14
15																									15
16																									16
17												-	-		-										17
18											-	-		-											18
19										-	-	-													19
20												-		-		-			-	-	-	-	-	-	20
21																			-	-	-	-	-		21
22	-	-												-			-	-	-	-	-	-	-	-	22
23	-												-			-	-	-	-	-	-	-	-		23
24	-														-	-	-	-	-	-	-	-	-		24

Note: Shaded areas indicate that the returns from momentum strategy are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K).

2.4.2 Results and findings for UP and DOWN markets defined by prior 6 months' cumulative value weighted market returns

Table 2.2 presents an overview of the results of equally weighted momentum strategies following different market states defined by prior 6 months' value weighted cumulative market returns. In Panel A, 347 significantly negative momentum returns are found out of 576 (24×24) strategies in total following 6 months. UP are markets defined by 6 months' cumulative value weighted market return prior to each formation period. In general, significantly negative returns are presented themselves when formation and holding periods are smaller than 6 months and when formation and holding periods are longer than 12 months. For J=01, momentum strategies yield significantly negative returns when holding periods are less than 6 months and longer than 15 months with K=16, 20, 21 as exceptions.

For the strategies when J (formation period) varies from 02 to 12, in general momentum strategies generate significantly negative returns when holding periods are smaller than 6 months and longer than 12 months. When formation periods increase, the significantly negative returns are presented as holding periods decrease. When formation periods are longer than 12 months, there are many more significantly negative returns than when formation periods are smaller than 12 months. Finally, when formation periods increase, the first strategy generates a significantly negative return and appears to come sooner; in other words, the holding periods become shorter when the first significantly negative return occurs.

In Panel B, where DOWN market states are defined by 6 months' cumulative value weighted market returns prior to formation period, only 6 significant results were found out of 576 strategies I tested. They are 01-01, 01-02, 01-03, 01-04, 02-02 and 03-01. The dramatic difference in the number of significant results to be found in UP and DOWN markets indicates that the length of market states does influence the results. Nonetheless, momentum strategies still make significantly negative profits when the formation period is 1 month and last for about 4 months.

For the momentum effect following UP and DOWN market states when market states are defined by the past 6 months of value weighted market returns, I found more contrarian profits following UP market states than following DOWN market states. In other words, there are smaller momentum profits are following UP than following DOWN market states, in contrast to the expectations based on the behavioural models discussed previously.

Table 2.2 Average Monthly Momentum Profits following Market-states based on 6 Months' Cumulative Market Returns

Panel A: Average Monthly Momentum Profits Following 6-month UP Markets

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1		+	+	+	+	+									+		+	+	+			+	+	+	1
2	+	+		+	+	+																+	+	+	2
3	+	+	+	+																	+	+	+	+	3
4	+	+	+																		+				4
5	+	+																	+	+			+		5
6	+	+																+	+			+		+	6
7	+	+															+	+					+	+	7
8	+															+	+			+	+	+	+		8
9	+														-	+	+	+	+	+		+	+	+	9
10	+													+	+	+	+	+	+	+	+	+	+		10
11													+	+	+	+	+	+	+	+	+	+	+	+	11
12	+											+	+	+	+	+	+	+	+	+	+	+	+	+	12
13	+										+	+	+	+	+	+	+	+	+	+	+	+	+	+	13
14	+	+					+			+	+		+	+	+	+	+	+	+	+	+	+	+	+	14
15	+								+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	15
16	+	+			+			+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	16
17	+	+		+			+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	17
18	+	+				+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	18
19	+				-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	19
20	+	+		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		20
21	+	+	+	+	+		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+			21
22	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+				22
23	+	+	+	+	+	+	+	+	+		+	+	+	+	+	+	+	+	+						23
24	+	+	+	+	+	+	+	+	+		+	+	+	+	+	+	+	+	+						24

Note: Shaded areas indicate that the returns from momentum strategy are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K).

Table 2.2 Continued

Panel B: Average Monthly Momentum Profits Following 6-month DOWN Markets

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	-	-	-	-																					**1**
2		-																							**2**
3	-																								**3**
4																									**4**
5																									**5**
6																									**6**
7																									**7**
8																									**8**
9																									**9**
10																									**10**
11																									**11**
12																									**12**
13																									**13**
14																									**14**
15																									**15**
16																									**16**
17																									**17**
18																									**18**
19																									**19**
20																									**20**
21																									**21**
22																									**22**
23																									**23**
24																									**24**

Note: Shaded areas indicate that the returns from momentum strategy are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K).

2.4.3 Results and findings for UP and DOWN markets defined by prior 12 months' cumulative value weighted market returns

Table 2.3 presents the overall results of returns of equally weighted monthly momentum strategies following UP and DOWN markets defined by prior 12-month cumulative value weighted market returns. In Panel A, I found 269 significantly negative returns out of 576 strategies following UP markets defined by 12 months' cumulative value weighted market returns prior to formation periods. For formation periods no longer than 2 months, I found 01-02, 01-05, 01-09, from 01-15 through out to 01-20, 01-22, 01-23, 01-24 and 02-01, 02-02 and 02-08, 02-14, from 02-16 through out to 02-19 and 02-23 are significantly negative momentum strategies.

For formation periods equal to 3 and 4 months, there are no significant returns. For J=05, only the 05-24 momentum strategy yields significantly negative returns. From formation periods equal to 6 to 12 months, it can be revealed that momentum strategies are significantly negative at the two ends, either extremely short for holding periods, which only last for 1 or 2 months, or either when holding periods are longer than 12 months. When formation periods become longer than 12 months, momentum strategies still earn abnormal significantly negative returns when holding periods are around mostly 2 months (for J=13-24) and some 3 months (only for J=16, 17). In addition, significant results occur irregularly around holding periods from 06 to 09 months for formation periods varying from 14 to 18 months.

The exception is when J=13; here it may be found that all the strategies are significantly negative except for 13-03 and 13-04. When formation periods vary from 18 to 24 months, the patterns of significantly negative momentum returns shift to the left. More clearly, in addition to the significantly negative returns when holding periods are longer than 12 months, holding periods of strategies with significantly negative returns decrease when formation periods increase. In terms of these significant results, the largest absolute value of negative momentum returns is usually the one for the shortest holding periods amongst strategies with the same formation periods. No clear pattern can be found for those significant strategies with the same holding period but different formation periods. The largest absolute value of the significant momentum strategy is 23-01 with the figure of 0.01502, which suggests a contrarian strategy of 23-01 earning abnormal returns of 18.024% annually.

Panel B shows the empirical results of monthly returns of equally weighted momentum strategy following a DOWN market defined by 12 months' cumulative value weighted market

returns. Only 11 significantly negative returns are found, which are 01-01, 01-02 01-03, 01-04, 01-05, 02-01, 02-02, 03-01, 04-01, 18-01 and 21-13. As I can see, although the most significant strategies in UP market become insignificant when the market follows a DOWN market-state, momentum strategies still yield significantly negative returns when formation and holding periods are less than 4 months. The largest absolute value of significant results presents itself for the 01-01 strategy, which yields -1.81% monthly, i.e. 21.73% per year (simple annual return).

Here again, I find momentum profits to be lower, not higher, in UP market states, which is inconsistent with the expectations based on the behavioural models discussed previously.

Table 2.3 Average Monthly Momentum Profits following Market-states based on 12 Months' Cumulative Market Returns

Panel A: Average Monthly Momentum Profits Following 12-month UP Markets

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1		-			-				-						-	-	-	-	-	-		-	-	-	1
2	-	-						-						-		-		-	-				-		2
3																									3
4																									4
5																									5
6	-	-																						-	6
7	-																						-	-	7
8	-	-																				-	-	-	8
9	-	-																			-	-	-	-	9
10	-																			-	-	-	-	-	10
11													-	-	-		-	-	-	-	-	-	-	-	11
12													-	-		-	-	-	-	-	-	-	-	-	12
13	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13
14	-	-				-	-	-						-	-	-	-	-	-	-	-	-	-	-	14
15	-	-				-	-	-					-	-	-	-	-	-	-	-	-	-	-	-	15
16	-	-	-			-		-	-				-	-	-	-	-	-	-	-	-	-	-	-	16
17	-	-	-		-		-	-					-	-	-	-	-	-	-	-	-	-	-	-	17
18	-	-					-					-	-	-	-	-	-	-	-	-	-	-	-	-	18
19	-	-									-	-	-	-	-	-	-	-	-	-	-	-	-	-	19
20	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20
21	-	-							-	-	-	-	-	-	-	-	-	-	-	-	-	-			21
22	-	-						-	-	-	-	-	-	-	-	-	-	-	-	-	-				22
23	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					23
24	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						24

Note: Shaded areas indicate that the returns from momentum strategies are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K).

Table 2.3 Continued

Panel B: Average Monthly Momentum Profits Following 12-month DOWN Markets

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	-	-	-	-	-																				**1**
2	-	-																							**2**
3	-																								**3**
4	-																								**4**
5																									**5**
6																									**6**
7																									**7**
8																									**8**
9																									**9**
10																									**10**
11																									**11**
12																									**12**
13																									**13**
14																									**14**
15																									**15**
16																									**16**
17																									**17**
18	-																								**18**
19																									**19**
20																									**20**
21													-												**21**
22																									**22**
23																									**23**
24																									**24**

Note: Shaded areas indicate that the returns from momentum strategies are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K).

2.4.4 Results and findings for UP and DOWN markets defined by prior 24 months' cumulative value weighted market returns

The results of average monthly momentum returns following UP markets defined by 24 months' cumulative value weighted market returns prior the formation periods are presented in Panel A, Table 2.4. In total, 462 significantly negative returns were found out of 576 (24×24) momentum strategies tested. For formation periods less than 12 months, momentum strategies can yield significantly negative returns for the holding period of 1 month and last for 5 months when the formation period is 1 month. Then the lengths of significantly negative momentum strategies decrease as formation periods increase.

When formation periods are 2 months, significantly negative momentum strategies last for 2 months. For formation periods of 3, 4, 6, 9 months, significantly negative returns are only found when the holding period is equal to 1 month. When formation periods are equal to 12 months, significantly negative returns occur when holding periods vary from 4 months to 24 months. When formation periods are longer than 13 months, significantly negative returns occur for all the holding periods tested. The patterns of significant momentum strategies, following past UP market states, when past market states are defined by past 24 months' returns can be described as follows. When formation periods are up to 12 months, there are significantly negative returns when such holding periods are very short or when they are very long. When formation periods are longer than 12 months, all the strategies generate significantly negative returns.

The largest absolute value among strategies with the same formation period usually occurs at K=01 or 02. I could not find a clear pattern for how the value of significantly negative value changes either within strategies of same formation periods or same holding periods. The largest absolute value of all significantly negative momentum strategies is present at 23-01 months with the figure of -0.02191, which indicates that a contrarian strategy of 23-01 can earn abnormal return of 26.292% annually.

In Panel B, where the results of average equally weighted monthly momentum strategies following DOWN markets defined by 24 months' value weighted market return is presented, I found only 10 significant results out of 576 total strategies. They are 01-01, 01-02, 01-03, 01-04, 01-05, 02-01, 02-02, 03-01, 04-01 and 05-01. They are all presented when formation periods and holding periods are quite short. The one with the largest absolute value amongst

those significant ones is the 03-01, with a figure of -1.25%. This implies that a contrarian strategy of 03-01 yields abnormal returns of 14.95% annually.

Again, I find relatively momentum profits to be relatively lower, not higher, in the UP market states, in contrast to the expectations based on the behavioural models discussed previously.

Table 2.4 Average Monthly Momentum Profits following Market-states based on 24 Months' Cumulative Market Returns

Panel A: Average Monthly Momentum Profits Following 24-month UP Markets																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	-	-	-	-	-										-	-	-	-	-	-	-	-	-	-	1
2	-	-														-	-	-	-	-	-	-	-	-	2
3	-														-	-	-	-	-	-	-	-	-	-	3
4	-														-	-	-	-	-	-	-	-	-	-	4
5														-	-	-	-	-	-	-	-	-	-	-	5
6	-												-	-	-	-	-	-	-	-	-	-	-	-	6
7												-	-	-	-	-	-	-	-	-	-	-	-	-	7
8										-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8
9	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
10								-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
11						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
12				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
13	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	13
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17
18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21
22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22
23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23
24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24

Note: Shaded areas indicate that the returns from momentum strategies are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K).

Table 2.4 Continued

Panel B: Average Monthly Momentum Profits Following 24-month DOWN Markets

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	-	-	-	-	-																				**1**
2	-	-																							**2**
3	-																								**3**
4	-																								**4**
5	-																								**5**
6																									**6**
7																									**7**
8																									**8**
9																									**9**
10																									**10**
11																									**11**
12																									**12**
13																									**13**
14																									**14**
15																									**15**
16																									**16**
17																									**17**
18																									**18**
19																									**19**
20																									**20**
21																									**21**
22																									**22**
23																									**23**
24																									**24**

Note: Shaded areas indicate that the returns from momentum strategies are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K).

2.4.5 Results between UP and DOWN market states and results between different lengths used to define UP and DOWN market states

First, it can be asserted that significantly negative returns of momentum strategies come from UP markets rather than DOWN markets. As I can see, only in Table 2.1 is the number of significant results almost the same for UP and DOWN markets. For other lengths used to defined market states, the number of significantly negative returns following UP markets is significantly larger than that following DOWN markets. This findings is at odds with the finding of Cooper et al. (2004). They found significantly positive momentum strategies following UP markets but failed to detect any significantly positive momentum strategies following DOWN market states. This finding is also inconsistent with the main finding in Huang (2006), in which they further confirm the findings of Cooper et al. (2004) using international data, and also with the finding of Chen et al. (2012) using data of Chinese market. However, it needs to be pointed out that the data employed in the work of Chen et al. (2012) is not as long as the data used in this research. Moreover, they only tested strategies no longer than equivalently[36] to 6 months regarding both formations and holding periods, with all the other identical criteria used to form momentum strategies. A comparison with the results of the article found in Chen et al. (2012) is presented in the next chapter.

Consistent with the findings in the paper of Cooper et al. (2004), in which they found that the definition of UP and DOWN market does impact on the results of momentum returns following different market states, I found that when the length of cumulative market returns used to define UP and DOWN markets changes, the results change. In Table 2.1, where momentum strategies following different market-states is defined by 3 months of cumulative market returns, the numbers of significant results for UP and DOWN market states are even: 66 for UP market states and 63 for DOWN market states. Nevertheless, when the length used to define different market states increases to 6, 12, and 24 months, the number of significant results following UP market states dramatically increases from 66 to 347, 269 and 464 respectively, while the number of significant returns following DOWN market states notably decreases to 6, 9 and 10 for 6, 12 and 24 months' definition, respectively.

[36] They tested weekly strategies based on weekly data in their article.

2.4.6 Possible explanations about the findings of momentum following different market states for the whole sample period

It is found that the momentum effects following UP market states are relatively lower than following DOWN market states in the Chinese stock market for all the different definitions of market states except for when the formation and holding periods are not shorter than 17 months for market states defined by past 3 months' cumulative value-weighted market returns. At first glance, this finding might be inconsistent with the predictions of Daniel et al. (1998) and Hong and Stein (1999). However, as Cooper et al. (2004) found out 'overreaction may actually be diminishing beyond some threshold level of prior market performance'. One of the possible explanations they have given to this finding is that 'investors are acquiring less private information in the extreme good states (to overreact to)'. They also pointed out that 'overconfidence theory does not necessarily predict a fully monotonic relation between lagged market returns and the level of overconfidence'. Thus, it can be implied from their arguments that momentum might not be strong following UP market states if past UP market states are extremely strong, as overreaction caused by overconfidence might be diminished beyond some threshold-level of extreme good market states. This is indeed one of the findings in Cooper et al. (2004).

I investigate whether this reasoning helps to explain the results presented in this chapter. It is found that the average mean returns of UP market states in the Chinese stock market are much higher than in the US market. From Appendix B10, the average return of UP market states in the US market is 2.542 per month over 1927-1009 while it is 6.095 per month in the Chinese market over 1993-2012 when market states are defined by past 3 months' value-weighted cumulative market returns. Moreover, those two figures are significantly different. Thus, UP market states in Chinese market are more extreme than they are in the US. The lack of momentum following extremely good past UP market states in the Chinese stock market might be due to the fact that these extreme UP market returns are indicative of a peak of an exceptionally good time, maybe even a bubble. Hence, it would be rational to expect that the market will turn, i.e., extreme UP market, eventually leading to the diminishing of overreaction caused by overconfidence in the Chinese stock market. Thus, following extreme UP market states in the Chinese stock market, investors might be selling even more quickly than investors do in the US market; consequently, prices of stocks decrease rapidly following extreme past UP market states, which finally leads to contrarian effect following UP market states when monthly data are used. Momentum profits following UP market states might be picked up if weekly data or daily data were used.

The second reason might be due to the phenomenon called the disposition effect by Shefrin and Statman (1985). Odean (1998) firstly described that phenomenon as individual investors are more likely to sell stocks with good performance relative rather than stocks with bad performance. Grinblatt and Han (2002) successfully linked the disposition effect and momentum effects. They argue that investors are keen to sell stocks which have earned capital gains on paper, leading to initial prices depression and higher returns later one. On the other hand, investors tend to hold the stocks facing capital losses, which results in initially prices' increase but later prices decrease. Nofsinger (2011) concluded that 'selling the "winners" (the stock that has increased in price) validates a good decision to purchase that stock in the first place and stimulates pride. Selling the "losers" (the stock with a loss) causes the realization that the original decision to purchase it was poor, and thus stimulates regret'.

Zhao and Wang (2001) documented the disposition effects are valid in the Chinese stock market. Moreover, Chen et al. (2007), confirmed that the disposition effects in the Chinese stock market is stronger than in the U.S. stock market. Thus, it can be expected, investors in the Chinese stock market tend to sell past winners more quickly than their peers in the U.S. market. On the other hand, they are more likely to hold the past losers longer than their peers in the U.S. market. Hence, following past UP market states with extreme high average returns, investors in the Chinese stock market will sell the past winners very quickly, resulting in a heave stress on prices' depreciation, which eventually leading to negative momentum returns.

Following past DOWN market states, investors in the Chinese stock market, tend to hold the past losers rather than selling them, which causes the prices of past losers relative higher than past winners during bear markets. Thus, momentum returns are relatively higher following DOWN markets than UP markets. Other important issues besides disposition effects include the lack of investment opportunities and prohibition of short-sell. Taking them into account, winners will be sold very quickly following UP markets to pocket the capital gains on paper. Consequently, prices of past winners will decrease very quickly, leading to contrarian profits following UP market states rather than momentum.

Phua et al. (2010) conducted a research about momentum effects in the Australian stock market. They tested a number of behavioural models which are predictive of the momentum movements following different market sates, using information of intertemporal performance of winners and losers. One of their findings confirmed that the disposition effect is a better

explanation to the momentum they observed in the Australian stock market rather than the overreaction bias. Therefore, when interpreting the possible reasons of the lack of momentum in the Chinese stock market, the finding that disposition effect has a stronger explanatory power to momentum rather than overreaction bias should be seriously considered. Thus, due to strong disposition and severe DOWN market states in the Chinese stock market, the momentum caused by overreactions may be eliminated by the disposition effect in the Chinese stock market. The lack of momentum profits following UP markets in the Chinese stock market is consistent with the finding of Phua et al. (2010).

Besides the reasons mentioned above, there is also another issue need to be considered: representativeness bias. Representativeness bias is discussed in Section 1.2.5, Chapter 1. To present it briefly, representativeness refers to the bias when determining 'the probability that a data set A was generated by a model B, or that an object A belongs to a class B', people often use the representativeness heuristic. It is found by Chen et al. (2007) that representativeness bias in the Chinese stock market is stronger than in the U.S. stock market.

Besides the arguments discussed above, another reason which might explain the lack of momentum in UP markets is that investors in emerging markets experience less overconfidence than those in developed markets. Chui et al. (2000, 2010) argue that investors in emerging markets do experience less confidence and greater risk aversion than those in developed markets. Chui et al. (2010) found that proxy variables representing individualism - those plausibly related to momentum profit - vary across countries. Momentum profits 'are more than 0.6% higher in those countries with individualism indexes in the top 30% than in those countries with individualism indexes in the bottom 30%'. In addition, they also found that in East Asian countries momentum and individualism are both weak. Moreover, the magnitude of mean reversal, which is caused by overreaction (DHS) and delayed overreaction and risk aversion (HS), tends to be lower in countries with lower individualism. Hence, it implies that weaker momentum profits in East Asian markets can be attributed to weaker overconfidence and stronger risk aversion. But it is worth point out, although, the finding of Chui et al. (2010) and Chui et al. (2000) reveal that in East Asian markets, investors are less confident. There are few researches directly test the overconfidence in the Chinese stock market, but indirect tests have provided evidence supporting less overconfidence and more risk aversion. Cheema and Nartea (2014), Cheema and Nartea (2015) tested information uncertainty and momentum under different market states confirming the argument by Chui et al. (2000) and suggesting investors in China is less overconfidence. Besides, less-

overconfidence in in China is also supported by the findings of Heine and Hamamura (2007). In the meta-analysis of overconfidence and biased self-attribution in 91 countries (including China), they found overconfidence and biased self-attribution are much weaker in East Asian countries (especially those countries deeply influenced by Confucian cultures, e.g. China, Korea and Japan). This is probably why there are no momentum profits in the stock markets such as China, Hong Kong, Taiwan and Japan.

In addition, from Table B11, Appendix B11, it can be seen that, the DOWN market states present themselves more often in the Chinese stock market than in the U.S. stock market for all four definitions of market conditions. Take market states conditional on past 3 months' value weighted cumulative market returns for example, the DOWN market states consist 56.67% of the overall market states while the UP market states consist 54.33% of the overall market states during the period of 1993-2012. However, for the U.S. stock market during 19565-1989, the period used in the research of Jegadeesh and Titman (1993), only 33% are DOWN market states and 67% are UP market states. Moreover, the percentage of DOWN market states to the overall market states conditional on past 3 months' market returns is the smallest one among the four different definitions of past market states.

Taking the often-happened DOWN market states and stronger representativeness bias in the Chinese stock market into account, we can tell that when market states are UP markets, investors in the Chinese stock market are reasonable to think the market states might transition into DOWN markets in the foreseen future very soon. They suffer from strong representativeness bias. So they will use past experience to judge the future market states quite often, thereby, they will be more willing to sell past winners on paper to pocket the capital gain before the market transition into DOWN market states and to hold the past losers due to disposition effect. Thus, price reversal is quick enough to eliminate any potential momentum effects following UP market states in the Chinese stock market.

Additionally, in the Chinese stock market, it is also found that the average return on the market index in UP market states is higher than the absolute value of average market return in DOWN market states[37],i.e., UP market states are more pronounced than DOWN market states. Hence, as UP market states are less frequent but record stronger price movements as compared to DOWN markets in China (and to the UP markets in the US), Chinese investors

[37] For detailed average returns in UP and DOWN market states refer to Appendix B10.

are more likely to expect reversals following an extreme bull market compared to the US market, and would be rational to engage in selling rather than buying. Consequently, price reversals due to this selling pressure following UP markets occur more quickly than following DOWN markets, which results in negative momentum/positive contrarian effects in returns being present more following UP market states than in DOWN market states, such as in the Chinese stock market.

It should be remembered that DOWN market states are severe in the Chinese market: DOWN market states occur in over 50% of the states in the Chinese stock markets. Thus, overall momentum strategies in the Chinese stock market are not as profitable as they are in the US market. Therefore, in combining these two market states together, it would be expected that momentum strategies generate negative performance in the Chinese stock market. My results taken from the different definitions of market states following UP and DOWN markets are in favour of this assumption. Negative rather than positive momentum profits are found across significant momentum strategies following UP and DOWN markets in all four different definitions of market states.

In conclusion, the inconsistence between the findings in this section for whole sample period from 1993 to 2012 and the predictions of DHS and HS cannot imply that the theory of DHS and HS does not apply to the Chinese stock market. Implied by Cooper et al. (2004) momentum might not be as strong if the UP market states are extreme. Additionally, according to Chui et al. (2000), Du et al. (2009) and Chui et al. (2010), the lack of momentum following UP markets and the findings of more relative momentum following UP markets rather than following DOWN markets can be attributed to strong disposition effect and representativeness bias out weighing the overreactions in the Chinese stock market.

2.4.7 Summary

Recalling the discussion in the literature part of Section 2.2, Du et al. (2009) suspect that momentum strategies might yield stronger negative profits (positive contrarian profits) following DOWN market states in emerging markets if the DOWN market states are more severe. They hypothesise that 'more severe DOWN markets reduce the level of investor overconfidence (DHS), and increase the level of investor risk aversion (HS) to a greater extent'. Lower overconfidence will lead to less momentum, while higher level of investor risk aversion will lead to less momentum. In other words, investors have weaker

overreaction/delayed overreaction during more severe DOWN market states, which may result in negative momentum followed by rapid mean reversals. Recall the discussion in Section 2.2; Chen et al. (2012) found that momentum strategies - the ones following DOWN market states were less profitable than the ones following UP market states. Such findings are in accordance with the previous studies of Cooper et al. (2004) in the US market, Huang (2006) in international developed markets and Du et al. (2009) in the Taiwanese stock market.

When past market states are defined by past 3 months' cumulative value weighted market returns, when formation and holding periods are not shorter than 17 months, more momentum is found following UP market states than following DOWN markets. This finding is consistent with the predictions of DHS and HS. However, when formation and holding periods are less than 9 months, more significant contrarian returns (less relevant momentum returns) are found following UP market states than following DOWN market states (for definition of market states defined by the past 3 months' value-weighted cumulative market returns). This is not compatible with the predictions of DHS and HS. However, the findings cannot necessarily reject predictions of models of DHS and HS in the Chinese stock market, as momentum might not be strong if the UP market states are extreme, and/or I assume lower overconfidence and more risk aversion of investors in emerging markets. This finding in this section is also inconsistent with the finding of Chen et al. (2012) and Du et al. (2009). However, the data used in their research is different from the data implemented in this research. In the next section, this problem is discussed in detail, which suggests that the findings of this research and those of Chen et al. (2012) is consistent when using the same period of data.

2.5 Comparison of Results with the Research of Chen et al. (2012)

Besides the empirical results I found in Section 2.4, I have also tried to replicate the research by Chen et al. (2012), as they found higher momentum returns following UP market states than following DOWN market states, which is inconsistent with my findings in Section 2.4. It is necessary to replicate their research to find out the reasons of such inconsistence. In their paper, they used weekly A-share stocks data in the Shanghai and Shenzhen stock exchanges from January 1995 to April 2010 to test for possible patterns of momentum profitability in the Chinese stock market following different market states. They found contrarian profits in the decile equally weighted strategies without skipping any intervals between formation- and holding-periods. The market condition they used to define market states is the past 13-week

cumulative value weighted market returns, which is equivalent to 3 months. Generally, they reveal that the contrarian strategies following DOWN market states are more profitable than the ones following past 13-week UP markets for the strategies with the same formation and holding periods. They assert that the significant contrarian profits observed for overall market states were mainly due to contrarian profits following DOWN market states, rather than from those following UP market states.

The work of Chen et al. (2012) is replicated as much as possible. Nevertheless, as the raw data used in my research is monthly data, momentum strategies of J=1, 2, 3, 4, 5, 6 and K=1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12-month can be tested. The reason for testing holding periods up to 12 months is to find out whether negative momentum profits–positive contrarian profits mainly contribute to DOWN market states when holding periods are extended. Here, market states are defined as the past 3 months cumulative value weighted market returns equivalent to 13 weeks for weekly data used in the research of Chen et al. (2012) The empirical results are presented in Table 2.5.

Before beginning with the discussion of the empirical results for period of 1995 to 2010, the main findings of Chen et al. (2012) are given hereafter. They have tested weekly strategies of J=1, 2, 4, 8, 12, 16 and 24 weeks, and K=1, 2, 4, 8, 12 and 16 weeks. For these weekly strategies they tested, they found 3 significant contrarian strategies following UP market states and 24 significant contrarian strategies following DOWN market states. Hence, they asserted there are stronger relevant momentum following UP market states than following DOWN market states, in line with the predictions of DHS and HS. The weekly strategies tested by Chen et al. (2012) are equivalent to J=1, 2, 3, 4 and 6 months and K=1, 2, 3 and 4 months, which can be compared with their results. For these 20 strategies, they found no significant results from UP market states and 17 significantly positive contrarian profits (negative momentum profits) from DOWN market states.

In Table 2.5, average monthly momentum profits following different market states are presented for sub-sample periods from January 1995 to March 2010. The comparable and equivalent strategies to the ones tested in the research of Chen et al. (2012) are highlighted with bold lines in Table 2.5. A significantly negative result in Table 2.5 means significant contrarian profit as presented in the paper of Chen et al. (2012). There are in total 20 momentum strategies following UP and DOWN market states, which are equivalent to the weekly strategies tested in Chen et al. (2012) and with which they can be compared with.

Among these 20 strategies, 4 significant results were found out of 20 strategies following UP market states, while 6 out of 20 strategies following DOWN market states were significantly negative. Hence, taking only these 20 strategies into account, stronger relevant momentum is found following UP market states than following DOWN market states.

Nevertheless, when the formation and holding periods are expanded to J up to 6 months and K up to 12 months, the main findings changed. In Panel A, Table 2.5, when the formation and holding periods are expanded to 6 months and 12 months respectively, 6 significantly[38] negative momentum profits are found out of 72 strategies following 3 months' UP market states. In Panel B, Table 2.5, 6 significantly negative momentum profits are found out of 72 strategies following 3 months' cumulative DOWN market states. Thus, it can be concluded that when the formation and holding period are expanded, the negative momentum profits (positive contrarian profits) found cannot be attributed to momentum strategies solely following UP markets or DOWN states. Moreover, it is not clear whether there are stronger relevant momentum effects following UP market states than following DOWN market states or not.

When holding and formation periods are the same to the ones in Chen et al. (2012), it is found that the findings based on the monthly data collected by myself are accordant with the findings of Chen et al. (2012). However, when the formation and holding periods are expanded, the findings are mixed.

To conclude, the inconsistency between the findings of my research in Section 2.4 and the ones from Chen et al. (2012) is due to different sample periods and different formation and holding periods. When a sample period of January 1995 to March 1995 - the same sample period used in Chen et al. (2012) - is used, it is found that the findings are accordant with each other. Additionally, when formation and holding periods are expanded beyond 4 months, as used in Chen et al. (2012), the results were consistent with the ones presented in this chapter. Thus, the research of Chen et al. (2012) does not provide a full vision of the momentum effects following the UP and DOWN market states in the Chinese stock market, as they use only a limited number of potential formation and holding periods' values. The research in this chapter gives a much broader picture on the existence of momentum effects following UP and DOWN market states in the Chinese stock market.

[38] At the 10% significant level. The same significant level hereafter.

As I found that the main findings of market states using data sample of 1993 to 2012 in Section 2.4 and of 1995-2010 in Section 2.5 are different, this suggests that the sign and magnitude of momentum effects varies over time. Thus, further examination of the momentum/contrarian strategies in different sub sample periods is necessary, as in Chapter 1. This is because such an examination can provide a detailed insight into momentum effects following UP and DOWN market states during different sub-sample periods.

Table 2.5 Findings of momentum profitability following different market states in different sub-sample periods

Panel A: Average Monthly Momentum Returns Following 3-month UP markets: January 1995-March 2010												
J/K	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**	**12**
01	-0.0052	-0.0097*	-0.0051	-0.0051	-0.0053	-0.0034	-0.0033	-0.0033	-0.0030	-0.0026	-0.0021	-0.0018
	(-0.82)	(-1.84)	(-1.23)	(-1.43)	*(-1.72)	(-1.38)	(-1.42)	(-1.46)	(-1.46)	(-1.30)	(-1.08)	(-0.96)
02	-0.0135*	-0.0102	-0.0065	-0.0074	-0.0061	-0.0045	-0.0043	-0.0043	-0.0037	-0.0028	-0.0021	-0.0021
	(-1.82)	(-1.62)	(-1.21)	(-1.62)	(-1.66)	(-1.41)	(-1.43)	(-1.49)	(-1.37)	(-1.05)	(-0.82)	(-0.83)
03	-0.0097	-0.0088	-0.0073	-0.0064	-0.0050	-0.0038	-0.0039	-0.0037	-0.0029	-0.0025	-0.0022	-0.0026
	(-1.29)	(-1.29)	(-1.20)	(-1.29)	(-1.20)	(-0.99)	(-10.7)	(-1.05)	(-0.87)	(-0.77)	(-0.69)	(-0.82)
04	-0.0097	-0.0099	-0.0069	-0.0058	-0.0047	-0.0038	-0.0033	-0.0027	-0.0021	-0.0020	-0.0022	-0.0026
	(-1.26)	(-1.44)	(-1.19)	(-1.14)	(-1.04)	(-0.89)	(-0.80)	(-0.68)	(-0.54)	(-0.52)	(-0.60)	(-0.72)
05	-0.0131*	-0.0104	-0.0068	-0.0056	-0.0049	-0.0039	-0.0033	-0.0028	-0.0026	-0.0024	-0.0025	-0.0024
	(-1.77)	(-1.66)	(-1.21)	(-1.09)	(-1.03)	(-0.85)	(-0.74)	(-0.64)	(-0.61)	(-0.58)	(-0.63)	(-0.61)
06	-0.0134*	-0.0113*	-0.0072	-0.0063	-0.0053	-0.0042	-0.0035	-0.0036	-0.0035	-0.0035	-0.0031	-0.0037
	(-1.97)	(-1.83)	(-1.24)	(-1.17)	(-1.03)	(-1.82)	(-0.71)	(-0.75)	(-0.74)	(-0.77)	(-0.69)	(-0.85)
Panel B: Average Monthly Momentum Returns Following 3-month DOWN markets: January 1995-March 2010												
J/K	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**	**12**
01	-0.0085**	-0.0089***	-0.0052*	-0.0026	-0.0026	-0.0005	-0.0001	-0.0007	-0.0006	-0.0007	-0.0002	0.00026
	(-2.39)	(-2.78)	(-1.97)	(-1.14)	(-1.22)	(-0.26)	(-0.04)	(-0.42)	(-0.35)	(-0.46)	(-0.17)	(-0.18)
02	-0.0131***	-0.0086**	-0.0044	-0.0024	-0.0005	0.0007	0.0005	0.0002	0.0002	0.0008	0.0012	0.0011
	(-2.75)	(-2.17)	(-1.31)	(-0.79)	(-0.79)	(0.24)	(0.20)	(0.07)	(0.11)	(0.36)	(0.57)	(0.51)
03	-0.0094**	-0.0049	-0.0022	0.00069	0.00136	0.00198	0.00151	0.00107	0.0017	0.00213	0.00188	0.0019
	(-1.99)	(-1.15)	(-0.55)	(-0.18)	(0.39)	(0.59)	(0.47)	(0.35)	(0.59)	(0.78)	(0.70)	(0.71)
04	-0.0052	-0.0032	0.0007	0.0021	0.0028	0.0028	0.0023	0.0026	0.0030	0.0026	0.00249	0.00205
	(-1.08)	(-0.71)	(0.16)	(0.53)	(0.71)	(0.76)	(0.65)	(0.78)	(0.93)	(0.83)	(0.80)	(0.67)
05	-0.0052	-0.0005	0.0017	0.0030	0.0029	0.0028	0.0031	0.0032	0.0026	0.0025	0.0019	0.0016
	(-1.02)	(-0.10)	(0.36)	(0.69)	(0.69)	(0.68)	(0.81)	(0.85)	(0.72)	(0.71)	(0.54)	(0.47)
06	-0.0004	0.0013	0.0029	0.0035	0.0030	0.0037	0.0038	0.0028	0.0028	0.0022	0.0017	0.0013
	(-0.07)	(0.26)	(0.59)	(0.75)	(0.68)	(0.88)	(0.91)	(0.69)	(0.72)	(0.56)	(0.46)	(0.35)

*Notes: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J month's accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with the lowest past returns are denoted as losers. The figures in the table are average returns of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at the 10%, 5% and 1% significant levels using T-test respectively.*

2.6 Findings of Momentum Effects Following Different Market States in Different Sub-Sample Periods

It is found that the main findings of market states using the data sample of 1993 to 2012 in Section 2.4 and the sample period of 1995 to 2010 in Section 2.5 are not fully accordant with each other. Stronger significantly negative momentum returns/significantly positive contrarian returns were found following UP market states than following DOWN market states for the sample period of 1993 to 2012. However, the findings for sample period of 1995 to 2010 show that significantly negative momentum returns are almost equally presented following UP and DOWN market states. It is also found that when sample periods changed, the findings of momentum following different market states might be different. Hence, it is necessary to test momentum following different market states in different sub-sample periods to provide further insight on this topic.

2.6.1 Results of momentum effects following UP and DOWN market states in different sub-sample periods

Following Chapter 1, whole sample period has been divided into 5 different sub-sample periods, which are January 1993 to December 1996, January 1997 to December 2000, January 2001 to December 2004, January 2005 to December 2008 and January 2009 to December 2012. I used the same methods stated in Section 2.3, Chapter 2 to re-examine the sub-sample periods. The whole sample period is divided into five sub-sample and in each sub-sample period strategies were then divided into two market states: UP and DOWN. Hence, the number of available sample size is quite small in each market-state in each sub-sample period. I have adjusted the standard errors according to heteroscedasticity-consistent covariance matrix estimators using White's heteroscedasticity-corrected standard errors. The reason was stated in Section 2.3, while the results are presented in Table 2.6. To make the patterns clear, I omitted the specific results of each strategy in Table 2.6, with only signs, notation of significance and number of observations kept. The detailed results are presented in Appendix B5 to B9. In Table 2.6, the sign before each returns are presented in parentheses, while the number of observations is presented in square brackets and significance is presented using stars. * means the results are significant at the 10% level, ** means the results are significant at 5% level and *** means the results are significant at 1% level.

Table 2.6 Average Monthly Momentum Returns following 3 Months Market-States in Different Sub-Sample Period

J-K Strategies	Market States	1993-2012	1993-1996	1997-2000	2001-2004	2005-2008	2009-2012
	WHOLE	(-)**	(-)	(+)	(-)	(-)**	(-)***
01-01	**UP**	(-)[103]	(-)[17]	(+)[20]	(-)[18]	(-)[21]	(-)**[26]
	DOWN	(-)***[136]	(-)[30]	(-)[27]	(-)[29]	(-)**[26]	(-)**[21]
	WHOLE	(-)***	(-)	(-)	(-)*	(-)**	(-)***
01-02	**UP**	(-)**[102]	(-)[16]	(-)[20]	(-)[18]	(-)[21]	(-)**[25]
	DOWN	(-)***[136]	(-)[30]	(-)[26]	(-)[28]	(-)*[25]	(-)***[21]
	WHOLE	(-)***	(-)	(-)	(-)	(-)**	(-)***
01-03	**UP**	(-)*[102]	(-)[16]	(-)[19]	(-)**[18]	(-)[21]	(-)[24]
	DOWN	(-)**[135]	(-)[29]	(-)[26]	(+)[27]	(-)*[24]	(-)**[21]
	WHOLE	(-)**	(-)	(-)	(-)	(-)**	(-)*
01-04	**UP**	(-)**[102]	(-)[16]	(-)[18]	(-)*[17]	(-)[21]	(-)[23]
	DOWN	(-)[134]	(-)[28]	(-)[26]	(+)[27]	(-)*[23]	(-)[21]
	WHOLE	(-)**	(-)	(-)	(-)	(-)**	(-)**
01-05	**UP**	(-)**[102]	(-)[16]	(-)[17]	(-)[16]	(-)[21]	(-)*[22]
	DOWN	(-)[133]	(+)[27]	(-)[26]	(+)[27]	(-)*[22]	(-)[21]
	WHOLE	(-)*	(-)	(-)	(+)	(-)**	(-)**
01-06	**UP**	(-)**[102]	(-)[16]	(-)[16]	(-)[15]	(-)[21]	(-)**[21]
	DOWN	(-)[132]	(+)[26]	(+)[26]	(+)[27]	(-)*[21]	(-)[21]
	WHOLE	(-)	(-)	(-)	(+)	(-)**	(-)**
01-07	**UP**	(-)*[102]	(+)[16]	(-)[16]	(-)[15]	(-)[21]	(-)[20]
	DOWN	(-)[131]	(+)[25]	(+)[25]	(+)[26]	(-)**[20]	(-)[21]
	WHOLE	(-)	(-)	(-)	(+)	(-)**	(-)
01-08	**UP**	(-)*[102]	(-)[16]	(-)[16]	(-)[15]	(-)[20]	(-)[19]
	DOWN	(-)[130]	(-)[424]	(+)[24]	(+)[25]	(-)**[20]	(-)[21]
	WHOLE	(-)	(-)	(-)	(+)	(-)*	(-)
01-09	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(-)[19]	(-)[19]
	DOWN	(-)[129]	(+)[23]	(+)[23]	(+)*[24]	(-)***[20]	(-)[20]
	WHOLE	(-)	(-)	(-)	(+)	(-)*	(-)
01-10	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(-)[19]	(-)[19]
	DOWN	(-)[128]	(-)[22]	(+)[22]	(+)**[23]	(-)***[19]	(-)[19]
	WHOLE	(-)	(-)	(-)	(+)	(-)	(-)
01-11	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(+)[19]	(-)[18]
	DOWN	(-)[127]	(-)[21]	(+)[21]	(+)**[22]	(-)***[18]	(-)*[19]
	WHOLE	(-)	(-)	(-)	(+)	(-)	(-)
01-12	**UP**	(-)[102]	(+)[16]	(-)[15]	(-)[15]	(+)[18]	(-)[17]
	DOWN	(-)[126]	(-)[20]	(+)[21]	(+)**[21]	(-)**[18]	(-)[19]

Table 2.6 Continued

J-K Strategies	Market States	1993-2012	1993-1996	1997-2000	2001-2004	2005-2008	2009-2012
	WHOLE	(-)***	(-)	(-)	(-)**	(-)**	(-)***
02-01	**UP**	(-)**[102]	(-)[16]	(-)[20]	(-)*[18]	(-)[21]	(-)**[25]
	DOWN	(-)**[136]	(-)[30]	(-)[26]	(-)[28]	(-)[25]	(-)**[21]
	WHOLE	(-)***	(+)	(-)	(-)	(-)**	(-)***
02-02	**UP**	(-)**[102]	(-)[16]	(-)[19]	(-)**[18]	(-)[21]	(-)[24]
	DOWN	(-)*[135]	(+)[29]	(-)[26]	(+)[27]	(-)[24]	(-)**[21]
	WHOLE	(-)**	(-)	(-)*	(-)	(-)*	(-)
02-03	**UP**	(-)*[102]	(-)[16]	(-)[18]	(-)**[17]	(-)[21]	(-)[23]
	DOWN	(-)[134]	(-)[28]	(-)[26]	(+)[27]	(-)[23]	(-)**[21]
	WHOLE	(-)*	(+)	(-)	(-)	(-)*	(-)*
02-04	**UP**	(-)**[102]	(-)[16]	(-)[17]	(-)*[16]	(-)[21]	(-)*[22]
	DOWN	(-)[133]	(+)[27]	(-)[26]	(-)[27]	(-)[22]	(-)[21]
	WHOLE	(-)	(-)	(-)	(+)	(-)*	(-)*
02-05	**UP**	(-)**[102]	(-)[16]	(-)[16]	(-)[15]	(-)[21]	(-)*[21]
	DOWN	(-)[132]	(+)[26]	(+)[26]	(-)[27]	(-)[21]	(-)[21]
	WHOLE	(-)	(+)	(-)	(+)	(-)**	(-)*
02-06	**UP**	(-)*[102]	(+)[16]	(-)[16]	(-)[15]	(-)[21]	(-)*[20]
	DOWN	(+)[131]	(+)[25]	(+)[25]	(+)[26]	(-)*[20]	(-)[21]
	WHOLE	(-)	(+)	(-)	(+)	(-)*	(-)
02-07	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(-)[20]	(-)[19]
	DOWN	(+)[130]	(+)[24]	(+)[24]	(+)[25]	(-)**[20]	(-)[21]
	WHOLE	(-)	(+)	(-)	(+)	(-)*	(-)
02-08	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(-)[19]	(-)[19]
	DOWN	(+)[129]	(+)[23]	(+)[23]	(+)[24]	(-)**[20]	(-)[21]
	WHOLE	(-)	(+)	(-)	(+)	(-)	(-)
02-09	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(+)[19]	(-)[19]
	DOWN	(+)[128]	(+)[22]	(+)[22]	(+)*[23]	(-)***[19]	(-)[20]
	WHOLE	(-)	(+)	(-)	(+)	(-)	(-)
02-10	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(+)[19]	(-)[18]
	DOWN	(-)[127]	(-)[21]	(+)[21]	(+)**[22]	(-)**[18]	(-)[19]
	WHOLE	(-)	(+)	(-)	(+)	(-)	(-)
02-11	**UP**	(-)[102]	(+)[16]	(-)[15]	(-)[15]	(+)[18]	(+)[17]
	DOWN	(+)[126]	(-)[20]	(+)[21]	(+)**[21]	(-)**[18]	(-)[19]
	WHOLE	(-)[125]	(+)	(-)	(+)	(-)	(-)
02-12	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(+)[17]	(+)[17]
	DOWN	(+)[125]	(-)[19]	(+)[20]	(+)**[20]	(-)**[18]	(-)[19]

Table 2.6 Continued

J-K Strategies	Market States	1993-2012	1993-1996	1997-2000	2001-2004	2005-2008	2009-2012
	WHOLE	(-)***	(-)	(-)	(-)	(-)**	(-)***
03-01	**UP**	(-)*[102]	(-)[16]	(-)[19]	(-)**[18]	(-)[21]	(-)[24]
	DOWN	(-)***[135]	(-)[29]	(-)[26]	(+)[27]	(-)[24]	(-)**[21]
	WHOLE	(-)**	(-)	(-)*	(-)	(-)*	(-)*
03-02	**UP**	(-)*[102]	(-)[16]	(-)*[18]	(-)**[17]	(-)[21]	(-)[23]
	DOWN	(-)[134]	(-)[28]	(-)[26]	(+)[27]	(-)[23]	(-)[21]
	WHOLE	(-)	(+)	(-)	(-)	(-)	(-)
03-03	**UP**	(-)*[102]	(+)[16]	(-)[17]	(-)*[16]	(-)[21]	(-)[22]
	DOWN	(-)[133]	(-)[27]	(-)[26]	(+)[27]	(-)[22]	(-)[21]
	WHOLE	(-)	(+)	(-)	(+)	(-)	(-)
03-04	**UP**	(-)*[102]	(+)[16]	(-)*[16]	(-)[15]	(-)[21]	(-)[21]
	DOWN	(+)[132]	(-)[26]	(+)[26]	(+)[27]	(-)[21]	(-)[21]
	WHOLE	(-)	(+)	(-)	(+)	(-)**	(-)
03-05	**UP**	(-)*[102]	(+)[16]	(-)[16]	(-)[15]	(-)[21]	(-)[20]
	DOWN	(+)[131]	(+)[25]	(+)[25]	(+)[26]	(-)*[20]	(-)[21]
	WHOLE	(-)	(+)	(+)	(+)	(-)	(-)
03-06	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(-)[20]	(-)[19]
	DOWN	(+)[130]	(+)[24]	(+)[24]	(+)*[25]	(-)*[20]	(-)[21]
	WHOLE	(-)	(+)	(+)	(+)	(-)	(-)
03-07	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(-)[19]	(-)[19]
	DOWN	(+)[129]	(+)[23]	(+)[23]	(+)*[24]	(-)**[20]	(-)[20]
	WHOLE	(-)	(+)	(-)	(+)	(-)	(-)
03-08	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(+)[19]	(-)[19]
	DOWN	(+)[128]	(-)[22]	(+)[22]	(+)*[23]	(-)**[19]	(-)[19]
	WHOLE	(-)	(+)	(-)	(+)	(-)	(-)
03-09	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(+)[19]	(-)[18]
	DOWN	(+)[127]	(-)[21]	(+)[21]	(+)**[22]	(-)**[18]	(-)[19]
	WHOLE	(-)	(+)	(-)	(+)	(-)	(-)
03-10	**UP**	(-)[102]	(+)[16]	(-)[15]	(-)[15]	(+)[18]	(+)[17]
	DOWN	(+)[126]	(-)[20]	(+)[21]	(+)**[21]	(-)*[18]	(-)[19]
	WHOLE	(-)	(+)	(-)	(+)	(-)	(-)
03-11	**UP**	(-)[102]	(+)[16]	(-)[15]	(-)[15]	(+)[17]	(+)[17]
	DOWN	(+)[125]	(-)[19]	(+)[20]	(+)**[20]	(-)*[18]	(-)[18]
	WHOLE	(-)	(+)	(-)	(+)	(-)	(-)
03-12	**UP**	(-)[102]	(+)[16]	(-)[14]	(-)[15]	(+)[16]	(+)[17]
	DOWN	(+)[124]	(-)[18]	(+)[20]	(+)***[19]	(-)*[18]	(-)[17]

Table 2.6 Continued

J-K Strategies	Market States	1993-2012	1993-1996	1997-2000	2001-2004	2005-2008	2009-2012
	WHOLE	(-)**	(-)	(-)	(-)	(-)**	(-)***
04-01	**UP**	(-)**[102]	(-)[16]	(-)[18]	(-)*[17]	(-)[21]	(-)[23]
	DOWN	(-)[134]	(-)[28]	(+)[26]	(+)[27]	(-)[23]	(-)[21]
	WHOLE	(-)*	(+)	(-)	(-)	(-)*	(-)*
04-02	**UP**	(-)**[102]	(+)[16]	(-)[17]	(-)*[16]	(-)[21]	(-)*[22]
	DOWN	(-)[133]	(+)[27]	(+)[26]	(+)[27]	(-)[22]	(-)[21]
	WHOLE	(-)	(-)	(-)	(+)	(-)*	(-)
04-03	**UP**	(-)*[102]	(+)[16]	(-)*[16]	(-)[15]	(-)[21]	(-)[21]
	DOWN	(+)[132]	(-)[26]	(+)[26]	(+)[27]	(-)[21]	(-)[21]
	WHOLE	(-)	(+)	(-)	(+)	(-)**	(-)
04-04	**UP**	(-)*[102]	(+)[16]	(-)[16]	(-)[15]	(-)*[21]	(-)[20]
	DOWN	(+)[131]	(+)[25]	(+)[25]	(+)[26]	(-)[20]	(-)[21]
	WHOLE	(-)	(+)	(+)	(+)	(-)*	(-)
04-05	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(-)*[20]	(-)[19]
	DOWN	(+)[130]	(+)[24]	(+)[24]	(+)[25]	(-)[20]	(-)[21]
	WHOLE	(-)	(+)	(+)	(+)	(-)	(-)
04-06	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(-)*[19]	(-)[19]
	DOWN	(+)[129]	(+)[23]	(+[23]	(+)**[24]	(-)[20]	(-)[20]
	WHOLE	(-)	(+)	(+)	(+)	(-)	(-)
04-07	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(+)[19]	(-)[19]
	DOWN	(+)[128]	(+)[22]	(+)[22]	(+)**[23]	(-)**[19]	(-)[19]
	WHOLE	(-)	(+)	(-)	(+)	(-)	(-)
04-08	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(+)[19]	(-)[18]
	DOWN	(+)[127]	(-)[21]	(+)[21]	(+)**[22]	(-)**[18]	(-)[19]
	WHOLE	(-)	(+)	(-)	(+)	(-)	(-)
04-09	**UP**	(-)[102]	(+)[16]	(-)[15]	(-)[15]	(+)[18]	(+)[17]
	DOWN	(+)[126]	(-)[20]	(+)[21]	(+)**[21]	(-)*[18]	(-)[19]
	WHOLE	(-)	(+)	(-)	(+)	(-)	(-)
04-10	**UP**	(-)[102]	(+)[16]	(-)[15]	(-)[15]	(+)[17]	(+)[17]
	DOWN	(+)[125]	(-)[19]	(+)[20]	(+)**[20]	(-)*[18]	(-)[18]
	WHOLE	(-)	(+)	(-)	(+)	(-)	(-)
04-11	**UP**	(-)[102]	(+)[16]	(-)[14]	(-)[15]	(+)[16]	(+)[17]
	DOWN	(+)[124]	(-)[18]	(+)[20]	(+)***[19]	(-)*[18]	(-)[17]
	WHOLE	(-)	(-)	(-)	(+)*	(-)	(-)
04-12	**UP**	(-)[102]	(+)[16]	(-)[14]	(-)[15]	(+)[15]	(+)[17]
	DOWN	(-)[123]	(-)[19]	(+)[19]	(+)***[18]	(-)**[18]	(-)[16]

Table 2.6 Continued

J-K Strategies	Market States	1993-2012	1993-1996	1997-2000	2001-2004	2005-2008	2009-2012
	WHOLE	(-)**	(+)	(-)	(-)	(-)**	(-)**
05-01	**UP**	(-)**[102]	(-)[16]	(-)[17]	(-)[16]	(+)[21]	(-)**[22]
	DOWN	(-)[133]	(+)[27]	(-)[26]	(+)[27]	(-)[22]	(-)[21]
	WHOLE	(-)*	(+)	(-)	(+)	(-)*	(-)*
05-02	**UP**	(-)**[102]	(-)[16]	(-)[16]	(-)[15]	(+)[21]	(-)*[21]
	DOWN	(-)[132]	(+)[26]	(-)[26]	(+)[27]	(-)[21]	(-)[21]
	WHOLE	(-)	(+)	(-)	(+)	(-)**	(-)
05-03	**UP**	(-)**[102]	(+)[16]	(-)[16]	(-)[15]	(+)[21]	(-)[20]
	DOWN	(+)[131]	(+)[25]	(+)[25]	(+)[26]	(-)*[20]	(-)[21]
	WHOLE	(-)	(+)	(+)	(+)	(-)	(-)
05-04	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(+)[20]	(-)[19]
	DOWN	(+)[130]	(+)[24]	(+)[24]	(+)[25]	(-)*[20]	(-)[21]
	WHOLE	(-)	(+)	(+)	(+)	(-)	(-)
05-05	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(+)[19]	(-)[19]
	DOWN	(+)[129]	(+)[23]	(+)[23]	(+)*[24]	(-)*[20]	(-)[20]
	WHOLE	(-)	(+)	(+)	(+)	(-)	(-)
05-06	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(+)[19]	(-)[19]
	DOWN	(+)[128]	(+)[22]	(+)[22]	(+)**[23]	(-)**[19]	(-)[19]
	WHOLE	(-)	(+)	(-)	(+)	(-)	(-)
05-07	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(+)[19]	(-)[18]
	DOWN	(+)[127]	(-)[21]	(+)[21]	(+)**[22]	(-)*[18]	(-)[19]
	WHOLE	(-)	(+)	(-)	(+)*	(-)	(-)
05-08	**UP**	(-)[102]	(+)[16]	(-)[15]	(-)[15]	(+)[18]	(+)[17]
	DOWN	(+)[126]	(-)[20]	(+)[21]	(+)**[21]	(-)*[18]	(-)[19]
	WHOLE	(-)	(+)	(-)	(+)	(-)	(-)
05-09	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(+)[17]	(+)[17]
	DOWN	(+)[125]	(-)[19]	(+)[20]	(+)**[20]	(-)*[18]	(-)[18]
	WHOLE	(-)	(+)	(-)	(+)	(-)	(-)
05-10	**UP**	(-)[102]	(+)[16]	(-)[14]	(-)[15]	(+)[16]	(+)[17]
	DOWN	(+)[124]	(-)[18]	(+)[20]	(+)***[19]	(-)*[18]	(-)[17]
	WHOLE	(-)	(+)	(-)	(+)*	(-)	(-)
05-11	**UP**	(-)[102]	(+)[16]	(-)[14]	(-)[15]	(+)[15]	(+)[17]
	DOWN	(-)[123]	(-)[17]	(+)[19]	(+)***[18]	(-)*[18]	(-)[16]
	WHOLE	(-)	(+)	(-)	(+)*	(-)	(-)
05-12	**UP**	(-)[102]	(+)[16]	(-)[14]	(-)[14]	(-)[14]	(+)[17]
	DOWN	(-)[122]	(-)[16]	(+)[18]	(+)***[18]	(-)**[18]	(-)[16]

Table 2.6 Continued

J-K Strategies	Market States	1993-2012	1993-1996	1997-2000	2001-2004	2005-2008	2009-2012
	WHOLE	(-)**	(-)	(-)	(+)	(-)***	(-)**
06-01	**UP**	(-)**[102]	(-)[16]	(-)[16]	(-)[15]	(-)[21]	(-)**[21]
	DOWN	(-)[132]	(-)[26]	(+)[26]	(+)[27]	(-)**[21]	(-)[21]
	WHOLE	(-)	(+)	(-)	(+)	(-)**	(-)*
06-02	**UP**	(-)**[102]	(+)[16]	(-)[16]	(-)[15]	(-)[21]	(-)*[20]
	DOWN	(-)[131]	(+)[25]	(+)[25]	(+)[26]	(-)*[20]	(-)[21]
	WHOLE	(-)	(+)	(+)	(+)	(-)*	(-)
06-03	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(-)[20]	(-)[19]
	DOWN	(+)[130]	(+)[24]	(+)[24]	(+)[25]	(-)*[20]	(-)[21]
	WHOLE	(-)	(+)	(+)	(+)	(-)	(-)
06-04	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(-)[19]	(-)[19]
	DOWN	(+)[129]	(+)[23]	(+)[23]	(+)**[24]	(-)*[20]	(-)[20]
	WHOLE	(-)	(+)	(+)	(+)	(-)	(-)
06-05	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(+)[19]	(-)[19]
	DOWN	(+)[128]	(+)[22]	(+)[22]	(+)**[23]	(-)*[19]	(-)[19]
	WHOLE	(-)	(+)	(-)	(+)*	(-)	(-)
06-06	**UP**	(-)[102]	(+)[16]	(-)[16]	(-)[15]	(+)[19]	(-)[18]
	DOWN	(+)[127]	(-)[21]	(+)[21]	(+)**[22]	(-)*[18]	(-)[19]
	WHOLE	(-)	(+)	(-)	(+)*	(-)	(-)
06-07	**UP**	(-)[102]	(+)[16]	(-)[15]	(-)[15]	(+)[18]	(+)[17]
	DOWN	(+)[126]	(-)[20]	(+)[21]	(+)**[21]	(-)**[18]	(-)[19]
	WHOLE	(-)	(+)	(-)	(+)	(-)	(-)
06-08	**UP**	(-)[102]	(+)[16]	(-)[15]	(-)[15]	(+)[17]	(+)[17]
	DOWN	(+)[125]	(-)[19]	(+)[20]	(+)**[20]	(-)**[18]	(-)[18]
	WHOLE	(-)	(+)	(-)	(+)*	(-)	(-)
06-09	**UP**	(-)[102]	(+)[16]	(-)[14]	(-)[15]	(+)[16]	(+)[17]
	DOWN	(+)[124]	(-)[18]	(+)[20]	(+)***[19]	(-)**[18]	(-)[17]
	WHOLE	(-)	(-)	(-)	(+)*	(-)	(-)
06-10	**UP**	(-)[102]	(+)[16]	(-)[14]	(-)[15]	(+)[15]	(+)[17]
	DOWN	(-)[123]	(-)[17]	(+)[19]	(+)***[18]	(-)***[18]	(-)[16]
	WHOLE	(-)	(+)	(-)	(+)*	(-)	(-)
06-11	**UP**	(-)[102]	(+)[16]	(-)[14]	(-)[14]	(-)[14]	(-)[14]
	DOWN	(-)[122]	(-)[16]	(+)[18]	(+)***[18]	(-)***[18]	(+)***[18]
	WHOLE	(-)	(-)	(-)	(+)*	(-)	(-)
06-12	**UP**	(-)[102]	(+)[16]	(-)[13]	(-)[13]	(-)[13]	(-)[13]
	DOWN	(-)[121]	(-)[15]	(+)[18]	(+)**[18]	(-)**[18]	(+)***[18]

*Note: * indicates the results are significant at the 10% level, ** indicates the results are significant at the 5% level and *** indicates the results are significant at the 1% level. Signs in ( ) are the signs of empirical results. Numbers in [ ] are numbers of the months following UP market states and DOWN market states respectively.*

Looking at Table 2.6, almost no significant results appear in the sub-sample periods of 1993-1996 and 1997-2000 for the whole market state[39], and for UP and DOWN market states. The only exceptions are the 02-03 whole market state, 03-02 whole market state and 03-04 whole market state in the sub-sample period of 1997-2000. Hence, the first conclusion that can be drawn from the results is that the negative momentum returns/positive contrarian returns of 1993 to 2012 are generated by sub-sample periods after 2000.

For whole market states in the sub-sample period of 2001-2004, 12 significant returns are found, in which 2 are negative momentum returns/positive contrarian returns and 10 are positive momentum returns/negative contrarian returns for the whole market state. For UP and DOWN market states in the sub-sample of 2001-2004, it was found that there are 8 significantly negative momentum returns in UP market states and 38 significantly positive momentum returns in DOWN markets. I can then assert that the significantly positive momentum returns in period of 2001 to 2004 sub-sample period were generated by DOWN market states rather than UP market states. However, this finding is contradicted by the findings of Chen et al. (2012). The prediction of DHS and HS suggests that momentum profits should be higher following UP market states than following DOWN market states. The findings from sub-sample period of 2001-2004 contradict both of the models presented by DHS and HS. The reason of the inconsistence is discussed in Section 2.6.2 in details.

In the sub-sample period of 2005-2008, I found there were 32 significantly negative momentum returns/positive contrarian returns in whole market-state, 3 significantly negative/positive contrarian returns in UP market states and 55 significantly negative momentum/positive contrarian returns in DOWN market states. Therefore, the contrarian effect found from 2005-2008 is to be attributed mainly to the strategies following the DOWN market states. I also noticed that, in the sub-sample period of 2005-2008 some strategies following UP market states generated positive momentum returns though the results are not statistically significant. Although, it cannot be asserted that contrarian effects in whole market states are covered up by momentum effects in UP market states (as these positive momentum returns are not statistically significant), it can be proclaimed that contrarian strategies are more effective following the market decline in the period of 2005-2008. These findings revealed from the sub-sample period of 2005-2008 are consistent with the findings of Chen et al. (2012), which are presented and discussed in Section 2.5. Additionally, there are no

[39] The whole market state refers to the whole market which does not defined by past cumulative market returns.

significant returns following UP market states, while there exists 54 significantly negative momentum returns. Thus, momentum profits are higher following UP market states than following DOWN market states, which accords with the predictions of DHS and HS.

In the sub-sample period of 2009 to 2012, 20 significantly negative momentum/positive contrarian returns are found following the whole market states; 12 significantly negative momentum /positive contrarian returns are found from strategies following UP market states; and 8 significantly negative momentum/positive contrarian returns and 2 significantly positive momentum /negative contrarian returns are found from strategies following DOWN market states. Hence, negative momentum returns/contrarian effects found from sub-sample periods from 2009-2012 are roughly equally caused by strategies following UP and DOWN market states. Thus, one cannot assert that the findings for the sub-sample period of 2009-2012 are contradicting the predictions of DHS and HS.

In summary, the findings of sub-sample period of 2001-2004 suggest that weaker relevant momentum is found following UP market states than following DOWN market states. Such findings are contradicting the predictions of DHS and HS. Nevertheless, for the sub-sample period of 2005-2008, the findings suggest that there are stronger relevant momentum profits following UP market states than following DOWN market states, which is in line with DHS and HS. For sub-sample the period of 2009-2012, relevant momentum profits are almost equal following UP and DOWN market states. Thus, the findings from the sub-sample periods of 2005-2008 and 2009-2012 are consistent with the predictions of DHS and HS. The possible reasons of these consistent findings are discussed in Section 2.6.2.

2.6.2 Possible explanations of momentum effects following different market states in different sub-sample periods

Recall the literature review in Section 2.2, the widely accepted behavioural explanations to justify momentum profitability following different market states in a systematic framework were contributed by Daniel et al. (1998) and Hong and Stein (1999). According to the interpretations of Cooper et al. (2004), Daniel et al. (1998) have attributed momentum and following mean reversal to overreaction to private and underreaction to public information due to the overconfidence of investors. Derived from the DHS model, in UP market states, 'investors in aggregate hold long positions in the equity market' (Cooper et al., 2004), which increases in market prices 'attributed unduly to investor skill' (Cooper et al., 2004), and have resulted in greater aggregate overconfidence. 'If overconfidence is in fact higher following

market increases, then the overreactions will be stronger following these UP markets generating greater momentum in the short-run' (Cooper et al., 2004).

Hong and Stein (1999) have introduced another widely accepted behavioural model to explain short-run momentum followed by long-run mean-reversal. Their model also predicts price changes following dynamic market states relating to the risk aversion of momentum traders. They found that momentum traders' risk aversion decreases resulting in delayed overreaction, which eventually drives greater momentum profits. Campbell and Cochrane (1995), and Barberis et al. (2001), among others, suggest that risk aversion decreases as wealth increases, which provides another possible explanation to momentum profits following different market states. In UP market states, as wealth in general increases, investors' risk aversion decreases which leads to greater delayed overreaction. Hence, momentum profits are greater following UP market states. On the contrary, in DOWN market states, as wealth decreases, investors' risk aversion increases, which leads to less delayed overreaction. Hence, momentum profits are less following DOWN market states.

My findings so far show that contrarian rather than momentum effects dominate the Chinese stock market, and that momentum effects are generally weaker, not stronger following UP than DOWN markets. These results at first glance are at odds with the aforementioned behavioural models. Nevertheless, this does not mean that the Chinese stock market is fundamentally different from the assumptions in DHS and HS about investor's irrationality and biasness. As discussed in Section 2.4.6 and repeated here again, Cooper et al. (2004) pointed out that 'overconfidence theory does not necessarily predict a fully monotonic relation between lagged market returns and the level of overconfidence'. Thus, it can be inferred from their arguments that momentum might not be strong following UP market states if past UP market states are extremely strong, as overreaction caused by overconfidence might be diminished beyond some threshold level of extreme good market states, leading to reversals rather than continuations in prices.

Lastly, the frequency and magnitude of UP and DOWN market states might help to explain the results presented here. Following extreme but relatively rare UP market states in the Chinese stock, as investors are less overconfident and more risk averse, they should expect a rapid price drop (quick price reversal), thus, contrarian strategies should be more effective following UP market states. While following DOWN market states which are less extreme

and more frequent, investors would be less likely to expect a quick reversal and more likely to expect a weak continuation in price decline, consequently, momentum strategies would be profitably implemented following DOWN market states.

From Appendix B10, in the sub-sample of 2001-2004, the average monthly market return following UP market states in the Chinese stock market is not significantly different from the one in the US stock market. However, the average monthly market return following DOWN market states in the Chinese stock market is significantly lower than the one in the US stock market. Moreover, the absolute return in UP markets is lower than in DOWN markets in the sub-sample period of 2001-2004. Thus, in the sub-sample period of 2001-2004, there are extreme DOWN market states but normal UP market states. Therefore, the argument of Cooper et al. (2004) that too extreme UP markets beyond a certain threshold might cause price reversal rather than price continuation does not work in this sub-sample period. Hence, the findings of stronger momentum following UP markets than following DOWN market are revealed only in this sub-sample period, which is fully compatible with the prediction of DHS and SS.

Nonetheless, for the sub-sample period of 2005 to 2008, the average monthly market return following UP market states in the Chinese stock market is significantly higher than the one in the US stock market, and the average monthly market return following DOWN market states in the Chinese stock market is significantly lower than the one in the US stock market. Moreover, the absolute return of UP markets is higher than that of DOWN markets in the sub-sample period of 2005-2008. Thus, there are extreme UP markets in this sub-sample, according to Cooper et al. (2004); following such extreme UP market states, it is rational for investors to expect price continuation in UP markets resulting in contrarian profits following UP market states.

It can be seen from the sub-sample period of 2001-2004 that average monthly market returns following UP market states are the lowest among the five sub-sample periods while the average monthly market returns following DOWN market states are still low, suggesting a market crash. Therefore, after a long period of market decline, when the market again started to increase in the sub-sample period of 2005-2008, it is normal for investors to expect the price will continue to surge following an extreme bull market, resulting in relative stronger momentum following UP market states than DOWN ones.

In conclusion, my results are consistent with the findings of Du et al. (2009), Chui et al. (2000, 2010) and Patel and Sarkar (1998). Although no momentum profits were found in the Chinese market following both UP and DOWN markets, momentum profits caused by overreaction (DHS), delayed overreaction and risk aversion (HS) cannot be rejected. The difference between the evidence revealed in this chapter and momentum profits in developed markets might be due to there being weaker overreaction and stronger risk aversion on the part of Chinese investors and the different patterns of the UP and DOWN markets between the Chinese market and US market.

2.7 Summary and Conclusions of Chapter 2

In this chapter, I have used monthly data of Shanghai and Shenzhen Stock Exchanges from 1991 to 2012 to examine the theories of DHS and HS by dividing the whole market into UP and DOWN market states defined in the work of certain researchers (Cooper et al., 2004). In Section 2.4, the returns of momentum strategies using four different lengths to define market states are examined. I found that only when the past 6 months of cumulative value weighted market returns are used to defined market states, the significantly negative momentum returns/positive contrarian returns be attributed to strategies following DOWN market states. This finding is consistent with the models of DHS and HS and the findings of Chen et al. (2012). For all the other 3 lengths used to define market states, the significantly negative momentum returns/positive contrarian returns revealed that whole market states cannot be attributed to DOWN market states when DOWN market states are more severe. This finding is inconsistent with the models of DHS and HS and inconsistent with the findings of Chen et al. (2012).

The research of Chen et al. (2012) is replicated in Section 2.5. If I only examine the momentum strategies up to 4 months in both formation and holding periods as Chen et al. (2012) did, then the results are consistent with the findings of Chen et al. (2012). The negative momentum returns found from January 1995 to March 2010 are mainly contributed by strategies following DOWN market states. However, when holding periods and formation periods are extended beyond 4 months, the findings are different. Here, the significantly negative momentum returns/positive contrarian returns cannot be attributed mainly to strategies following DOWN market states.

Therefore, the findings of Chen et al. (2012) about the Chinese stock market regarding market states is subject from bias, which the lengths of the formation and holding periods in their research are limited, lack of extended examination. To find out why the findings are inconsistent with the models of DHS and HS, further examination of momentum effects following different market states in different sub-sample periods was carried out in Section 2.6. The limitation of the research is the limited observations in each sub-sample period in each market state. However, in order to reduce the impact of limited observations, standard errors have been adjusted following White's method.

Significant positive momentum returns were found in the sub-sample period of 2001-2004, but not in other sub-sample periods. The finding of the sub-sample period 2001-2004 further confirms the finding of the sub-sample period 2001-2004 in Chapter 1. The finding in the sub-sample period of 2005-2008 is consistent with the models of DHS and HS and also consistent with the finding of Chen et al. (2012). The reason for this may be due to the following reasons: weaker overreaction/delayed reaction due to less overconfidence and stronger risk aversion on the part of investors in the Chinese stock market. In addition, another reason might be that extreme UP and DOWN market states, where returns of the UP market states are higher than the absolute value of average return in DOWN market states.

The unexplained puzzle that the findings in this chapter are not consistent with the predictions of the models of DHS and HS. provides further motivation for Chapter 3. Why have no momentum profits been detected followed UP market states in the Chinese stock market? Moreover, whether the lack of momentum profits following UP market states is due to unique features of the Chinese stock market or is due to the Chinese stock market being fundamentally different from its developed peers remains an unresolved issue? Chapter 3 tries to answer this question.

Chapter 3 Momentum Effects under Different Market Dynamics in the Chinese Stock Market

3.1 Introduction

In Chapter 2, I examined momentum profits following different market states in the Chinese stock market. My findings revealed that there were no absolute significant momentum profits following UP market states as there should have been according to the prediction of Daniel et al. (1998) (hereafter DHS), in terms of the momentum effect following different market states. Instead, a more relevant momentum effect was found following UP market states rather than following DOWN market states. Such a finding was in accordance with the prediction of DHS about the momentum effect following different market states, but the failure to find any significantly positive momentum profits following UP market states remains a contradiction to the theory of DHS.

In order to understand whether the momentum effect in the Chinese stock market following different market states differs from other developed markets, I will examine in this chapter the momentum effect in the Chinese stock market following the application of different market dynamics. This method is inspired by the research of Asem and Tian (2011) and Hanauer (2014). Asem and Tian (2011) provide a method for examining the momentum effect following different subsequent market states conditionally on past market states. In addition, they found hard evidence that the theories of Daniel et al. (1998), Hong and Stein (1999) (hereafter SS) and Sagi and Seasholes (2007) (hereafter SS) can be used to explain the momentum effect following UP market states, while the theory of DHS can be used to explain the momentum effect following DOWN market states.

The motivation of this chapter is therefore to find out whether these three theories mentioned above are still valid in the Chinese stock market, thus providing an insight into the momentum effect following different market dynamics. In this chapter, I found that momentum returns are higher when markets stay in the same UP direction after formation periods of the strategies than when they transition to a different DOWN state conditionally on past UP market states as in formation periods. Moreover, momentum returns were higher when markets stayed in the same DOWN direction than when they transitioned to different UP market-states conditional on past DOWN market states. Such findings are in accordance with the predictions of DHS, HS and SS with respect to the momentum effect following past UP

market states. They are also in line with the predations of DHS regarding momentum effect following past DOWN market states. The findings of this chapter provide evidence that the Chinese stock market is not different fundamentally from other developed markets. Overreaction exists in the Chinese stock markets and drives momentum effects in the market. The lack of absolute momentum profits for the whole the Chinese stock market was due to combinations of a series of unique factors in the Chinese stock market.

This chapter is constructed as follows. In Section 3.2, the literature review regarding momentum returns, market states and market dynamics is examined. The predictions of DHS, HS and SS are then discussed. Section 3.3 discusses the methodology used to test the momentum effect following different market dynamics. Section 3.4 presents the overall results of momentum strategies following different market dynamics. In Section 3.5, possible explanations are given as to why there are no momentum profits for whole market states in the Chinese stock market. A conclusion is then provided in Section 3.6.

3.2 Literature Review on Momentum Effects, Market States and Market Dynamics

3.2.1 Behavioural explanations of momentum profitability

Before discussing the models of behavioural finance used to explain momentum, I should be aware that ever since momentum profits have been documented by Jegadeesh and Titman (1993), arguments have been made about the puzzle of momentum profitability in the extensive literature, stated in terms of a rational or behavioural phenomenon. Researchers believe that momentum effect can be explained within the framework of traditional finance; that is, relating to rational explanations and specific or common risks. For example, George and Hwang (2007) and McLean (2010) find momentum profits can be explained by firm-specific information rather than seasonality. In addition, the belief in firm-specific components as the main source of momentum is supported by Grundy and Martin (2001) and Antoniou et al. (2005).

Macroeconomic risks have also been found to be related to momentum profits. According to Liu and Zhang (2008), macroeconomic risks measured by the growth of industrial production are found to the main source of momentum. In addition, Conrad and Kaul (1998) propose a decomposition in which one of its components called cross-sectional differences in return is believed to be the main source of momentum profitability. This argument is accepted by

Jegadeesh and Titman (2002) as a possible explanation of momentum, although they criticize the results of Conrad and Kaul (1998) as being small sample biased.

Within the framework of behavioural finance, evidence has been found that initial momentum is usually followed by longer-term reversals. Chan et al. (1996) suggest that contrarian and momentum profits may not be incompatible. Later, researchers started to find models consistent with both contrarian and momentum effects. The most accepted models so far are the models proposed by Barberis et al. (1998) (Hereafter BSV), Daniel et al. (1998) (hereafter DHS) and Hong and Stein (1999) (hereafter HS).

Barberis et al. (1998) introduced a unified model consistent with both contrarian and momentum effects. This model is discussed in Section 2.2, Chapter 2. However, according to Asem and Tian (2011) the theory of Barberis et al. (1998) does not provide clear predictions of momentum effects under different market dynamics, thus, the theory of Barberis et al. (1998) will not be repeated here.

The models of DHS and HS are discussed in details in Section 2.2, Chapter 2, so they will be discussed here briefly. The model created by DHS has provided us with specific predictions about the effects of market continuations and market transitions on momentum profits, which will be discussed later. In the model of Daniel et al. (1998), investors overestimate the precision of their own interpretation to new information, while in the meantime underreacting to public information. Thus, they tend to be overconfident and overreact to good news, which generates momentum. In the long-term, overreaction to prices is eventually corrected by public information, which was underestimated by investors. Hence, in combination, momentum strategies generate abnormal returns in the inter-mediate horizon and mean reversion in the long-term. Therefore, momentum profits should be higher when the market is following UP states than following DOWN states, since aggregate overconfidence should be greater in a bull market than in a bear market.

In the theory of HS, momentum is driven by initial underreaction to information and subsequent overreaction. They found decreasing risk aversion leading to greater delayed overreaction, which increases momentum profits. Therefore, if risk aversion decreases, momentum becomes greater. Following their prediction, the market in UP states increases wealth and reduces investors' risk aversion, which drives higher momentum profits following

UP market states, while in DOWN states it decreases wealth and surges investors' risk aversion, which makes momentum profits retreat following DOWN market states.

Besides the three behavioural explanations for momentum profits, Sagi and Seasholes (2007) (hereafter SS), present a rational asset model permitting no discrimination between behavioural and rational explanations for momentum profits. Specifically, they find that a firm's revenue and cost, which are within the framework of rational explanations, and a firm's growth options and shutdown options, which are within the framework of behavioural explanations, combine to determine the dynamics of a firm's return autocorrelations. They find that 'momentum strategies carried out in high revenue volatility firms, low cost firms and high market-to-book firms produce greater profits' than the traditional momentum strategy of Jegadeesh and Titman (1993). Their model proves that momentum profits are conditioned on costs and revenue volatility and growth options, which provides a consistent and single framework of traditional explanation and behavioural explanations. One of the conditioned factors in their model – a firm's growth options - also offers a prediction of momentum profits following different market states. In particular, higher momentum profits resulting from higher autocorrelations should follow UP market states, being that they are attributed to higher growth options in UP markets, while lower momentum profits resulting from lower autocorrelations should follow DOWN market states, as they are attributed to lower growth options in DOWN markets.

In conclusion, DHS, HS and SS all predict that momentum profits should be higher following UP market states than DOWN market states. In the theory of DHS, momentum is driven by overreactions triggered by self-attribution following good performance. In the theory of HS, a decreased wealth effect during UP markets makes risk aversion retreat, which eventually leads to greater delayed overreaction - the factor producing momentum. In the theory of SS, investors' opinions towards a firm's growth are higher following UP market states than following DOWN market states. Thus, following UP market states, momentum profits should be higher than following DOWN markets, as they are found to be autocorrelated with investors' option of a firm's growth. This chapter is motivated by these three predictions along with the findings in Chapter 2 that momentum profits are not widely found following the UP markets in the Chinese stock market.

3.2.2 Literature review on momentum effects under different market dynamics

Before discussing the literature about momentum effects under different market dynamics, a brief review of literature about momentum effects following different market states is given. Besides the paper of Cooper et al. (2004), which confirms that momentum effects in the US market are consistent with the predictions of DHS and HS, there are papers supporting the findings of Cooper et al. (2004) outside the US stock market. Huang (2006) find the predictions of DHS, HS and SS that momentum profits are higher following UP markets than DOWN market still valid internationally. Nevertheless, the behavioural explanations are seriously challenged when evidence reveals that no significant momentum profits can be found in emerging markets. For example, Rouwenhorst (1999) finds that only 6 out of 20 emerging markets exhibit significant momentum profits. Chui et al. (2000) have found no momentum profitability present in any of the 6 Asian emerging markets they examined. In Chapter 2, no significant positive momentum profits have been found following neither UP or DOWN market states for the Chinese stock market from 1993 to 2012. The possible reasons for the lack of momentum profits in the Chinese stock market are discussed in Chapter 2. However, solely according to the evidence found in Chapter 2 and based on theories from other literature in terms of momentum profitability in emerging markets, the predictions of DHS and HS cannot be rejected.

As regards to momentum effects under different market dynamics, the paper of Asem and Tian (2011) provides an alternative approach to further examining such challenges and inconsistencies in emerging markets. The motivation of their research is inspired by the work of Cooper et al. (2004), in which they argue that 'the onset of reversals would of course diminish the momentum profits'. Asem and Tian (2011) consider that 'momentum profits should be higher when the markets continue in UP states than when they reverse'. Specifically, they suspect that the lack of momentum profits following DOWN market states is due to the offsetting of the losses when the market reverses to UP states against the profits, while they continue in the DOWN market states. This is because, according to Cooper et al. (2004) market reversals reduce momentum profits following both market states. Therefore, in the work of Cooper et al. (2004), they further define the market states in terms of four market dynamics by adding market returns in the subsequent month to the past cumulative market returns. The past market states are then defined as past cumulative value weighted market returns by the end of portfolios formation month; the subsequent market states are defined by the value weighted market return by the end of subsequent one month after the portfolios' formation month. Hence, the four different market dynamics are (UP, UP), (UP, DOWN), (DOWN, DOWN) and (DOWN, UP), where, (UP, UP) and (DOWN, DOWN) present market

continuations while (UP, DOWN) and (DOWN, UP) present market transitions. For example, the (UP, UP) market dynamic means the cumulative value weighted market return is non-negative by the end of the portfolio's formation month - say month t - while the market return by the end of next month - say month - $t+1$ is non-negative.

The DHS (1998), HS (1999) and SS (2007) models can be used to make specific predictions about momentum profits following the four market dynamics. In the DHS (1998) model, overconfidence of investors 'induced by confirming market movements drives momentum profits'. In UP markets, investor overconfidence increases when the market is followed by future confirmatory movements, while overconfidence decreases when the market is followed by future disconfirming movement. Consequently, momentum profits, resulting from overreaction caused by overconfidence, should be higher when market continues in the UP states than in transition to DOWN states. In DOWN markets, investor overconfidence increases when the market is followed by future confirmatory DOWN movements, while overconfidence decreases when the market is followed by future disconfirming movement. Consequently, momentum profits, resulting from overreaction caused by overconfidence, should be higher when the market continues in the DOWN state than in its transition to the UP state. Therefore, DHS predict that 'momentum profits should be higher when markets continue in the same state than they transition to a different state' (Asem and Tian, 2011).

In HS (1999), the main factors making momentum profits change during different market dynamics are investors' risk aversion caused by the wealth effect. In UP market states, investors' risk aversion shrinks due to a positive effect of increasing wealth; hence, momentum profits should be higher when the market continues in UP market states than when it makes a transition to DOWN markets. In DOWN market states, investors' risk aversion increases due to a negative effect of decreasing wealth; hence, momentum profits should be lower when the market continues in the DOWN market state than when it makes a transition to UP markets.

In SS (2007), momentum profits are positively correlated with return autocorrelations, which are positively correlated with growth options. Thus, in UP market states, higher growth options result in higher return autocorrelations, causing higher momentum profits. This indicates that if a market is subsequently followed by UP market states, momentum profits should be higher than following its transition to subsequent DOWN market states. Therefore, 'the HS and SS models predict higher momentum profits when the market continues in UP

states than when it transitions to DOWN state, but lower momentum profits when they continue in DOWN states than when they transition to UP states' (Asem and Tian, 2011).

To sum up, DHS HS and SS models predict higher momentum profits following (UP, UP) market dynamic than following (UP, DOWN) market dynamic. The DHS model predicts higher momentum profits following a (DOWN, DOWN) dynamic than following a (DOWN, UP) dynamic, but the HS and SS model predict lower momentum profits following a (DOWN, DOWN) dynamic than following a (DOWN, UP) dynamic.

Following Jegadeesh and Titman (1993) and Cooper et al. (2004), Asem and Tian (2011) examine momentum profits following the four different market dynamics of (UP, UP), (UP, DOWN), (DOWN, DOWN) and (DOWN, UP) using the US market monthly data from January 1927 to December 2005. They find the mean momentum profit is a significant 2.09% per month following (UP, UP) and it is -0.01% (insignificant) when the market follows (UP, DOWN). This indicates 'momentum profits are higher when the market continues in UP state than when it transitions to DOWN state, consistent with the effect of market reversals on momentum profits'. The results are consistent with the predictions of DHS and HS and SS models for UP market states. Following DOWN market states, the mean momentum profit is 3.53% per month (significant) when the market is following (DOWN, DOWN) market dynamic, while it is -2.54% per month (significant) following (DOWN, UP). Momentum profits are higher with market continuation than following transition into UP market-states. The results are then consistent with the predictions of DHS, but inconsistent with the predictions of HS and SS for markets following DOWN markets. Their results are robust when adjusted for FF three-factor model and macroeconomic adjusted model.
Therefore, they conclude that the findings of their work support the predictions of the DHS, HS and SS models for the market-state condition momentum profits. However, the results following DOWN market states are more consistent with the DHS model than the HS and SS models. Thus, they assert that the 'DHS model lends credence to a particular behavioural bias, continuous overreaction to private information in the face of confirming news, as a source of momentum profits'.

The work of Asem and Tian (2011) provides an insight into the market states to test the implications of DHS, HS and SS models. Following the work of Asem and Tian (2011), Hanauer (2014) applies the test to the Japanese stock market, which is the only developed market failing to find any evidence of momentum profits so far. He uses monthly stock data

from October 1986 to September 2012 in Japanese stock market to test for the momentum profits following different market dynamics. Following UP market-states, momentum strategies generated 1.40% (significant) per month profits following (UP, UP) dynamic and -1.35% (significant) per month profits following (UP, DOWN) dynamic.

Following DOWN market states momentum strategies yielded 2.35% (significant) per month profits following (DOWN, DOWN) dynamics and -2.88% (significant) per month profits following (DOWN, UP) dynamics. The results are also robust to FF three-factor adjusted model. Hence, Hanauer (2014) affirms that momentum profits are higher when the market continues in the same subsequent future market states than when it transitions to different subsequent future market states. This again supports the predictions of DHS, HS and SS models for markets following UP markets, but more consistent with the prediction of DHS model than predictions of HS and SS following the DOWN markets. The results of Hanauer (2014) indicate that the DHS model applies to the Japanese market following both the UP and DOWN markets and HS and SS models only apply to the Japanese market following UP market states. This is fully consistent with the findings of Asem and Tian (2011) in the US market. The lack of momentum in the Japanese stock market is due to the offsetting effect when market transitions relate to different subsequent market states. Hence, Hanauer (2014) confirms that 'different market dynamics and not different momentum, cause the overall low momentum returns in Japan'.

Inspired by the work of Asem and Tian (2011) and Hanauer (2014), it is worth testing momentum profits following different market dynamics in the Chinese stock market. However, there has been little research conducted on such a topic. So far, only one research study has tested momentum profits following different market dynamics in the Chinese stock market - a conference paper by Cheema and Nartea (2015). Here, they use monthly data in the Chinese stock market for A shares on SHSE and SZSE from January 1996 to December 2012. Following the methods of Jegadeesh and Titman (1993), Cooper et al. (2004) and Asem and Tian (2011), they have tested decile equal weighted and value weighted momentum strategies following four different market dynamics. The momentum strategies they tested are J=3 months and K=3, 6, 9, 12 months. They subsequently found positive and significant momentum returns only following DOWN market states. In regard then to market dynamics, they find J=6, K=6 strategy cannot produce any significant returns following UP markets, while following DOWN market states 6-6 strategy yielded 1.55% (significant) per month momentum profits following (DOWN, DOWN) market dynamic and 1.47% (insignificant) per month profits following (DOWN, UP) market dynamic.

These findings are consistent with Asem and Tian (2011) when the market follows DOWN market states but no significant results are found following UP market states. They claim that momentum profits in the Chinese stock market are 'higher when the market continues in the DOWN state than when it transition to UP' market states, which is consistent with the predictions of DHS, Asem and Tian (2011) and Hanauer (2014). However, the lack of momentum returns following UP markets in the Chinese stock market cannot be explained by market dynamics. They suspect instead that the absence of momentum profits in the Chinese stock market is due to 'a combination of risk-seeking behavioural and the lack of alternative investment opportunities for building personal wealth'. Although they did not find any significant results in the Chinese stock market following UP markets, they have to prove that the DHS model also applies to the Chinese stock market following DOWN market states, so affirming that the DHS model is correct even if no momentum can be found in the Chinese stock market. The absence of momentum profits in the Chinese stock market is due to the unique combination of factors of the Chinese stock market, rather than DHS model failures in the Chinese stock market.

3.3 Data and Methodologies Used to Test Momentum Effects under Different Market Dynamics in the Chinese Stock Market

3.3.1 Data, the construction of momentum strategies and the definition of market dynamics in the Chinese stock market

The data used in this chapter is the same used in Chapter 1 and Chapter 2. All listed common stocks in SHSE and SZSE from January 1991 to December 2012 are included. As market states are defined up to 24 months, the formation period of momentum strategies constructed is also up to 24 months. The actual momentum strategies tested are from 1993 to 2012. As there is no existing value weighted market index for combined SHSE and SZSE, the value weighted market index is computed by weighting the market value for each stock. Similar to Chapter 2, the autocorrelation and heteroscedasticity of the time series of momentum returns are tested. White's general heteroscedasticity test and the Durbin-Watson test for autocorrelation are used to that end. As explained in Chapter 2, no autocorrelation is found, but heteroscedasticity is found existing in all the time series. Therefore, standard errors are adjusted according to heteroscedasticity-consistent covariance matrix estimators using White's heteroscedasticity-corrected standard errors. To recall, the covariance matrix estimator used in this chapter is defined as in MacKinnon and White (1985). Long and Ervin

(2000) recommend using HC_3[40] when the sample size is less than 250 in order to provide best performance of the three estimators introduced in the process of White's heteroscedasticity-corrected standard errors.

Following Cooper et al. (2004), for Asem and Tian (2011), market states are defined as returns of value weighted market index. At the beginning of each month (t+1), the past market is classified as UP (DOWN) market states, if the past m-month (m=3, 6, 12, 24) value weighted market returns are nonnegative (negative), Furthermore, month t+1 is classified as UP (DOWN) if the value weighed market return of month t+1 is nonnegative (negative). Thus, the market dynamics are categorised as (UP, UP), (UP, DOWN), (DOWN, DOWN) and (DOWN, UP). Take m=3 as example, (UP, UP) indicates at the beginning of month t+1, the past 3-month cumulative market returns are nonnegative and at the end of month t+1, the value weighted market return is nonnegative. (UP, DOWN) means that the past 3-month value weighted market returns are nonnegative but at the end of t+1, the value weighted market return is negative. Thus, (UP, UP) and (DOWN, DOWN) present markets continuing in the same direction in the subsequent month, while (UP, DOWN) and (DOWN, UP) indicate market transitions to a different market direction. To understand fully the patterns of market dynamics, four different lengths of past market states are tested, where past market states are defined by past 3, 6, 12, 24 months' value weighted market returns. For market dynamics defined by past 3-month value weighted market returns, the four categorisations are found to be 85 (UP, UP), 33 (UP, DOWN), 101 (DOWN, DOWN) and 42 (DOWN, UP). In terms of defining past 6-month value weighted market returns, 84 (UP, UP), 42 (UP, DOWN), 91 (DOWN, DOWN), 41 (DOWN, UP) are found. 65 (UP, UP), 48 (UP, DOWN), 84 (DOWN, DOWN) and 55 (DOWN, UP) are found for 12-month past value weighted market returns. In with respect to 24-month past value weighted market returns, there are 56 (UP, UP), 58 (UP, DOWN), 67 (DOWN, DOWN), 59 (DOWN, UP). I can then observe that as the length of past months used to define market states increase, the allocation of numbers in each market dynamics become more even.

The construction of momentum strategies is the same as in Chapter 1 and 2. In this chapter, only equally weighted momentum strategies are tested because it is proved that equally weighted momentum strategies are more prone to momentum compared to value-weighted strategies. Additionally, most of the researches about momentum effects under different

[40] $HC_3 = X'diag(\frac{e_i^2}{(1-h_{ii})^2})X(X'X)^{-1}$ as defined and presented in Section 2.4, Chapter 2.

market dynamics only tested equal-weighted strategies. Thus, in order to make the results comparable to the results in Chapter 2 and to the findings revealed by existing literature, only equally weighted momentum returns are used. Returns of momentum using FF-three factor model and other risk-adjusted models are not computed in this research. This is because the data used in the research includes very early stages of the Chinese stock market when the data needed to construct FF three facto models is not available in the early years. Another reason is that the evidence from the papers of Asem and Tian (2011), Hanauer (2014) has already proved that risk-adjusted momentum returns provide similar evidence as simple raw momentum returns.

3.3.2 Predictions of momentum effects under different market dynamics

As discussed in Section 2.2, the three models of DHS, HS and SS provide specific predictions of the patterns of momentum profits under different market dynamics. The DHS model holds that momentum profits are driven by investors' overconfidence. Thus, higher overconfidence leads to higher momentum profits, while lower overconfidence causes lower momentum profits. Besides, the DHS model suggests that the arrival of confirming information causes a surge in investors' overconfidence; in the meantime, disconfirming information causes it to decrease to a lower extent as the consequence of biased self-attribution. Therefore, in UP markets, the DHS model implies that overconfidence increases if "buys" are followed by future price appreciations while overconfidence decreases if "buys" are followed by future price depreciations. To wit: overconfidence should be higher when the UP markets continue in UP market states than when they transition to DOWN market states.

Consequently, in UP markets momentum profits should be higher when markets continue in UP market states than when they transition to the DOWN market states. In DOWN markets, the process is the opposite: overconfidence increases if "sells" are followed by price depreciations, while it decreases if "sells" are followed by price appreciations. Thus, in DOWN market states, momentum profits should be higher when the market continues in DOWN market states than when it transitions to UP market states. To sum up, under the predictions of DHS, in UP market states, momentum profits should be higher following (UP, UP) than following (UP, DOWN), while in DOWN market states, momentum profits should be higher following (DOWN, DOWN) than following (DOWN, UP).

In the HS model, momentum traders overreact slowly due to the diffusion of private information, which eventually results in positive serial correlation in returns. According to the

HS model, momentum profits are positively related to investor's risk aversion because lower risk aversion leads to greater delayed overreaction. In addition, risk aversion is negatively linked to the wealth effect, which increases in UP market states and shrinks in DOWN market states. More clearly, risk aversion surges in UP market states due to wealth increasing in UP market states and plummeting in DOWN market-states as wealth is lost in DOWN market states. Hence, HS predict that momentum profits should be higher in subsequent UP market states than in subsequent DOWN market states conditioned on the past market states, since in subsequent UP markets, there is a positive effect on investors' aggregate wealth leading to lower risk aversion. Subsequent DOWN markets have a negative effect on aggregate wealth resulting in higher risk aversion. Thus, HS predict that momentum profits should be higher when markets continue in UP markets than when they transition to DOWN market-states. Similarly, momentum profits should be higher when markets transition from DOWN to UP markets than when they continue in the DOWN market states. So, according to HS, in UP market states, momentum profits should be higher in (UP, UP) than in (UP, DOWN), while in DOWN markets, (DOWN, UP) than in (DOWN, DOWN).

In the SS model, the factor affecting momentum profits in different market dynamics is a firm's growth option: 'Growth options increase the sensitivity of a firm's value to these options, making the firm riskier'. Consequently, increased risk as a systematic component in a firm's return autocorrelation will increase with the growth options. Hence, conditional on past market states, momentum profits should be higher in subsequent UP market states than in DOWN market states. Therefore, the SS model predicts that higher momentum should be exhibited when markets continue in UP states than transition to DOWN market states, while momentum profits should be higher when market states transition from DOWN to UP than when they stay in DOWN market-states. Summarily, according to the SS model, in UP market states, momentum profits should be higher following (UP, UP) than following (UP, DOWN), while in DOWN market states, momentum profits should be higher following (DOWN, UP) than following (DOWN, DOWN).

The predictions by DHS, HS and SS of how momentum profits should be following different four market dynamics: (UP, UP), (UP, DOWN), (DOWN, DOWN), (DOWN, UP) are described hereafter. The details of how market dynamics are defined are presented in Section 3.2.1. All three models predict higher momentum profits should be in (UP, UP) than in (UP, DOWN). However, only DHS predicts higher momentum profits in (DOWN, DOWN) than in (DOWN, UP), while HS and SS models predict that higher momentum profits in (DOWN,

UP) than in (DOWN, DOWN). Considering the specific situation in the Chinese stock market where contrarian rather than momentum profits is found, according to literature and results in Chapter 2, all three models predict higher momentum or lower contrarian in (UP, UP) than in (UP, DOWN). For DOWN market states, DHS predicts a higher momentum or lower contrarian in (DOWN, DOWN) than in (DOWN, UP), while HS and SS predict lower momentum or higher contrarian in (DOWN, DOWN) than in (DOWN, UP).

Moreover, in consideration of the total number of strategies being tested, all three models predict that more strategies should yield momentum profits or fewer strategies should yielded contrarian profits in (UP, UP) than (UP, DOWN). Following DOWN market states, DHS predicts that more strategies should generate momentum profits or fewer strategies should generate contrarian profits in (DOWN, DOWN) than in (DOWN, UP), while HS and SS predict that fewer strategies should generate momentum profits or more strategies should generate contrarian profits in (DOWN, DOWN) than in (DOWN, UP).

3.4 Results of Momentum Effects in the Chinese Stock Market under Different Market Dynamics

3.4.1 Results and findings for momentum effects under different market dynamics conditional on past 3 months' cumulative market returns

Table 3.1 presents an overview of the results of momentum profits conditional on the past 3 months' cumulative market returns. The significant results of a given strategy at 10% confidence level are in the shaded pattern. The empirical numerical results are presented in Appendix C1; Panel A and Panel B show the momentum returns following (UP, UP) and (UP, DOWN) market dynamics conditional on past UP market states. Then, 57 out of 576 (24 by 24) strategies generate significantly negative momentum returns following (UP, UP) market dynamics conditional on past UP markets. As can be observed in Panel B Table 3.1, the returns of 51 out of 576 are significantly negative following (UP, DOWN) market dynamics. It is unclear whether momentum returns are higher when markets continue in UP states than when they transition to DOWN states at the first glance.

If we combine Panel A and Panel B together, I find that only a 2-2 strategy generates both significant results following both (UP, UP) and (UP, DOWN) market dynamics. The return of the 1-2 strategy is -0.0112 (t-value=-1.82) in an (UP, UP) market dynamic, while a -1.56% (t-value=-1.82) in a (DOWN, DOWN) market dynamic, conditional on past UP markets, the

momentum return is significantly higher when markets continue in UP states than when they transition to DOWN market states. For the 2-1 strategy, the return of the momentum strategy is significantly negative in the (UP, UP) market dynamic, while it is insignificant in the (UP, DOWN) one, which is to say that momentum profits are relatively lower when markets stay in UP markets than when they transition to DOWN markets, conditional on past UP market states.

For all the other significantly negative returns found under the (UP, DOWN) market dynamic, the paring strategies under the (UP, UP) market dynamics, produce insignificant returns. Thus, for these strategies, the momentum profits they yield are higher than for the market continuing in the UP market states than when they transition to DOWN states. There are 51 strategies falling into this category. For all the strategies that have significant returns following (UP, UP) markets but have insignificant returns following (UP, DOWN) dynamics, the momentum profits they generate are lower than when market continue in UP market states than when they transition to DOWN market states. There are 55 strategies belonging to this category. Additionally, 1-2 strategy and 2-1 strategy being analysed, conditional on past UP market states, the momentum profits of 51 strategies are relatively higher when markets continue in same UP market states than when they transition to DOWN market states, while momentum profits of 56 strategies are relatively lower when markets continue in UP market states than when they transition to DOWN market-states.

If the formation and holding periods are divided into short term (saying less than 1 year) and long term (saying longer than 1 year), then the pattern of the momentum returns following (UP, UP) and (UP, DOWN) is clearer. For short formation and holding periods, two significantly negative returns are found following (UP, UP), while 44 significantly negative returns of momentum strategies are found following (UP, DOWN). Thus, for formation and holding periods less than 12 months, momentum strategies generate higher returns following (UP, UP) than following (UP, DOWN). For formation and holding periods longer than 12 months, as analysed in the last paragraph, the returns of strategies 13/01, 13/02, 14/01, 16/01, 17/01, 22/01, 23/01 produce higher momentum returns following (UP, UP) than following (UP, DOWN). All the other momentum strategies where formation and holding periods are longer than 12 months yielded lower momentum returns following (UP, UP) than following (UP, DOWN).

Thus, the results show generally that when formation and holding periods are less than 12 months, momentum strategies produce higher relevant momentum returns when market states continued in the same direction than when market states transition into opposite direction to DOWN market states, conditional on past UP market states. When formation and holding periods are longer than 12 months, in general, momentum returns are relatively lower when market states are continuing in the same direction than when market states transition into DOWN market states, conditional on past UP market states. Hence, generally, when formation and holding periods are less than 12 months, the findings are reconcilable with the predictions of DHS, HS and SS when market states are following past UP markets. When formation and holding periods are longer than 12 months, the findings are irreconcilable with the predictions of DHS, HS and SS.

The reason of such contradiction to the prediction of DHS, HS and SS conditional on past UP market states might be due to the past UP market states being too extreme. As pointed out in Chapter 2, according to Cooper et al. (2004) if the UP market states are too extreme beyond a certain threshold, UP market states might cause prices of stocks to reverse rather than continue in the same direction. Expanding this argument to the market dynamics framework, if (UP, UP) market dynamics are more extreme and more frequent than (UP, DOWN) ones, it is rational for investors to expect the price would reverse very quickly in the future. More specifically, if investors have experienced past UP markets, and then they observe further UP market state after the holding period, they are even more likely to sell the price to guarantee the potential profits. Especially in emerging markets, as discussed in Chapter 2, investors in the emerging markets are less overconfident and more risk averse, therefore, they are more likely to sell past winners resulting in a very strong price reversal rather than price continuation

Such findings are partially consistent with the findings of Asem and Tian (2011) and Hanauer (2014); both papers affirm that the momentum profit of a 6-6 strategy is higher when the markets continue in the same UP market-state than when they transition to DOWN market states, conditional on past UP market states. When formation and holding periods are less than 12 months, the findings are also partially in accord with evidence from the Chinese market. That is, according to Cheema and Nartea (2015), the momentum return of a 6-6 momentum strategy is significantly higher when the markets continue in UP states than when they transition to DOWN markets, supporting the predictions of DHS, HS and SS about markets following past UP markets.

From Panel C, Table 3.1, 212 strategies out of 576 generate significantly negative momentum returns in (DOWN, DOWN) dynamics, and in the meantime all these strategies failed to produce any significant returns in a (DOWN, UP) market dynamic except the 1-2 strategy. From Panel D, 17 out of 576 strategies yield significantly negative momentum returns following (DOWN, UP), and all these strategies have insignificant returns in the (DOWN, DOWN) dynamic except for the 2-1 strategy. For the 2-1 strategy, the return of it is -0.55% (t-value=1.66) in the (DOWN, DOWN) dynamic and -2.12% (t-value=2.15) in the (DOWN, UP) one. Thus, conditional on past DOWN states, the returns of the 1-2 momentum strategy are relatively higher when markets continue in a DOWN market-state, than when they transition to UP market states. For the rest of 211 significant returns following (DOWN, DOWN) dynamic, the momentum profits are relatively lower when market states continue in DOWN market states than when they transition to UP market states.

For the rest of the 16 significant strategies (except for 1-2) in (DOWN, UP) market dynamic, conditional on past DOWN markets, momentum profits are significantly higher when markets continue in DOWN market states than when they transition to UP market states. Therefore, considering all the above analyses, the returns of 211 momentum strategies are significantly lower when markets continue in DOWN market states than when they transition to UP market states. Meanwhile, the returns of 17 momentum strategies are significantly higher when markets continue in DOWN market states than when they transition to UP market states.

Conditionally, in relation to past DOWN market states, when formation and holding periods are less than 5 months, I found that relevant returns of momentum strategies are higher following (DOWN, DOWN) than following (DOWN, UP). When formation and holding periods are longer than 9 months, the returns of momentum strategies are significantly lower following (DOWN, DOWN) than following (DOWN, UP).

For formation and holding periods less than 9 months, the momentum returns are relatively higher when markets are continuing in the same direction of DOWN market states than when market states transition into different UP market states, conditional on past DOWN market states. To sum up, when formation and holding periods are less than 9 months, the findings are in favour of the predictions of DHS, HS and SS. However, when formation and holding periods are longer than 5 months, the findings contradict the predictions of DHS about market dynamics conditional on past DOWN market states. However, they do correspond to the

predictions of HS and SS. When holding and formation periods are less than 9 months, the findings are consistent with the findings of Asem and Tian (2011), Hanauer (2014) and Cheema and Nartea (2015). Here, all three papers confirm conditional on past DOWN market states, that momentum profits are higher when markets continue in DOWN states than when they transition to UP market states supporting the predictions of DHS rather than HS and SS.

In respect of the whole picture of market-dynamics when past market states are defined by past 3 months' cumulative value weighted market returns, or when formation and holding periods are in a short to medium time span, the findings are in line with the prediction of DHS, HS and SS. However, when formation and holding periods expand to longer periods, the findings are incompatible with the predictions of DHS, but compatible with the predictions of HS and SS.

Table 3.1 Momentum Profits under Different Market Dynamics Conditional on Past 3 Months' Cumulative Market Return

Panel A: Momentum Profits under (UP, UP) Market Dynamics Conditional on Past 3-month Market Returns

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1		-																							**1**
2	-																								**2**
3																									**3**
4																									**4**
5																									**5**
6																									**6**
7																									**7**
8																									**8**
9																									**9**
10																									**10**
11																								-	**11**
12																					-	-	-	-	**12**
13																					-	-	-	-	**13**
14																					-	-	-	-	**14**
15																					-	-	-	-	**15**
16																				-	-	-	-		**16**
17																			-	-	-	-	-		**17**
18																			-	-	-	-			**18**
19																			-	-	-				**19**
20																	-	-	-	-					**20**
21																-	-	-	-						**21**
22															-	-	-	-							**22**
23								-	-	-			-	-	-	-	-								**23**
24										-		-	-	-	-	-									**24**

Note: Shaded areas indicate that the returns from momentum strategy are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K). For detailed empirical results, refer to Appendix C1.

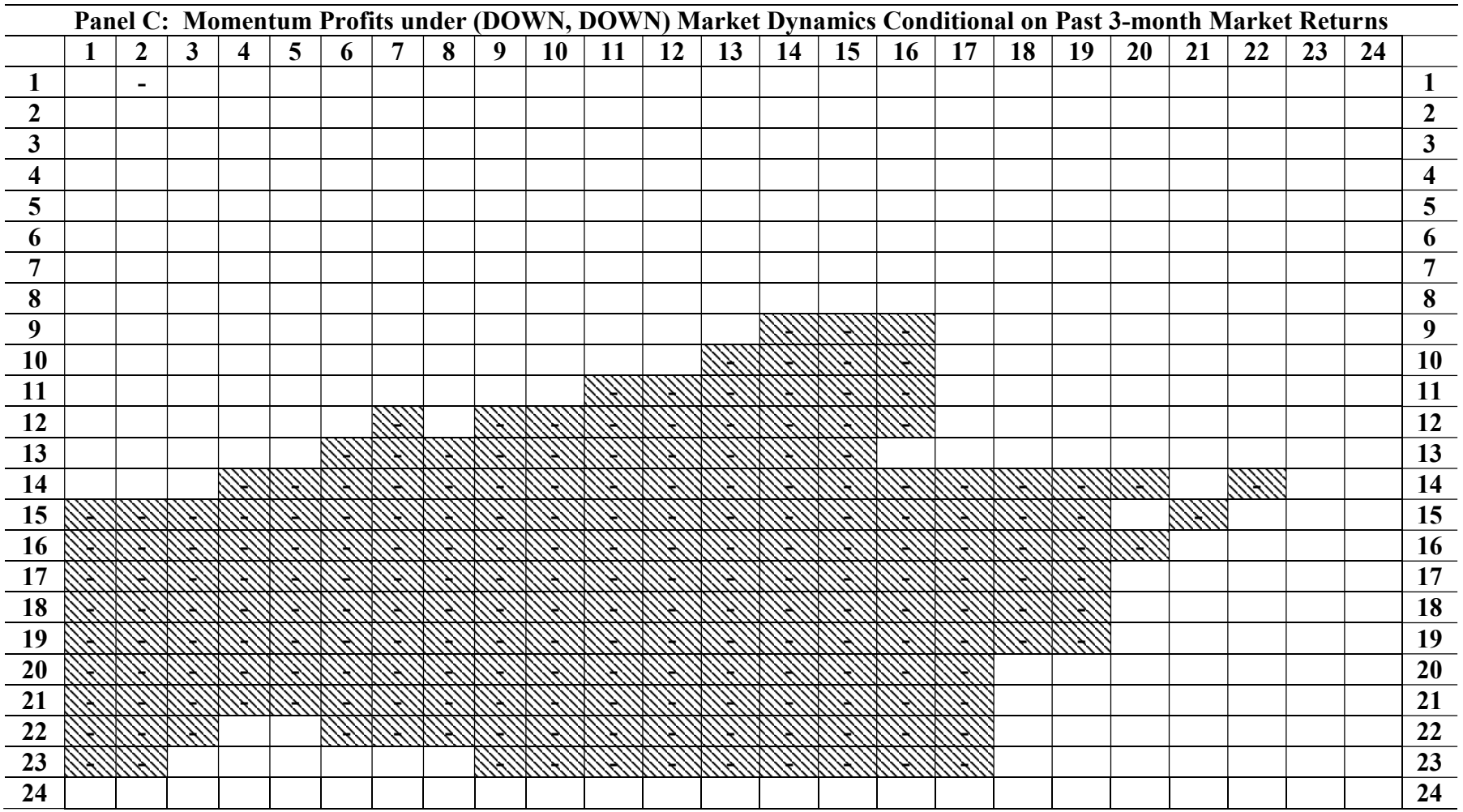
Table 3.1 Continued

Panel B: Momentum Profits under (UP, DOWN) Market Dynamics Conditional on Past 3-month Market Returns

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1		-	-	-	-	-	-	-	-																**1**
2		-	-	-	-	-	-	-	-																**2**
3	-	-	-	-	-	-	-																		**3**
4	-	-	-	-	-	-																			**4**
5	-	-	-	-	-																				**5**
6	-	-	-	-																					**6**
7	-	-	-																						**7**
8	-	-																							**8**
9	-																								**9**
10																									**10**
11																									**11**
12																									**12**
13	-	-																							**13**
14	-																								**14**
15																									**15**
16	-																								**16**
17	-																								**17**
18																									**18**
19																									**19**
20																									**20**
21																									**21**
22	-																								**22**
23	-																								**23**
24																									**24**

Note: Shaded areas indicate that the returns from momentum strategy are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K). For detailed empirical results, refer to Appendix C1.

Table 3.1 Continued



Note: Shaded areas indicate that the returns from momentum strategy are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K). For detailed empirical results, refer to Appendix C1.

Table 3.1 Continued

Panel D: Momentum Profits under (DOWN, UP) Market Dynamics Conditional on Past 3-month Market Returns

J \ K	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	K \ J
1	-	-	-	-	-																				1
2	-	-	-	-	-																				2
3	-	-	-																						3
4	-	-																							4
5	-	-																							5
6																									6
7																									7
8																									8
9																									9
10																									10
11																									11
12																									12
13																									13
14																									14
15																									15
16																									16
17																									17
18																									18
19																									19
20																									20
21																									21
22																									22
23																									23
24																									24

Notes: Shaded areas indicate that the returns from momentum strategy are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K). For detailed empirical results, refer to Appendix C1.

3.4.2 Results and findings for momentum effects under different market dynamics conditional on past 6 months' cumulative market returns

An overview of the results of market dynamics as defined by past 6 months' cumulative market returns and market returns of subsequent months are presented in Table 3.3. In Panel A, Table 3.2, momentum strategies yield 18 significantly negative returns out of 576 strategies tested following (UP, UP) market dynamics. In Panel B, Table 3.2, momentum strategies generate 218 significantly negative returns out of 576 strategies tested following (UP, DOWN) market dynamics. For these significant results following (UP, UP) market dynamics are strategies of J=20, K=18, 19, 20; J=21, K=17, 18, 19; J=22, K=16, 17, 18; J=23, K=13-17 and J=24, K=13-16. For all these significant contrarian profits, the matching strategies following (UP, DOWN) strategies generate insignificant results. Thus, for these strategies momentum strategies generate lower momentum profits (higher contrarian profits) in (UP, UP) than in (UP, DOWN) market dynamics. This indicates that the results of the 18 strategies mentioned above are inconsistent with the predictions of all three models for UP market states, but these strategies are exceptions as can be seen in the discussion in the next paragraph.

From Panel B Table 3.2, I can see that the 218 strategies generate significant results following (UP, DOWN) market dynamics. It is thus notable that all these significant strategies generate no significant results following (UP, UP) market dynamics. Such results indicate that these 218 strategies have higher momentum profits (lower contrarian profits) in (UP, UP) than in (UP, DOWN) market dynamics. Generally, 218 strategies out of the 576 ones produce relatively higher momentum profits (lower contrarian profits) when markets continue in UP market states than when markets transition to DOWN market states. Meanwhile, as mentioned in the previous paragraph, only 18 strategies, out of the 576 ones generate relatively lower momentum profits (higher contrarian profits) when markets continue in UP market states than when markets transition to DOWN markets. Therefore, such results are generally consistent with the predictions of DHS, HS and SS that momentum profits are higher when market states continue in UP market states than when they transition to DOWN market states.

However, it is noted that following UP market states, no significant momentum profits are found but all significant results either in (UP, UP) and (UP, DOWN) generated are contrarian profits. This finding is different from the finding of Asem and Tian (2011), in which J,K=6,6 momentum profits is significantly positive in (UP, UP) and insignificantly negative in (UP, DOWN). It is also inconsistent with the finding for the Japanese market from Hanauer (2014)

for past UP market states, where 6-6 momentum strategy generates significantly positive returns in (UP, UP) and significantly negative returns in (UP, DOWN). In terms of evidence for the Chinese market, Cheema and Nartea (2015) report insignificant momentum profits in (UP, UP) and (UP, DOWN) market dynamics for the 6-6 strategy for the two different lengths of market dynamics they tested[41].

In conclusion, the findings of momentum strategies following past UP market states, when market dynamics are defined as past 6-month cumulative market returns and subsequent 1-month market returns, reveal that momentum strategies produce relatively higher (lower) momentum (contrarian) profits in (UP, UP) market dynamics, compared to (UP, DOWN). This indicates that predictions of DHS, HS and SS models are correct in the Chinese stock market, but no positive momentum profits are found either in the (UP, UP) or (UP, DOWN) market dynamic. This finding is consistent with the findings of Asem and Tian (2011) and Hanauer (2014), in that momentum profits are higher when market states continue in the same UP market states than when markets transition to different DOWN market states. Moreover, it is also coherent with the predictions of DHS, HS and SS for past UP market states.

The results of past DOWN market states are shown in Panel C and Panel D, Table 3.2. As can be seen, momentum strategies produce 20 significantly positive momentum returns out of the 576 strategies tested in (DOWN, DOWN) market dynamics. For the same length of definition of market dynamics, momentum strategies following (DOWN, UP) market dynamics yield 58 significantly negative momentum returns out of 576 strategies tested. In other words, momentum strategies generate significant momentum profits following (DOWN, DOWN) market dynamics, while they can only generate significant contrarian profits following (DOWN, UP) market dynamics. The results indicate that, conditional on past DOWN markets, momentum profits are higher when markets continue in DOWN market states than when they transition to UP market states. The patterns of momentum profits in different market dynamics following past 6 months' DOWN market states suggest that they are consistent with the predictions of DHS; conditional on past DOWN market states, momentum profits should be higher when market states continue in DOWN market states than when they transition to UP market states.

[41] They test momentum strategies based on two different lengths of past value weighted market returns: past 36 months and 24 months. But the lagged market returns they used to define the subsequent market states are different from those of Asem and Tian (2011) and Hanauer (2014), in which the subsequent market states are defined by market returns in the next month subsequent to past returns. In Cheema and Nartea (2015), the subsequent market states are defined by market returns in lagged 6 (t+6) months.

However, the results contradict the predictions of HS and SS. These findings are consistent with the findings of Asem and Tian (2011) and Hanauer (2014) insofar as both studies found that a 6-6 strategy has a higher momentum profit when market states continue in DOWN market states than when they transition to UP market states conditional on past DOWN market states for the US and Japanese markets. However, the findings are also consistent with the findings of Cheema and Nartea (2015).

For market states conditional on past 36 months' market returns[42], they find significantly positive momentum profits of 1.55% (t-value=3.86) in (DOWN, DOWN) and positive momentum profits of 1.47% (t-value=1.85) in (DOWN, UP). Conditional on past 24 months' market value, it is then found that the 6-6 strategy has significant 0.87% (t-value=2.62) momentum profits in (DOWN, DOWN) and 0.67% (t-value=1.70) momentum profits in (DOWN, UP). Thus, it can be affirmed that the findings conditional on past 6 month-states show that momentum profits in the Chinese stock market are higher when markets continue in subsequent DOWN market states than when they transition into subsequent UP market states. Such findings are fully consistent with the findings of Asem and Tian (2011) for the US market, by Hanauer (2014) for the Japanese market and by Cheema and Nartea (2015) for the Chinese stock market. They also support the predictions of DHS for the market states conditional on past DOWN market states, but contradict the predictions of HS and SS about market-dynamics following past DOWN market states.

To sum up, the results of momentum profits following market dynamics defined by past 6 months' cumulative market returns and subsequent market returns reveal that momentum strategies generate higher relevant momentum profits when markets continue in the same direction than when they transition to different market states. More specifically, momentum strategies produce relatively higher momentum profits following (UP, UP) than (UP, DOWN), while they yield higher momentum profits following (DOWN, DOWN) than (DOWN, UP) conditional on past 6 months' cumulative market returns. These findings are therefore consistent with the predictions of DHS, HS and SS when market states follow past UP markets, but when market states following DOWN market states, the findings are only consistent with the predictions of DHS.

[42] Where subsequent market states are defined by lagged 6 months' value weighted returns.

Table 3.2 Momentum Profits under Different Market Dynamics Conditional on Past 6 Months' Cumulative Market Return

Panel A: Momentum Profits under (UP, UP) Market Dynamics Conditional on Past 6-month Market Returns																								
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	
1																									**1**
2																									**2**
3																									**3**
4																									**4**
5																									**5**
6																									**6**
7																									**7**
8																									**8**
9																									**9**
10																									**10**
11																									**11**
12																									**12**
13																									**13**
14																									**14**
15																									**15**
16																									**16**
17																									**17**
18																									**18**
19																									**19**
20																		-	-	-					**20**
21																	-	-	-						**21**
22																-	-	-							**22**
23													-	-	-	-	-								**23**
24													-	-	-	-									**24**

Notes: Shaded areas indicate that the returns from momentum strategy are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K). For detailed empirical results, refer to Appendix C2.

Table 3.2 Continued

Panel B: Momentum Profits under (UP, DOWN) Market Dynamics Conditional on Past 6-month Market Returns

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2**
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		**3**
4	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-				**4**
5	-	-	-	-	-	-	-	-	-																**5**
6	-	-	-	-	-																				**6**
7	-	-	-	-	-																				**7**
8	-	-	-	-	-																				**8**
9	-	-	-	-	-																				**9**
10	-	-	-	-	-																				**10**
11	-	-	-	-	-	-																			**11**
12	-	-	-	-	-	-																			**12**
13	-	-	-	-	-	-	-																		**13**
14	-	-	-	-	-	-																			**14**
15	-	-	-	-	-	-																			**15**
16	-	-	-	-	-		-	-																	**16**
17	-	-	-	-	-	-	-																		**17**
18	-	-	-	-	-	-																			**18**
19	-	-	-	-	-	-																			**19**
20	-	-	-	-	-																				**20**
21	-	-	-	-	-																				**21**
22	-	-	-	-	-																				**22**
23	-	-	-	-	-																				**23**
24	-	-	-	-	-																				**24**

Notes: Shaded areas indicate that the returns from momentum strategy are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K). For detailed empirical results, refer to Appendix C2.

Table 3.2 Continued

Panel C: Momentum Profits under (DOWN, DOWN) Market Dynamics Conditional on Past 6-month Market Returns																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1																									1
2				+	+	+	+																		2
3				+	+	+	+																		3
4		+	+	+	+	+																			4
5	+	+	+	+	+																				5
6		+	+																						6
7																									7
8																									8
9																									9
10																									10
11																									11
12																									12
13																									13
14																									14
15																									15
16																									16
17																									17
18																									18
19																									19
20																									20
21																									21
22																									22
23																									23
24																									24

Notes: Shaded areas indicate that the returns from momentum strategy are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K). For detailed empirical results, refer to Appendix C2.

Table 3.2 Continued

Panel D: Momentum Profits under (DOWN, UP) Market Dynamics Conditional on Past 6-month Market Returns

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	-	-	-	-	-	-	-	-	-	-	-														**1**
2	-	-	-	-	-	-																			**2**
3	-	-	-	-	-																				**3**
4	-	-	-	-																					**4**
5	-	-	-																						**5**
6	-	-																							**6**
7																									**7**
8																									**8**
9																									**9**
10																									**10**
11																									**11**
12																									**12**
13																									**13**
14																									**14**
15																									**15**
16																									**16**
17																									**17**
18																									**18**
19																									**19**
20																									**20**
21																									**21**
22																									**22**
23																									**23**
24																									**24**

Notes: Shaded areas indicate that the returns from momentum strategy are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K). For detailed empirical results, refer to Appendix C2.

3.4.3 Results and findings for momentum effects under different market dynamics conditional on past 12 month's cumulative market returns

The empirical results of momentum profits conditional on past 12 months' cumulative value weighted market returns are presented in Table 3.3. Panel A and Panel B are presented with results following past UP markets, while Panel C and Panel D are the results of momentum profits following past DOWN markets.

From Panel A, it can be seen that no significant returns of either momentum profits or contrarian profits were found for all the 576 momentum strategies are tested. However, in Panel B, I can see that 512 momentum strategies out of 576 tested made significant contrarian profits. To wit: each significant individual momentum strategy made relatively higher momentum profits when markets followed (UP, UP) than (UP, DOWN) market dynamics. In other words, conditional on past UP market states, momentum profits are relatively higher when markets continue in UP markets than when they transition to DOWN markets. Such results are consistent with the predictions of DHS, HS and SS models when market states follow past UP market states. But for the actual momentum profits generated, it is different from the results of Asem and Tian (2011) and Hanauer (2014). As I have mentioned in Section 3.2, for the US market, I found significant 6-6 momentum profits in (UP, UP) and insignificant momentum profits in (UP, DOWN). Meanwhile for the Japanese market, momentum profits were significantly higher in (UP, UP) than in (DOWN, DOWN). For the Chinese market, no significant momentum profits were found for the 6-6 strategy tested, which can be considered as consistent.

Panel C and Panel D report momentum profits following past DOWN market states. Following (DOWN, DOWN) market dynamics, 52 out of 576 momentum profits were found to be significantly positive in (DOWN, DOWN) markets, while the rest were all insignificant. In the meantime, from Panel D, all significant momentum returns were found to be negative (102 out of 576). Thus, conditional on past DOWN market states, each significant momentum strategy generates higher momentum profits when market states continue in DOWN states than when they transition to UP states. The findings confirm the predictions of DHS model when markets follow DOWN states, but stand against the predictions of HS and SS when markets follow DOWN market states. The results are also fully consistent with the findings of Asem and Tian (2011), Hanauer (2014) and Cheema and Nartea (2015).

Table 3.3 Momentum Profits Following Different Market Dynamics Based on Past 12 Months Cumulative Market Return

Panel A: Momentum Profits under (UP, UP) Market Dynamics Conditional on Past 12-month Market Returns																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1																									1
2																									2
3																									3
4																									4
5																									5
6																									6
7																									7
8																									8
9																									9
10																									10
11																									11
12																									12
13																									13
14																									14
15																									15
16																									16
17																									17
18																									18
19																									19
20																									20
21																									21
22																									22
23																									23
24																									24

Notes: Shaded areas indicate that the returns from momentum strategy are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K). For detailed empirical results, refer to Appendix C3.

Table 3.3 Continued

Panel B: Momentum Profits under (UP, DOWN) Market Dynamics Conditional on Past 12-month Market Returns

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2**
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**3**
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**4**
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**5**
6	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	**6**
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**7**
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**8**
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**9**
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**10**
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**11**
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**12**
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**13**
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		**14**
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			**15**
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						**16**
17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						**17**
18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							**18**
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							**19**
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								**20**
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-									**21**
22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-									**22**
23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								**23**
24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-										**24**

Notes: Shaded areas indicate that the returns from momentum strategy are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K). For detailed empirical results, refer to Appendix C3.

Table 3.3 Continued

Panel C: Momentum Profits under (DOWN, DOWN) Market Dynamics Conditional on Past 12-month Market Returns

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1							+		+																**1**
2				+	+	+	+	+	+																**2**
3			+	+	+	+	+	+	+	+		+													**3**
4		+	+	+	+	+	+	+	+																**4**
5		+	+	+	+	+	+	+																	**5**
6		+	+	+	+	+	+																		**6**
7	+	+	+	+	+	+																			**7**
8		+	+	+	+																				**8**
9	+	+	+	+																					**9**
10																									**10**
11																									**11**
12																									**12**
13																									**13**
14																									**14**
15																									**15**
16																									**16**
17																									**17**
18																									**18**
19																									**19**
20																									**20**
21																									**21**
22																									**22**
23																									**23**
24																									**24**

Notes: Shaded areas indicate that the returns from momentum strategy are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K). For detailed empirical results, refer to Appendix C3.

Table 3.3 Continued

Panel D: Momentum Profits under (DOWN, UP) Market Dynamics Conditional on Past 12-month Market Returns

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-	-	-	**1**
2	-	-	-	-	-	-	-	-		-	-														**2**
3	-	-	-	-	-	-	-																		**3**
4	-	-	-	-	-																				**4**
5	-	-	-	-																					**5**
6	-	-	-																						**6**
7	-	-																							**7**
8	-	-																							**8**
9	-																								**9**
10	-																								**10**
11	-																								**11**
12	-																								**12**
13	-																								**13**
14	-																								**14**
15	-																								**15**
16																									**16**
17	-																								**17**
18	-																								**18**
19	-																								**19**
20																									**20**
21																									**21**
22		-																							**22**
23	-																				-	-	-	-	**23**
24	-																				-	-	-	-	**24**

Notes: Shaded areas indicate that the returns from momentum strategy are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K). For detailed empirical results, refer to Appendix C3.

3.4.4 Results and findings for momentum effects under different market dynamics conditional on past 24 months' cumulative market returns

The results of the momentum strategies conditional on past 24 months' cumulative market results are in Table 3.4. In Panel A, where results of momentum returns following (UP, UP) market dynamics are presented, it is found that returns of 145 momentum strategies out of 576 are significantly negative. In Panel B, I found 576 strategies out of that 576 ones generate significantly negative momentum returns. If this is examined in detail, it is notable that all 142 significant results following (UP, UP) market dynamics are also significant following (UP, DOWN) market dynamics. Thus, the figures of each return need to be examined to determine whether momentum returns following (UP, UP) are higher than following (UP, DOWN) or not.

These detailed results are presented in Appendix C4. Accordingly, I found that for 145 significant results following (UP, UP), returns of 54 significant momentum strategies were relatively higher than following (UP, DOWN), while returns of 91 significant momentum strategies following (UP, UP) were relatively lower than (UP, DOWN). Additionally, besides these 145 strategies yielding significant returns in both (UP, UP) and (UP, DOWN) dynamics, 431 (576-145) momentum strategies produced significantly negative returns following (UP, DOWN) but generated insignificant returns following (UP UP). Thus, in general, 485 (431+54) out of 576 momentum strategies are significantly higher in (UP, UP) than in (UP, DOWN), which implies that conditional on past UP market states, momentum profits are relatively higher when markets continue in UP market states than when they transition to DOWN market states.

This finding confirms the predictions of DHS, HS and SS when market follow past UP market states. Again, the failure to find any significantly positive momentum profits contradicts the findings of significant momentum profits following (UP,UP) market dynamics by Asem and Tian (2011) for the US market and Hanauer (2014) for the Japanese market. However, it is still consistent with the fact that in the US and Japanese markets, momentum profits are higher when markets continue in UP markets than when they transition to DOWN markets.

Table 3.4 Momentum Profits under Different Market Dynamics Conditional on Past 24 Months Cumulative Market Return

Panel A: Momentum Profits under (UP, UP) Market Dynamics Conditional on Past 24-month Market Returns																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1																									1
2																									2
3																									3
4																									4
5																									5
6																									6
7																								-	7
8																							-	-	8
9																					-	-	-	-	9
10																					-	-	-	-	10
11																				-	-	-	-	-	11
12																				-	-	-	-	-	12
13																		-	-	-	-	-		-	13
14																		-	-	-	-	-	-	-	14
15																	-	-	-	-	-	-	-	-	15
16																	-	-	-		-	-	-	-	16
17															-	-	-	-	-	-	-	-	-	-	17
18														-	-	-	-	-	-	-	-	-	-	-	18
19													-	-	-	-	-	-	-	-	-	-	-	-	19
20												-	-	-	-	-	-	-	-	-	-	-	-		20
21											-	-	-	-	-	-	-	-	-	-	-	-		-	21
22									-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	22
23							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		23
24						-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-			24

Notes: Shaded areas indicate that the returns from momentum strategy are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K). For detailed empirical results, refer to Appendix C4.

Table 3.4 Continued

Panel B: Momentum Profits under (UP, DOWN) Market Dynamics Conditional on Past 24-month Market Returns

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2**
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**3**
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**4**
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**5**
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**6**
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**7**
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**8**
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**9**
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**10**
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**11**
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**12**
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**13**
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**14**
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**15**
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**16**
17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**17**
18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**18**
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**19**
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**20**
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**21**
22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**22**
23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**23**
24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**24**

Notes: Shaded areas indicate that the returns from momentum strategy are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K). For detailed empirical results, refer to Appendix C4.

Table 3.4 Continued

Panel C: Momentum Profits under (DOWN, DOWN) Market Dynamics Conditional on Past 24-month Market Returns

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1																									**1**
2					+	+		+																	**2**
3				+	+	+	+																		**3**
4			+	+		+																			**4**
5		+	+	+	+																				**5**
6		+		+																					**6**
7																									**7**
8																									**8**
9																									**9**
10																									**10**
11																									**11**
12																									**12**
13																									**13**
14																									**14**
15																									**15**
16																									**16**
17																									**17**
18																									**18**
19																									**19**
20																									**20**
21																									**21**
22																									**22**
23																									**23**
24																									**24**

Notes: Shaded areas indicate that the returns from momentum strategy are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K). For detailed empirical results, refer to Appendix C4.

Table 3.4 Continued

Panel D: Momentum Profits under (DOWN, UP) Market Dynamics Conditional on Past 24-month Market Returns

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	-	-	-	-	-	-	-	-	-	-	-														**1**
2	-	-	-	-	-	-	-	-																	**2**
3	-	-	-	-	-	-																			**3**
4	-	-	-	-																					**4**
5	-	-	-	-																					**5**
6	-	-	-																						**6**
7	-	-																							**7**
8	-																								**8**
9	-																								**9**
10																									**10**
11																									**11**
12																									**12**
13																									**13**
14																									**14**
15																									**15**
16																									**16**
17																									**17**
18																									**18**
19																									**19**
20																									**20**
21																									**21**
22																									**22**
23																									**23**
24																									**24**

Notes: Shaded areas indicate that the returns from momentum strategy are significant at least at the 10% significant level; the signs indicate the sign of momentum returns. The rows are the formation periods (J) and the columns are the holding periods (K). For detailed empirical results, refer to Appendix C4.

3.5 Possible Explanations of Lacking Momentum Profits in the Chinese Stock Market Conditional on Past UP Market States

In Chapter 2, several possible explanations about why there are no momentum profits following UP market states are discussed. The main motivation of this Chapter is to test whether models of DHS, HS and SS are valid in the Chinese stock market. All results are in line with predictions of DHS, HS and SS when market follows conditional past UP market states, and in line with the predictions of DHS when markets follow conditional on past DOWN market states. The only exception is the results when formation periods longer than 10 months and holding periods longer than 7 months' conditional on the past 3-month value weighted market returns. I discussed briefly in Section 3.4.1 why the findings of momentum conditional on past 3 months market returns are contradicting the predictions of DHS, HS and SS. I suspect it is because (UP, UP) market dynamics are more frequent and extreme than (UP, DOWN) ones conditional on past 3 months market returns, which according to Cooper et al. (2004) caused strong price-reversal rather than price-continuation. Additionally, in emerging markets, investors are less overconfident and more risk averse, making it more likely that they will sell past winners to pocket the profits. If this suspicion is right, it should be observed that (UP, UP) are less frequent and less extreme than (UP, DOWN) for the other three definitions of market dynamics (conditional on past 6-month, 12-month and 24-months market returns).

From Table 3.5, it can be seen that (UP, UP) consists of 72.03% of the past UP market states while (UP, DOWN) only consists 27.93% of past UP market states. Thus, conditional on past 3 month's UP market states, it is more likely to see a confirming UP market state than a disconfirming DOWN market state. However, when the length of past market states changes into 6, 12 and 24 months' market returns, the (UP, UP) are less frequent than (UP, DOWN). Moreover, when the length of past market states increases, the percentage of (UP, UP) consisting of past UP market states decreases. For past 24 months' UP market, the (UP, UP) market dynamics are less frequent than (UP, DOWN). Therefore, strongest relative momentum profits are found under (UP, UP) than under (UP, DOWN).

Therefore, the findings revealed by past 3 months' market dynamics cannot be seen as contradicting the predictions to DHS, HS and SS. The reason for such inconsistence is due to too frequent and extreme (UP, UP) market dynamics than (UP, DOWN) market dynamics,

coupled with investors being less overconfident and more risk averse in the Chinese stock market.

Table 3.5 Number of Market Dynamics, Percentage in Total Dynamics and Percentage Condition on Past Market-states

	(UP, UP)	(UP, DOWN)	(DOWN, DOWN)	(DOWN, UP)
Panel A: Condition on past 3-month's value weighted market returns				
No. of Dynamics	85	33	101	42
% in dynamics	32.57%	12.64%	38.70%	16.09%
% conditional on past markets	72.03%	27.97%	70.63%	29.37%
Panel B: Condition on past 6-month's value weighted market returns				
No. of Dynamics	84	42	91	41
% in dynamics	32.56%	16.28%	35.27%	15.89%
% conditional on past markets	66.67%%	33.33%	68.94%	31.06%
Panel C: Condition on past 12-month's value weighted market returns				
No. of Dynamics	65	48	84	55
% in dynamics	25.79%	19.05%	33.33%	21.83%
% conditional on past markets	57.52%	42.48%	60.43%	39.57%
Panel D: Condition on past 24-month's value weighted market returns				
No. of Dynamics	56	58	67	59
% in dynamics	23.33%	24.17%	27.92%	24.58%
% conditional on past markets	49.12%	50.88%	53.17%%	46.83%

Although the findings of this chapter are consistent with the findings of Asem and Tian (2011) and Hanauer (2014), one issue/question still remains: why no momentum profits are found conditional on past UP market states in the Chinese stock market. Cheema and Nartea (2015) suspect that one of the reasons that why there are no momentum profits following past UP markets-state is the lack of alternative investment opportunities. They analyse that due to lack of alternative investment opportunities, past winners and losers are both attractive to Chinese investors especially following UP markets. If this suspicion is right, when following past UP markets, I should expect that when (UP, UP) market dynamics exist more than (UP, DOWN) markets, contrarian profits are more likely to appear in momentum strategies. Table 2.6 presents the number of each four market dynamics, percentage of dynamics in total market dynamics and percentage of dynamics conditional on past market states.

If past winners and losers are both attractive to Chinese investors especially following UP markets, when market dynamics of (UP, UP) are much more presented than (UP, DOWN), this indicates that the prices of losers are more likely to increase in subsequent market states. From Table 2.5, the (UP, UP) dynamics present themselves more often than the (UP, DOWN) ones, when the length of past months used to define market dynamics decreases. Thus, the prices of past losers are more likely to increase in the subsequent month, conditional on shorter length of market dynamics, which leads to past losers being more attractive to Chinese investors, when (UP, UP) existing more often than (UP, DOWN). Therefore, losers and winners are more attractive when market conditional on past 3-month market returns than when market conditional on 6, 12, 24-month market returns, resulting in eliminating momentum profits in past UP markets.

The second reason of lacking momentum profits in the Chinese stock market I suspect is the extent of overconfidence in the Chinese stock market. As discussed in Chapter 2, the literature about the psychological biases of investors in emerging markets following DOWN market states is consistent. Most of research confirms that investors in emerging markets following DOWN markets are less confident and experience greater risk aversion (Chui et al. 2000, Chui et al. 2010, Du et al. 2009, and Patel and Sarkar 1998). However, when it comes to the psychological bias of investors in emerging markets following UP market states, divergent opinions are presented in literature. Du et al. (2009) and Patel and Sarkar (1998) found out that investors in emerging markets are only less confident and experiencing greater risk aversion in DOWN markets rather than in UP markets. They assert that investors in UP markets are the same as the investors in developed market such as the US: they are

overconfident and less risk-averse based on their research. The lack of momentum profits conditional on past UP market states in this chapter is consistent with the findings by Heine and Hamamura (2007): overconfidence and biased self-attribution is not universal but different according different cultures. People in East Asian are less overconfident and self-attribution biased, especially, those in Confucian cultures, such as Chinese, Koreans and Japanese. The evidences in the chapter support the arguments of Heine and Hamamura (2007) and extend the arguments of Du et al. (2009) and Patel and Sarkar (1998) to the Chinese stock market.

According to the literature mentioned in the previous paragraph that investors in emerging markets are less confident in DOWN market states than investors in developed markets, momentum profits following (DOWN, DOWN) in the Chinese market should be lower than in the US market. As according to DHS, overreaction and overconfidence lead to lower momentum. Asem and Tian (2011) found that following DOWN market-state the mean momentum profit of the 6-6 strategy is 3.53% per month (significant) when the market following (DOWN, DOWN) market dynamic, while it is -2.54% per month (significant) following (DOWN, UP) conditional on past 12-month market returns. It is also documented that significant momentum profits exist for 6-6 strategy conditional on past 12-month market returns in this research. According to Appendix C3, it reports 0.8814% (significant) momentum profits versus -0.701 (insignificant) momentum profits. This finding confirms the argument that investors in emerging markets are less confident in DOWN market states than investors in developed markets. For past UP market states, literature also points out that in emerging markets, following UP market states, investors are not less confident than investors in developed market. Thus, I should observe same level of momentum profits in the Chinese stock market comparing to the US market conditional on past UP markets. Nevertheless, in this chapter, I failed to detect any significant momentum profits conditional on past UP market states, which cannot provide any support to this argument.

The third reason of lacking momentum profits in the Chinese stock market is suspected to be disposition effect. Shefrin and Statman (1985) documented the phenomenon that investors tend to hold onto their losing stocks too long and sell their winning stocks too early. They predicted that investors ‘dislike occurring losses much more than they enjoy making gains’. The argument is supported by Zhao and Wang (2001) and Chen et al. (2007) with respect the Chinese stock market. Zhao and Wang (2001) found disposition effect also exists in the Chinese stock market, while Chen et al. (2007) found in the Chinese stock market, disposition

effect are even stronger than in the US market. Thus, if that the disposition effect in the Chinese stock market is stronger than in the US market, it is highly likely that holding past losers too long would make the prices of past losers appreciate more quickly than in the US market. While selling past winners too quickly makes prices of past winners depreciate more rapidly in the Chinese stock market than in the US. Thus, the stronger disposition effect in the Chinese stock market makes past winners become future losers and past losers become future winners sooner than in the US market, which results in lower momentum profits in the Chinese stock market compared to the US market. According to Phua et al. (2010), the disposition effect better fits the observed momentum found in the Australian stock market than overreaction bias. Therefore, the effect of overreactions contributing to momentum profits might be eliminated by disposition effect in the Chinese stock market. The findings in this chapter are consistent with the ones in Zhao and Wang (2001) and Chen et al. (2007).

The last reason might due to the representativeness bias discussed in Section 2.4.6, Chapter 2. It is found representativeness bias is stronger in the Chinese stock market than in the U.S. market (Chen et al., 2007). That is to say, investors in the Chinese stock market are keen to use past information to form future expectation often. From Panel, Table 3.5, it can be seen that the likelihood of subsequent UP market states is much higher than subsequent DOWN market state when the markets are following UP markets. So, due to strong representativeness bias, investors in the Chinese stock market are more likely to form the expectation that the subsequent market states will be UP markets rather than DOWN markets followed by past UP market states. Therefore, they are more likely to hold the past winners and past losers based on such expectations, resulting in relevantly stronger momentum effects following (UP, UP) than (UP, DOWN) dynamics. When markets are following past DOWN market states, the investors in the Chinese stock market are more likely to believe that in the subsequent month, market will stay in (DOWN, DOWN) rather than (DOWN, UP), due to strong representativeness bias and the fact that (DOWN, DOWN) market dynamic present themselves much more often than (DOWN, UP) market dynamic. Base on such expectations, investors in the Chinese stock market will sell the past winners quick enough to pocket capital gains on paper; in the meantime, they will sell the past losers they hold to stop further capital losses, which eventually leads to weak positive momentum profits in the (DOWN, DOWN) market dynamic.

When market follows (DOWN, UP), due to representativeness bias and past experience that (DOWN, UP) present themselves much less than (DOWN, DOWN), investors are more likely

to believe that the market will transition into (DOWN, DOWN) rather than stay in (DOWN, UP). The Heavy pressure of future prices' drop makes investors to sell the past winners and also the past losers they have, but due to disposition effect the selling pressure on past winners is stronger than selling past losers. Thus, the prices of winner reverse quicker than the prices of losers, which eventually causes weak negative momentum profits following (DOWN, UP). These factors together contribute to negative momentum profits following DOWN market states.

Thus, the possible reasons of Chinese markets lacking momentum profits involve a combination of several factors. First, in DOWN market states, investors in Chinese market are less overconfident than investors in the US markets, resulting in lower momentum profits following past DOWN markets. Second, the lack of alternative investment opportunities makes both winners and losers attractive to Chinese investors especially following UP market states thus eliminating momentum profits. Third, disposition effects are stronger in the Chinese stock market than in the US market, making past winners become future losers and past losers become future winners more quickly than in the US market, leading to momentum effects in the Chinese stock market to be much weaker than in the US market. And the last, strong representativeness bias along with disposition effect contribute to weak positive momentum profits in (DOWN, DOWN) and negative momentum profits in other three market dynamics.

3.6 The Influences of Other Factors on the Momentum Profits in the Chinese Stock Market and Further Research Recommendations

Besides the UP/DOWN market states and market dynamics, there might be other factors affecting momentum profits in the Chinese stock market, such as sentiment of investors, information uncertainty, spillover effects between the Chinese stock markets, Hong Kong and the U.S. markets. In this section, the influences of these factors on momentum in the Chinese stock market will be discussed. These factors also provide directions for further researches on momentum effects in Chinese stock markets.

The first factor will be disused is called sentiment. Broadly defined, sentiment refers to 'whether an individual, for whatever extraneous reason, feels excessively optimistic or pessimistic about a situation' (Antoniou et al., 2013). Since 1980s, researchers have noticed that judgement of future events is affected by current sentiment. Generally, researches have

shown that people with positive sentiment tend to make optimistic judgements and choices, whereas those with negative sentiment tent to make pessimistic ones (Bower 1981, 1991, Wright and Bower 1992, and Arkes et al. 1988). The paper of Antoniou et al. (2013) is the first one to research the link between sentiment and momentum. In their article, based on the HS model, they argue that 'newswatchers will underreact more strongly when they receive information that contradicts their sentiment due to cognitive dissonance'. They further suggested that good (bad) news of winners (losers) travels slowly when investors are optimistic (pessimistic). Therefore, momentum is driven by the losers in optimistic sentiment and the winners in pessimistic sentiment. Generally, they found the momentum strategies of 6-3, 6-6 and 6-12 months yielded significant profits when sentiment is optimistic, whereas the momentum profits intensively decrease to insignificant ones when sentiment is pessimistic. Considering the link between momentum profits, sentiment and market states, they tested the model of a non-linear regression of momentum profits on sentiment, market states and the square of market states as well as the model of a linear regression of momentum profits on sentiment and market states. The results of this two models both confirmed that 'the investors' sentiment effect on momentum profits goes beyond the market-state effect' (Antoniou et al., 2013). They pointed out the investor sentiment has a strong explanatory power on momentum profits after controlling for market states.

The research of Antoniou et al. (2013) successfully linked momentum profits and investor sentiment. However, their research did not provide an insight about momentum profits, market states and investors' expectations and sentiment. Inspired by this research, Galariotis et al. (2014) designed a method to the role of market state on momentum effects utilising 'a comparison between the expected and actual market price'. In general, their innovation is that they used a direct and indirect measurements to determine market expectations: the prices of stock index futures (direct measurement) and changes in market sentiment at different points (indirect measurement). Then, they use the comparison between the expected and actual market prices to test momentum effects based on market states. In general, their findings in terms of the impact of UP/DOWN market states based on sentiment indicators, momentum profits in both UP and DOWN markets can be well predicted by sentiment indicators.

In Chinese stock markets, investors sentiment might play an important role on momentum effects. The results in Chapter 2 and 3 suggest that investors' behaviours in terms of overreactions, self-attribution bias and risk aversion might be different from their peers in the U.S. stock market. Additionally, culture differences between Chinese investors and those in

the western countries might also affect their behaviours, eventually having impacts on momentum profits. Therefore, whether investor sentiment has impact on momentum in the Chinese stock market provides further research direction. The research of Antoniou et al. (2013) provided evidence supporting the model of HS. Although the findings in Chapter 2 and 3 only support the model of HS to be valid conditional on the past UP markets rather than DOWN markets, the reason might can be explained by different sentiment during UP and DOWN markets, especially when expectations on markets in the future are considered.

The second issue I plan to discuss is whether information uncertainty (IU) can contribute to momentum profits. Information uncertainty refers to the 'ambiguity with respect to the implications of new information for a firm's value' (Zhang, 2006). The ambiguity originates from the volatility of a firm's fundamental values and poor information. DHS pointed out when uncertainty increase, psychological biases increase. Inspired by this argument, Zhang (2006) established his hypothesis: 'if the slow market response to information is due to psychological biases such as overconfidence, these psychological biases will be larger and, hence, the price response will be slower when there is more ambiguity about the implications of the information for a firm's value'. Broadly, the results of his research confirmed his hypothesis that 'uncertainty delays the flow of information into stock prices'. Particularly, the greater IU results in relatively lower (higher) future returns of stock following bad (good) news.

Stemmed from the research of Zhang (2006), Cheema and Nartea (2014) tested the interactions between IU and momentum. Inspired by literature arguing that people in East Asian countries (especially for Chinese, Koreans and Japanese with Confucian cultures) are less overconfident due to stronger self-criticism bias (Lee and Seligman, 1997), and Asians and Asian Americans tend to be more pessimistic than European Americans (Chang, 1996, 2002). Although, high IU is conducive to overconfidence, this could be the case when investors who are already overconfident. But, in the case of investors with very low levels of overconfidence, such conclusion might not be necessarily the same. Thus, Cheema and Nartea (2014) hypothesize that high IU makes investors are prone to be less overconfident, pessimistic and less self-enhancing. For that reason, if a market is dominated by less overconfident, pessimistic and less self-enhancing investors, high IU may not necessarily cause lower future returns and higher momentum profits. The results of their study about the Chinese stock market have proved their hypothesis, that in the Chinese stock market greater IU does not necessarily generate lower future returns and higher momentum returns. Their

findings could be used to explain the reason of lacking momentum found in Chapter 2 and Chapter 3. Of course, further research of information uncertainty under different market states would be useful to provide a better understanding of investors' behaviours in terms of IU and momentum effects under different market states.

Besides factors mentioned above, how do UP/DOWN market states in the Hong Kong stock market and in the U.S. stock markets affect momentum profits in the Chinese stock market? It is difficult to find answers to this question directly in the literature. The early researches about the linkage of return and volatility across different stock markets have focused only on developed countries. These studies have found evidences of volatility spillovers across equity markets among developed countries (Hamao et al. 1990 and King et al. 1994). Although, after the Asian financial crisis of 1997, more researches have studied the transmission of return and volatility among equity markets in Asian and the U.S. market. Generally, the researches confirmed that, similar to developed countries, stock markets in Asian are 'highly integrated, but the spillovers are not homogeneous across markets' (Worthington and Higgs, 2004). Especially, the U.S. and Japanese stock markets have volatility spillover effects on the stock markets in Pacific Basin, including Hong Kong, Korea, Malaysia, Singapore, Taiwan and Thailand (Ng, 2000).

Nevertheless, the researches about the spillovers between equity markets in China and Hong Kong and the ones between China and the U.S. are limited. Generally speaking, spillover effects are found from Hong Kong to mainland China market, however, the spillover effects are weak or insignificant from the equity market of the U.S. to the ones in China. For instance, Wang and Firth (2004) confirmed that volatilities in stock markets in Hong Kong and Taiwan spill over to SHSE and SZSE, but SESE and SZSE are not influenced by stock markets in Japan, the UK and the U.S. The findings of Li (2007) about the linkages between stock markets in China, Hong Kong and the U.S. also suggested a similar conclusion. They found volatility spillover from Hong to Mainland China, but no spillover from the U.S. stock markets to the Chinese ones. However, these researches are focused on return and volatility spillovers from the overall market states rather the spillover effects from the aspects of UP/DOWN market states. In the research of Bae and Karolyi (1994) about the volatility spillovers between Japan and the U.S., they found that bad news tends to have stronger spillovers on subsequent returns than good news. But, no further researches focus on the spillovers from different market states, especially on the Chinese stock markets. Further

research about volatility spillovers between China, Hong Kong and the U.S. is worth doing, especially from the aspects of UP/DOWN markets.

3.7 Conclusions of Chapter 3

In this Chapter, the momentum effect following different market dynamics in the Chinese stock market was examined to test the validity of the theories of DHS, HS and SS for the Chinese stock market over the past 20 years from 1993 to 2012. According to the findings of Asem and Tian (2011), the predictions of DHS, HS and SS are valid with respect to the momentum effects conditional on past UP market states. Moreover, the predictions of DHS are justifiable regarding momentum effects conditional on past DOWN market states. According to the findings in Chapter 2, momentum profits were not found in the Chinese stock market for the overall markets as well as following past UP market states. Additionally, Hanauer (2014) found similar evidence that no momentum profits followed whole market states and past UP markets for the Japanese stock market. Nevertheless, he found that in the Japanese stock market the predictions of DHS, HS and SS were valid following past UP market states, while the predictions of DHS were valid following past DOWN market states.

Thus, in this chapter, momentum effects were examined following different market dynamics for the Chinese stock market. It is found that momentum effects are higher when market states are in the same UP market states than when they transition into DOWN market states conditional on past UP market states. Meanwhile, momentum effects are higher when market states are in the same DOWN market states than when they transition into different UP market states conditional on past DOWN market states. Generally, momentum effects are higher when market stay in the same market states than when they transition into different market states. Such findings are consistent with the findings of Asem and Tian (2011) for the US stock market and with the findings of Hanauer (2014) for the Japanese stock market, as well as with the findings of Cheema and Nartea (2015) for the Chinese stock market.

It is found that the relevant momentum profits are higher when the market states are in the same market than when they transition into different market states conditional on the past 3-month, 6-month, 12-month and 24-month market returns. The only exception for this conclusion is for formation and holding periods longer than 5 months when market states are defined by past 3-month market returns. The reasons are due to too extreme UP markets beyond a certain threshold causing price-reversals rather than price-continuation (Cooper et

al. (2004), additional with that investors in the emerging stock markets are less overconfident and more risk averse (Chui et al. 2000, Chui et al. 2010, and Du et al. 2009). I also found significantly positive momentum profits following (DOWN, DOWN) market dynamics. Thus, it can be confirmed that the overreaction implied by the theory of DHS is applicable to the Chinese stock market. The Chinese stock market is fundamentally similar to other developed markets, such as the US, where overreactions do exist and generate momentum profits at a certain level. However, due to a combination of several factors in the Chinese stock market (the extreme UP and DOWN market states, stronger disposition effects over overreactions, less overconfidence).

In conclusion, the finding in this chapter show that relevant momentum profits are stronger when markets stay in the same direction than they transition into different dynamics. This is consistent with predictions of DHS models but not HS and SS, confirming overconfidence can generate momentum profits in the Chinese stock market. Nevertheless, the existence of positive momentum profits only in (DOWN, DOWN) dynamic. The possible reasons of this finding might due to a combination of several factors: less overconfidence in the Chinese stock market due to culture difference (Heine and Hamamura 2007, Chui et al. 2000, 2010 and Patel and Sarkar 1998), strong disposition effects out-weighing overreactions (Phua et al. 2010, Zhao and Wang 2001, and Chen et al. 2007) and representativeness bias along with extreme UP and DOWN markets beyond a certain threshold (Chen et al. 2007, Cooper et al. 2004).

Conclusion of Thesis

Momentum profits are found in most developed stock markets except for Japan. However, the existence of momentum in the Chinese stock market, the second largest stock market in the world, is not clear from the existing literature available. This thesis has conducted a comprehensive investigation in respect to the momentum and contrarian effects in the Chinese stock market. Motivated by the ambiguous evidence regarding momentum effect in Chinese stock, overall momentum is examined for whole sample period of 1991-2012 using a comprehensive data set, including all the stocks in the A-share markets in the Shanghai Stock Exchange and Shenzhen Stock exchange. This thesis has therefore provided a full vision of momentum and contrarian effects in the Chinese stock market. I found that the ambiguous/contradictory evidence documented in the literature review was due to different sample periods examined. Overall, momentum effects did not exist in the Chinese stock market for the period of 1991 to 2012.

In Chapter 1 of the thesis, a thorough investigation of momentum effects in Chinese A-share stock markets in the past 22 years (1991 to 2012) was given to provide comprehensive results of momentum effects in the Chinese stock market. Overall, no significant momentum profits were found for the whole sample period and in 4 out of 5 sub-samples for both equal-weighted momentum portfolios and value-weighted portfolios. I also found that IPOs do not have an impact on momentum or contrarian effects in the Chinese stock market. However, lead-lag effects contribute to momentum.

Chapter 2 of this thesis investigated the reasons as to why no momentum profits are found in the Chinese stock market, by examining momentum returns in different market states. Overall, I found that in the Chinese stock market, momentum strategies generate relatively more contrarian returns (less momentum returns) following UP market states than following DOWN market states. This is because UP and DOWN market states in the Chinese stock market are too extreme and investors in the Chinese stock market are less overconfident and more risk averse compared to investors in developed stock markets. Plus, representativeness bias is stronger among the investors in the Chinese stock market than their peers in the U.S. market and investors in the Chinese market also face disposition effects.
Momentum strategies following different market dynamics were then studied in Chapter 3. The results here revealed that momentum effects were more pronounced when markets stayed

in the same state (bull or bear) than when they transitioned into a different state. These findings accorded with the theory of Daniel et al. (1998), suggesting that investors' overreactions occur on the Chinese stock market. The findings further suggest that the Chinese stock market is not fundamentally different from other developed markets, as suggested by some previous studies. The lack of absolute momentum effects in the Chinese stock market is not due to investors' rationality but due to the unique features of this market that both UP and DOWN market states in the Chinese stock market are too extreme compared to developed stock markets. Findings in this chapter confirm the existence of overreactions in the Chinese stock market. Nevertheless, due to the representativeness bias and the disposition effect which has stronger explanatory power to momentum profits than overreaction bias, the overreaction bias contributed to momentum profits might be eliminated by the disposition effect in the Chinese stock market.

This thesis contributes in the following aspects. First, it provides a comprehensive analysis of the momentum effect in the Chinese stock market, revealing that the mixed results presented in the literature regarding the existence of momentum in China can be reconciled and are due to different sample periods. Second, it shows that the reason of prior studies failed to find momentum profits is due to market dynamics rather than the non-existence of momentum itself in the Chinese stock market. There have only been several published papers examining momentum effect under different market states and market dynamics in the Chinese stock market, especially for the momentum under different market dynamics. By examining momentum effects under different market states and market dynamics, I have found that the lack of momentum profits in the Chinese stock market is not due to the non-existence of momentum itself and not due to failure of the application of behavioural models. Instead, I found that the theory of Daniel et al. (1998) also holds in the Chinese stock market. In this respect, the Chinese market does not fundamentally differ from that of the U.S. and other developed markets. The results of this thesis have therefore extended the range over which the theory of Daniel et al. (1998) applies.

On the practical implication aspect, investors in the Chinese stock market they should learn that momentum strategies cannot earned abnormal excess returns compared to those developed markets in the U.S. and Europe. However, contrarian strategy might work in the Chinese stock market. In recent past years, Chinese stock markets are more opened than ever before. International investors are now can trade stocks in the Chinese stock market through QFII, RQFII and through Shanghai Hong Kong Connect and Shenzhen Hong Kong Connect

programmes. For them, the understanding of the momentum effects and its performance following bull/bear markets can help them to adjust their investing activities. Also the difference between extents of psychological biases (caused by culture difference) which Chinese investors and their peers in the Western countries have, reminds them to consider the impacts of different cultures and different extents of psychological biases when investing in each other's' markets. The quick reversals in the Chinese stock market is caused by psychological biases of investors. Due to lack of alternative investing opportunities such as complete short-selling, disposition effects contribute extensively to the quick mean reversals. Therefore, the daily price limits and prohibition on the complete short-selling might not help reducing the volatility of the markets but making it even worse.

References

ANTONIOU, A., GALARIOTIS, E. C. & SPYROU, S. I. 2005. Contrarian Profits and the Overreaction Hypothesis: The Case of the Athens Stock Exchange. *European Financial Management,* 11**,** 71-98.

ANTONIOU, C., DOUKAS, J. A. & SUBRAHMANYAM, A. 2013. Cognitive Dissonance, Sentiment, and Momentum. *Journal of Financial and Quantitative Analysis,* 48**,** 245-275.

ASEM, E. & TIAN, G. Y. 2011. Market Dynamics and Momentum Profits. *Journal of Financial and Quantitative Analysis,* 45**,** 1549-1562.

ASNESS, C. S., MOSKOWITZ, T. J. & PEDERSEN, L. H. 2013. Value and Momentum Everywhere. *The Journal of Finance,* 68**,** 929-985.

BAE, K.-H. & KAROLYI, G. A. 1994. Good News, Bad News and International Spillovers of Stock Return Volatility between Japan and the Us. *Pacific-Basin Finance Journal,* 2**,** 405-438.

BALVERS, R., WU, Y. & GILLILAND, E. 2000. Mean Reversion across National Stock Markets and Parametric Contrarian Investment Strategies. *The Journal of Finance,* 55**,** 745-772.

BARBERIS, N., HUANG, M. & SANTOS, T. 2001. Prospect Theory and Asset Prices. *The Quarterly Journal of Economics,* 116**,** 1-53.

BARBERIS, N., SHLEIFER, A. & VISHNY, R. 1998. A Model of Investor Sentiment. *Journal of Financial Economics,* 49**,** 307-343.

BARBERIS, N. & THALER, R. 2003. Chapter 18 a Survey of Behavioral Finance. *Handbook of the Economics of Finance.* Elsevier.

BEECHEY, M., GRUEN, D. W. & VICKERY, J. 2000. *The Efficient Market Hypothesis: A Survey*, Reserve Bank of Australia, Economic Research Department.

BENARTZI, S. & THALER, R. H. 2001. Naive Diversification Strategies in Defined Contribution Saving Plans. *American economic review***,** 79-98.

BLACK, F. 1986. Noise. *The journal of finance,* 41**,** 528-543.

BOHL, M. T. & SIKLOS, P. L. 2008. Empirical Evidence on Feedback Trading in Mature and Emerging Stock Markets. *Applied Financial Economics,* 18**,** 1379-1389.

CAMPBELL, J. Y. & COCHRANE, J. H. 1995. By Force of Habit: A Consumption-Based Explanation of Aggregate Stock Market Behavior. National Bureau of Economic Research.

CAMPBELL, J. Y. & KYLE, A. S. 1993. Smart Money, Noise Trading and Stock Price Behaviour. *The Review of Economic Studies,* 60**,** 1-34.

CAMPBELL, J. Y., LO, A. W.-C. & MACKINLAY, A. C. 1997. *The Econometrics of Financial Markets*, princeton University press Princeton, NJ.

CARHART, M. M. 1997. On Persistence in Mutual Fund Performance. *The Journal of finance,* 52**,** 57-82.

CHAN, K. 1988. On the Contrarian Investment Strategy. *The Journal of Business,* 61**,** 147-163.

CHAN, K. & HAMEED, A. 2006. Stock Price Synchronicity and Analyst Coverage in Emerging Markets. *Journal of Financial Economics,* 80**,** 115-147.

CHAN, K., HAMEED, A. & WILSON, T. 2000. Profitability of Momentum Strategies in the International Equity Markets. *The Journal of Financial and Quantitative Analysis,* 35**,** 153-172.

CHAN, K., JEGADEESH, N. & LAKONISHOK, J. 1996. Momentum Strategies. *The Journal of Finance,* 51**,** 1681-1713.

CHANG, E. C. 1996. Cultural Differences in Optimism, Pessimism, and Coping: Predictors of Subsequent Adjustment in Asian American and Caucasian American College Students. *Journal of Counseling Psychology,* 43**,** 113.
CHANG, E. C. 2002. Cultural Differences in Psychological Distress in Asian and Caucasian American College Students: Examining the Role of Cognitive and Affective Concomitants. *Journal of Counseling Psychology,* 49**,** 47.
CHEEMA, M. A. & NARTEA, G. V. 2014. Momentum Returns and Information Uncertainty: Evidence from China. *Pacific-Basin Finance Journal,* 30**,** 173-188.
CHEEMA, M. A. & NARTEA, G. V. 2015. Momentum Returns, Market States, and Market Dynamics: Is China Different? *Conference: 2015 New Zealand Finance Colloquium.*
CHEN, JIANG, Y. & LI, Y. 2012. The State of the Market and the Contrarian Strategy: Evidence from China's Stock Market. *Journal of Chinese Economic and Business Studies,* 10**,** 89-108.
CHEN, G., KIM, K. A., NOFSINGER, J. R. & RUI, O. M. 2007. Trading Performance, Disposition Effect, Overconfidence, Representativeness Bias, and Experience of Emerging Market Investors. *Journal of Behavioral Decision Making,* 20**,** 425-451.
CHEN, G. M., LEE, B.-S. & RUI, O. 2001. Foreign Ownership Restrictions and Market Segmentation in China's Stock Markets. *Journal of Financial Research,* 24**,** 133-155.
CHOPRA, N., LAKONISHOK, J. & RITTER, J. R. 1992. Measuring Abnormal Performance: Do Stocks Overreact? *Journal of Financial Economics,* 31**,** 235-268.
CHOU, P.-H., WEI, K. J. & CHUNG, H. 2007. Sources of Contrarian Profits in the Japanese Stock Market. *Journal of Empirical Finance,* 14**,** 261-286.
CHUI, A. C. W., TITMAN, S. & WEI, K. C. J. 2000. Momentum, Legal Systems and Ownership Structure: An Analysis of Asian Stock Markets. *University of Texas at Austin working paper*.
CHUI, A. C. W., TITMAN, S. & WEI, K. C. J. 2010. Individualism and Momentum around the World. *The Journal of Finance,* 65**,** 361-392.
CLARKE, J., JANDIK, T. & MANDELKER, G. 2001. The Efficient Markets Hypothesis. *Expert financial planning: Advice from industry leaders***,** 126-141.
CONRAD, J. & KAUL, G. 1998. An Anatomy of Trading Strategies. *Review of Financial Studies,* 11**,** 489-519.
COOPER, M. J., GUTIERREZ, R. C. & HAMEED, A. 2004. Market States and Momentum. *The Journal of Finance,* 59**,** 1345-1365.
COX, J. C. & ROSS, S. A. 1976. The Valuation of Options for Alternative Stochastic Processes. *Journal of financial economics,* 3**,** 145-166.
DANIEL, K., HIRSHLEIFER, D. & SUBRAHMANYAM, A. 1998. Investor Psychology and Security Market under- and Overreactions. *Journal of Finance,* 53**,** 1839-1885.
DE BONDT, W. F. M. & THALER, R. 1985. Does the Stock Market Overreact? *The Journal of Finance,* 40**,** 793-805.
DE BONDT, W. F. M. & THALER, R. H. 1987. Further Evidence on Investor Overreaction and Stock Market Seasonality. *The Journal of Finance,* 42**,** 557-581.
DE LONG, J. B., SHLEIFER, A., SUMMERS, L. H. & WALDMANN, R. J. 1990. Noise Trader Risk in Financial Markets. *Journal of political Economy***,** 703-738.
DU, D., HUANG, Z. & LIAO, B.-S. 2009. Why Is There No Momentum in the Taiwan Stock Market? *Journal of Economics and Business,* 61**,** 140-152.

EDWARDS, W. 1968. Conservatism in Human Information Processing. *Formal representation of human judgment,* 17**,** 51.
FAMA, E. F. 1965. The Behavior of Stock-Market Prices. *The journal of Business,* 38**,** 34-105.
FAMA, E. F. 1970. Efficient Capital Markets: A Review of Theory and Empirical Work. *The journal of Finance,* 25**,** 383-417.
FAMA, E. F. 1991. Efficient Capital Markets: Ii. *The journal of finance,* 46**,** 1575-1617.
FAMA, E. F. 1998. Market Efficiency, Long-Term Returns, and Behavioral Finance. *Journal of Financial Economics,* 49**,** 283-306.
FAMA, E. F. & FRENCH, K. R. 1993. Common Risk Factors in the Returns on Stocks and Bonds. *Journal of Financial Economics,* 33**,** 3-56.
FAMA, E. F. & FRENCH, K. R. 1995. Size and Book-to-Market Factors in Earnings and Returns. *The Journal of Finance,* 50**,** 131-155.
FAMA, E. F. & FRENCH, K. R. 1996a. Multifactor Explanations of Asset Pricing Anomalies. *The Journal of Finance,* 51**,** 55-84.
FAMA, E. F. & FRENCH, K. R. 1996b. Multifactor Explanations of Asset Pricing Anomalies. *Journal of Finance,* 51**,** 55-84.
FAMA, E. F. & FRENCH, K. R. 1997. Industry Costs of Equity. *Journal of Financial Economics,* 43**,** 153-193.
FAMA, E. F. & FRENCH, K. R. 2012. Size, Value, and Momentum in International Stock Returns. *Journal of Financial Economics,* 105**,** 457-472.
FIGLEWSKI, S. 1979. Subjective Information and Market Efficiency in a Betting Market. *The Journal of Political Economy***,** 75-88.
FRENCH, K. R. 2014. *Historical Benchmark Returns* [Online]. Available: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html#HistBenchmarks [Accessed 5 March 2014].
FRIEDMAN, M. 1953. The Methodology of Positive Economics.
GALARIOTIS, E. C. 2014. Contrarian and Momentum Trading: A Review of the Literature. *Review of Behavioural Finance,* 6**,** 63-82.
GALARIOTIS, E. C., HOLMES, P., KALLINTERAKIS, V. & MA, X. S. 2014. Market States, Expectations, Sentiment and Momentum: How Naive Are Investors? *International Review of Financial Analysis,* 32**,** 1-12.
GEORGE, T. J. & HWANG, C. Y. 2007. Long‐Term Return Reversals: Overreaction or Taxes? *The Journal of Finance,* 62**,** 2865-2896.
GILBOA, I. 2014. Rationality and the Bayesian Paradigm. *Journal of Economic Methodology,* 22**,** 312-334.
GILBOA, I. & SCHMEIDLER, D. 1993. Updating Ambiguous Beliefs. *Journal of economic theory,* 59**,** 33-49.
GILBOA, I. & SCHMEIDLER, D. 2001. *A Theory of Case-Based Decisions*, Cambridge University Press.
GRETHER, D. M. 1980. Bayes Rule as a Descriptive Model: The Representativeness Heuristic. *The Quarterly Journal of Economics***,** 537-557.
GRIFFIN, J. M., JI, X. & MARTIN, J. S. 2003. Momentum Investing and Business Cycle Risk: Evidence from Pole to Pole. *Journal of Finance***,** 2515-2547.
GRINBLATT, M. & HAN, B. 2002. The Disposition Effect and Momentum. National Bureau of Economic Research.
GROSSMAN, S. J. & STIGLITZ, J. E. 1980. On the Impossibility of Informationally Efficient Markets. *The American economic review,* 70**,** 393-408.

GRUNDY, B. D. & MARTIN, J. S. 2001. Understanding the Nature of the Risks and the Source of the Rewards to Momentum Investing. *Review of Financial Studies,* 14**,** 29-78.
GUPTA, K., LOCKE, S. & SCRIMGEOUR, F. 2010. International Comparison of Returns from Conventional, Industrial and 52-Week High Momentum Strategies. *Journal of International Financial Markets, Institutions and Money,* 20**,** 423-435.
GUPTA, K., LOCKE, S. & SCRIMGEOUR, F. 2013. Profitability of Momentum Returns under Alternative Approaches. *International Journal of Managerial Finance,* 9**,** 219-246.
HAMAO, Y., MASULIS, R. W. & NG, V. 1990. Correlations in Price Changes and Volatility across International Stock Markets. *Review of Financial studies,* 3**,** 281-307.
HAMEED, A. & KUSNADI, Y. 2002. Momentum Strategies: Evidence from Pacific Basin Stock Markets. *Journal of Financial Research,* 25**,** 383-397.
HANAUER, M. 2014. Is Japan Different? Evidence on Momentum and Market Dynamics. *International Review of Finance,* 14**,** 141-160.
HARRISON, J. M. & KREPS, D. M. 1979. Martingales and Arbitrage in Multiperiod Securities Markets. *Journal of Economic theory,* 20**,** 381-408.
HEINE, S. J. & HAMAMURA, T. 2007. In Search of East Asian Self-Enhancement. *Personality and Social Psychology Review,* 11**,** 4-27.
HON, M. T. & TONKS, I. 2003. Momentum in the Uk Stock Market. *Journal of Multinational Financial Management,* 13**,** 43-70.
HONG, H. & STEIN, J. C. 1999. A Unified Theory of Underreaction, Momentum Trading, and Overreaction in Asset Markets. *Journal of Finance,* 54**,** 2143-2184.
HUANG, D. 2006. Market States and International Momentum Strategies. *The Quarterly Review of Economics and Finance,* 46**,** 437-446.
HVIDKJAER, S. 2006. A Trade-Based Analysis of Momentum. *Review of Financial Studies,* 19**,** 457-491.
JEGADEESH, N. 1990. Evidence of Predictable Behavior of Security Returns. *The Journal of Finance,* 45**,** 881-898.
JEGADEESH, N. & TITMAN, S. 1993. Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency. *The Journal of Finance,* 48**,** 65-91.
JEGADEESH, N. & TITMAN, S. 1995. Overreaction, Delayed Reaction, and Contrarian Profits. *The Review of Financial Studies,* 8**,** 973-993.
JEGADEESH, N. & TITMAN, S. 2001a. Profitability of Momentum Strategies: An Evaluation of Alternative Explanations. *The Journal of Finance,* 56**,** 699-720.
JEGADEESH, N. & TITMAN, S. 2001b. Profitability of Momentum Strategies: An Evaluation of Alternative Explanations. *Journal of Finance,* 56**,** 699-720.
JEGADEESH, N. & TITMAN, S. 2002. Cross-Sectional and Time-Series Determinants of Momentum Returns. *Review of Financial Studies,* 15**,** 143-157.
JENSEN, M. C. 1978. Some Anomalous Evidence Regarding Market Efficiency. *Journal of financial economics,* 6**,** 95-101.
KAHNEMAN, D. & RIEPE, M. W. 1998. Aspects of Investor Psychology. *The Journal of Portfolio Management,* 24**,** 52-65.
KAHNEMAN, D. & TVERSKY, A. 1979. Prospect Theory: An Analysis of Decision under Risk. *Econometrica: Journal of the Econometric Society***,** 263-291.
KANG, J., LIU, M.-H. & NI, S. X. 2002. Contrarian and Momentum Strategies in the China Stock Market: 1993-2000. *Pacific-Basin Finance Journal,* 10**,** 243-265.

KING, M., SENTANA, E. & WADHWANI, S. 1990. Volatiltiy and Links between National Stock Markets. National Bureau of Economic Research.
KYLE, A. S. 1985. Continuous Auctions and Insider Trading. *Econometrica: Journal of the Econometric Society*, 1315-1335.
LAKONISHOK, J., SHLEIFER, A., THALER, R. & VISHNY, R. 1991. Window Dressing by Pension Fund Managers. National Bureau of Economic Research.
LAKONISHOK, J., SHLEIFER, A. & VISHNY, R. W. 1992. The Impact of Institutional Trading on Stock Prices. *Journal of financial economics,* 32, 23-43.
LEE, C. M. C. & SWAMINATHAN, B. 2000. Price Momentum and Trading Volume. *The Journal of Finance,* 55, 2017-2069.
LEE, Y.-T. & SELIGMAN, M. E. 1997. Are Americans More Optimistic Than the Chinese? *Personality and Social Psychology Bulletin,* 23, 32-40.
LEHMANN, B. N. 1990. Fads, Martingales, and Market Efficiency. *The Quarterly Journal of Economics,* 105, 1-28.
LEROY, S. F. 1973. Risk Aversion and the Martingale Property of Stock Prices. *International Economic Review*, 436-446.
LEWELLEN, J. 2002. Momentum and Autocorrelation in Stock Returns. *Review of Financial Studies,* 15, 533-563.
LI, B., QIU, J. & WU, Y. 2011. Momentum and Seasonality in Chinese Stock Markets. *Journal of Chinese Economics and Finance*.
LI, H. 2007. International Linkages of the Chinese Stock Exchanges: A Multivariate Garch Analysis. *Applied Financial Economics,* 17, 285-297.
LIN, A. Y. & SWANSON, P. E. 2008. The Effect of China's Reform Policies on Stock Market Information Transmission. *Quarterly Journal of Finance and Accounting*, 49-76.
LINTNER, J. 1965. The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets. *The review of economics and statistics*, 13-37.
LIU, L. X. & ZHANG, L. 2008. Momentum Profits, Factor Pricing, and Macroeconomic Risk. *Review of Financial Studies,* 21, 2417-2448.
LO, A. W. & MACKINLAY, A. C. 1990. When Are Contrarian Profits Due to Stock Market Overreaction? *Review of Financial Studies,* 3, 175-205.
LONG, J. S. & ERVIN, L. H. 2000. Using Heteroscedasticity Consistent Standard Errors in the Linear Regression Model. *The American Statistician,* 54, 217-224.
LUCAS JR, R. E. 1978. Asset Prices in an Exchange Economy. *Econometrica: Journal of the Econometric Society*, 1429-1445.
LUI, W., STRONG, N. & XU, X. 1999. The Profitability of Momentum Investing. *Journal of Business Finance & Accounting,* 26, 1043-1091.
MACKINNON, J. G. & WHITE, H. 1985. Some Heteroskedasticity-Consistent Covariance Matrix Estimators with Improved Finite Sample Properties. *Journal of Econometrics,* 29, 305-325.
MALKIEL, B. G. 1991. Efficient Market Hypothesis. *In:* EATWELL, J., MILGATE, M. & NEWMAN, P. (eds.) *The World of Economics.* London: Palgrave Macmillan UK.
MALKIEL, B. G. 2003. The Efficient Market Hypothesis and Its Critics. *The Journal of Economic Perspectives,* 17, 59-82.
MANDELBROT, B. 1966. Forecasts of Future Prices, Unbiased Markets, and" Martingale" Models. *The Journal of Business,* 39, 242-255.
MCLEAN, R. D. 2010. Idiosyncratic Risk, Long-Term Reversal, and Momentum. *The Journal of Financial and Quantitative Analysis,* 45, 883-906.

MCQUEEN, G., PINEGAR, M. & THORLEY, S. 1996. Delayed Reaction to Good News and the Cross-Autocorrelation of Portfolio Returns. *The Journal of Finance,* 51**,** 889-919.
MEHRA, R. & PRESCOTT, E. C. 1985. The Equity Premium: A Puzzle. *Journal of monetary Economics,* 15**,** 145-161.
MERTON, R. C. & SAMUELSON, P. A. 1974. Fallacy of the Log-Normal Approximation to Optimal Portfolio Decision-Making over Many Periods. *Journal of Financial Economics,* 1**,** 67-94.
MOK, H. M. K. & HUI, Y. V. 1998. Underpricing and Aftermarket Performance of Ipos in Shanghai, China. *Pacific Basin Finance Journal,* 6**,** 453-474.
MOSKOWITZ, T. J. & GRINBLATT, M. 1999. Do Industries Explain Momentum? *Journal of Finance,* 54**,** 1249-1290.
NAUGHTON, T., TRUONG, C. & VEERARAGHAVAN, M. 2008. Momentum Strategies and Stock Returns: Chinese Evidence. *Pacific-Basin Finance Journal,* 16**,** 476-492.
NG, A. 2000. Volatility Spillover Effects from Japan and the Us to the Pacific–Basin. *Journal of international money and finance,* 19**,** 207-233.
NG, L. & WU, F. 2007. The Trading Behavior of Institutions and Individuals in Chinese Equity Markets. *Journal of Banking & Finance,* 31**,** 2695-2710.
NOFSINGER, J. R. 2011. *The Psychology of Investing*, Prentice Hall.
ODEAN, T. 1998. Are Investors Reluctant to Realize Their Losses? *The Journal of finance,* 53**,** 1775-1798.
PAN, L., TANG, Y. & XU, J. 2013. Weekly Momentum by Return Interval Ranking. *Pacific-Basin Finance Journal,* 21**,** 1191-1208.
PATEL, S. A. & SARKAR, A. 1998. Crises in Developed and Emerging Stock Markets. *Financial Analysts Journal***,** 50-61.
PHUA, V., CHAN, H., FAFF, R. & HUDSON, R. 2010. The Influence of Time, Seasonality and Market State on Momentum: Insights from the Australian Stock Market. *Applied Financial Economics,* 20**,** 1547-1563.
RABIN, M. 2002. Inference by Believers in the Law of Small Numbers. *The Quarterly Journal of Economics,* 117**,** 775-816.
ROBERTS, H. V. 1967. Statistical Versus Clinical Prediction of the Stock Market.
ROUWENHORST, K. G. 1998a. International Momentum Strategies. *The Journal of Finance,* 53**,** 267-284.
ROUWENHORST, K. G. 1998b. International Momentum Strategies. *Journal of Finance,* 53**,** 267-284.
ROUWENHORST, K. G. 1999. Local Return Factors and Turnover in Emerging Stock Markets. *The Journal of Finance,* 54**,** 1439-1464.
SAGI, J. S. & SEASHOLES, M. S. 2007. Firm-Specific Attributes and the Cross-Section of Momentum. *Journal of Financial Economics,* 84**,** 389-434.
SAMUELSON, P. A. 1965. Proof That Properly Anticipated Prices Fluctuate Randomly. *IMR; Industrial Management Review (pre-1986),* 6**,** 41.
SCHARFSTEIN, D. S. & STEIN, J. C. 1990. Herd Behavior and Investment. *The American Economic Review***,** 465-479.
SHARPE, W., ALEXANDER, G. & BAILEY, J. V. 1990. Investments, Englewood. NJ: Prentice Hall.
SHARPE, W. F. 1964. Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk. *The journal of finance,* 19**,** 425-442.
SHEFRIN, H. & STATMAN, M. 1985. The Disposition to Sell Winners Too Early and Ride Losers Too Long: Theory and Evidence. *journal of Finance***,** 777-790.

SHILLER, R. J., FISCHER, S. & FRIEDMAN, B. M. 1984. Stock Prices and Social Dynamics. *Brookings papers on economic activity,* 1984**,** 457-510.
SHLEIFER, A. 2000. *Inefficient Markets: An Introduction to Behavioral Finance*, OUP Oxford.
SU, C. & BROOKFIELD, D. 2013. An Evaluation of the Impact of Stock Market Reforms on Ipo under-Pricing in China: The Certification Role of Underwriters. *International Review of Financial Analysis,* 28**,** 20-33.
SU, D. & FLEISHER, B. M. 1999. An Empirical Investigation of Underpricing in Chinese Ipos. *Pacific Basin Finance Journal,* 7**,** 173-202.
TVERSKY, A. & KAHNEMAN, D. 1973. Availability: A Heuristic for Judging Frequency and Probability. *Cognitive psychology,* 5**,** 207-232.
TVERSKY, A. & KAHNEMAN, D. 1974. Judgment under Uncertainty: Heuristics and Biases. *science,* 185**,** 1124-1131.
WANG, C. 2004. Relative Strength Strategies in China's Stock Market: 1994–2000. *Pacific-Basin Finance Journal,* 12**,** 159-177.
WANG, C. & CHIN, S. 2004. Profitability of Return and Volume-Based Investment Strategies in China's Stock Market. *Pacific-Basin Finance Journal,* 12**,** 541-564.
WANG, J. & WU, Y. 2011. Risk Adjustment and Momentum Sources. *Journal of Banking & Finance,* 35**,** 1427-1435.
WANG, S. S. & FIRTH, M. 2004. Do Bears and Bulls Swim across Oceans? Market Information Transmission between Greater China and the Rest of the World. *Journal of International Financial Markets, Institutions and Money,* 14**,** 235-254.
WORTHINGTON, A. & HIGGS, H. 2004. Transmission of Equity Returns and Volatility in Asian Developed and Emerging Markets: A Multivariate Garch Analysis. *International Journal of Finance & Economics,* 9**,** 71-80.
WU, Y. 2011. Momentum Trading, Mean Reversal and Overreaction in Chinese Stock Market. *Review of Quantitative Finance and Accounting***,** 1-23.
ZAROWIN, P. 1990. Size, Seasonality, and Stock Market Overreaction. *Journal of Financial and Quantitative Analysis,* 25**,** 113-125.
ZHANG, X. F. 2006. Information Uncertainty and Stock Returns. *The Journal of Finance,* 61**,** 105-137.
ZHAO, Y. & WANG, X. 2001. The Empirical Study on Disposition Effect in China′ S Stock Market [J]. *Journal of Finance,* 7**,** 011.
ZHOU, H., GEPPERT, J. & KONG, D. 2010. An Anatomy of Trading Strategies: Evidence from China. *Emerging Markets Finance and Trade,* 46**,** 66-79.

Appendix

Appendix A1

Table A1 Average returns of equal-weighted momentum strategies of sub-sample periods

STRATEGY (J-K)	1993-2012 Equal-weighted	1993-1996 Sub-period 1	1997-2000 Sub-period 2	2001-2004 Sub-period 3	2005-2008 Sub-period 4	2009-2012 Sub-period 5
1-1	-0.0125**	-0.0161	0.0017++§	-0.0080635^	-0.0220**^^	-0.0162***^^^
	(-3.24)	(-1.08)	(0.32)	(-1.44)	(-2.39)	(-3.85)
1-2	-0.0111***	-0.0115	-0.0051	-0.0077*^^	-0.0176**^^	-0.0129***^^^
	(-3.70)	(-0.95)	(-1.12)	(-1.82)	(-2.68)	(-3.69)
1-3	-0.0066***	-0.0049	-0.0048	-0.0037	-0.0120**^	-0.0079***^^^
	(-2.95)	(-0.58)	(-1.12)	(-1.10)	(-2.20)	(-2.84)
1-4	-0.0048**	-0.0038	-0.0039	-0.0019	-0.0122**^^	-0.0048*^
	(-2.53)	(-0.60)	(-1.14)	(-0.59)	(-2.37)	(-1.99)
1-5	-0.0039**	-0.0003	-0.0025	-0.0015	-0.0110**^^+	-0.0056**^^
	(-2.49)	(-0.06)	(-0.85)	(-0.46)	(-2.45)	(-2.38)
1-6	-0.0026*	-0.0008	-0.0017	0.0006	-0.0079**^	-0.0049**^^
	(-1.92)	(-0.18)	(-0.68)	(0.20)	(-2.18)	(-2.3)
1-7	-0.0015	0.0031	-0.0007	0.0007	-0.0075**^^+§	-0.0046**^^
	(-1.20)	(0.83)	(-0.30)	(0.24)	(-2.37)	(-2.21)
1-8	-0.0021*	-0.0007	-0.0010	0.0010	-0.0058**^^	-0.0031^
	(-1.77)	(-0.17)	(-0.42)	(0.360)	(-2.14)	(-1.67)
1-9	-0.0005	0.0018	-0.0010	0.0018	-0.0018*^^	-0.0025
	(-0.35)	(0.51)	(-0.46)	(0.67)	(-1.92)	(-1.40)
1-10	-0.0016	0.0003	-0.0021	0.0020	-0.0046*^^	-0.0025^^
	(-1.51)	(0.09)	(-0.96)	(0.760)	(-1.82)	(-1.51)
1-11	-0.0012	0.0010	-0.0018	0.0025	-0.0037	-0.0021
	(-1.27)	(0.36)	(-0.83)	(1.01)	(-1.45)	(-1.32)
1-12	-0.0010	-0.0005	-0.0016	0.0030	-0.0030	-0.0013
	(-1.06)	(-1.20)	(-0.80)	(1.20)	(-1.14)	(-0.85)
2-1	-0.0151***	-0.0134	-0.0064	-0.0127**^^	-0.0228**^^	-0.0177***^^
	(-3.53)	(-0.78)	(-0.97)	(-2.04)	(-2.43)	(-3.54)
2-2	-0.0090***	0.0003§§	-0.0098	-0.0077	-0.0157**^	-0.0117***^^^
	(-2.76)	(0.03)	(-1.6)	(-1.47)	(-2.07)	(-2.77)
2-3	-0.0058**	-0.0007	-0.0086*	-0.0034	-0.0138*^	-0.0058
	(-2.07)	(-0.07)	(-1.76)	(-0.71)	(-1.94)	(-1.62)
2-4	-0.0043*	0.0013	-0.0049	-0.0017	-0.0129*^	-0.0058*
	(-1.79)	(0.17)	(-1.18)	(-0.36)	(-1.94)	(-1.76)

Table A1 Continued						
2-5	-0.0032	0.0000	-0.0028	0.0008	-0.0109*^	-0.0055*
	(-1.60)	(0.01)	(-0.81)	(0.19)	(-1.94)	(-1.74)
2-6	-0.0015	0.0048	-0.0006	0.0020	-0.0100**^^+§§	-0.0054*^
	(-0.80)	(0.83)	(-0.20)	(0.45)	(-2.14)	(-1.81)
2-7	-0.0011	0.0055§	0.0000	0.0025	-0.0075*	-0.0036
	(-0.66)	(1.03)	(-0.01)	(0.59)	(-1.90)	(-1.32)
2-8	-0.0012	0.0043	-0.0006	0.0034	-0.0066*	-0.0027
	(-0.72)	(0.82)	(-0.20)	(0.85)	(-1.80)	(-1.01)
2-9	-0.0011	0.0035	-0.0019	0.0042	-0.0058^	-0.0028
	(-0.70)	(0.72)	(-0.64)	(1.08)	(-1.66)	(-1.10)
2-10	-0.0010	0.0025	-0.0024	0.0048	-0.0042	-0.0022
	(-0.71)	(0.55)	(-0.84)	(1.29)	(-1.19)	(-0.91)
2-11	-0.0005	0.0028	-0.0020	0.0049	-0.0037	-0.0014
	(-0.36)	(0.65)	(-0.76)	(1.36)	(-1.00)	(-0.59)
2-12	-0.0008	0.0003	0.0003	0.0041	-0.0039	-0.0009
	(-0.57)	(0.09)	(-0.57)	(1.14)	(-1.03)	(-0.39)
3-1	-0.0126***	-0.0122	-0.0093	-0.0076	-0.0202**^^	-0.0139***^^
	(-3.07)	(-0.77)	(-1.27)	(-1.21)	(-2.06)	(-2.75)
3-2	-0.0076**	-0.0022	-0.0117*	-0.0033	-0.0172*^	-0.0083*
	(-2.16)	(-0.17)	(-1.85)	(-0.55)	(-1.94)	(-1.85)
3-3	-0.0047	0.0015	-0.0073	-0.0007	-0.0141	-0.0066
	(-1.57)	(0.15)	(-1.34)	(-0.12)	(-1.66)	(-1.55)
3-4	-0.0033	0.0002	-0.0043	0.0024	-0.0128	-0.0057
	(-1.26)	(0.03)	(-0.89)	(0.40)	(-1.68)	(-1.38)
3-5	-0.0017	0.0046	-0.0009	0.0034	-0.0127**^+	-0.0058
	(-0.74)	(0.68)	(-0.21)	(0.61)	(-2.02)	(-1.47)
3-6	-0.0010	0.0049	0.0010	0.0046	-0.0083	-0.0039
	(-0.47)	(0.77)	-0.2600	(0.86)	(-1.61)	(-1.05)
3-7	-0.0005	0.0068	0.0008	0.0057	-0.0072	-0.0029
	(-0.27)	(1.11)	-0.2200	(1.11)	(-1.50)	(-0.82)
3-8	-0.0010	0.0031	-0.0010	0.0065	-0.0067	-0.0029
	(-0.54)	(0.53)	(-0.28)	(1.30)	(-1.46)	(-0.84)
3-9	-0.0006	0.0046	-0.0021	0.0075	-0.0046	-0.0022
	(-0.30)	(0.80)	(-0.58)	(1.54)	(-1.03)	(-0.67)
3-10	-0.0006	0.0308	-0.0025	0.0072	-0.0042	-0.0014
	(-0.34)	(0.40)	(-0.71)	(1.52)	(-0.89)	(-0.42)
3-11	-0.0006	0.0012	-0.0017	0.0061	-0.0044	-0.0007
	(-0.32)	(0.24)	(-0.51)	(1.33)	(-0.91)	(-0.23)
3-12	-0.0006	0.0017	-0.0008	0.0069	-0.0035	-0.0012
	(-0.34)	(0.37)	(-0.23)	(1.53)	(-0.71)	(-0.40)

Table A1 Continued						
4-1	-0.0104**	-0.0121	-0.0095	-0.0045	-0.0227**^^	-0.0106**^
	(-2.53)	(-0.84)	(-1.36)	(-0.64)	(-2.13)	(-2.02)
4-2	-0.0061*	0.0027§	-0.0086	-0.0025	-0.0177*^	-0.0089*^
	(-1.75)	(0.24)	(-1.33)	(-0.37)	(-1.88)	(-1.75)
4-3	-0.0040	0.0000	-0.0049	0.0020	-0.0149*	-0.0064
	(-1.31)	(-0.00)	(-0.88)	(0.29)	(-1.73)	(-1.33)
4-4	-0.0019	0.0040	-0.0003	0.0036	-0.0154**^+	-0.0064
	(-0.71)	(0.48)	(-0.05)	(0.56)	(-2.07)	(-1.35)
4-5	-0.0009	0.0060	0.0027	0.0049	-0.0101*	-0.0044
	(-0.36)	(0.80)	-0.5900	(0.78)	(-1.70)	-0.9800
4-6	-0.0002	0.0071	0.0028	0.0074	-0.0081	-0.0034
	(-0.08)	(0.99)	-0.5900	(1.22)	(-1.47)	(-0.78)
4-7	-0.0002	0.0059	0.0005	0.0081	-0.0073	-0.0034
	(-0.09)	(0.84)	-0.1200	(1.38)	(-1.37)	(-0.80)
4-8	-0.0004	0.0039	-0.0010	0.0092	-0.0050	-0.0022
	(-0.16)	(0.56)	(-0.22)	(1.62)	(-0.96)	(-0.55)
4-9	0.0002	0.0047	-0.0018	0.0092	-0.0041	-0.0012
	-0.0800	(0.69)	(-0.42)	(1.67)	(-0.76)	(-0.30)
4-10	-0.0002	0.0020	-0.0018	0.0078	-0.0045	-0.0006
	(-0.11)	(0.31)	(-0.42)	(1.44)	(-0.80)	(-0.15)
4-11	-0.0001	0.0038	-0.0007	0.0085	-0.0037	-0.0011
	(-0.05)	(0.61)	(-0.17)	(1.60)	(-0.65)	(-0.28)
4-12	-0.0008	-0.0004	-0.0012	0.0093*^+§	-0.0051	-0.0013
	(-0.40)	(-0.06)	(-0.31)	(1.76)	(-0.90)	(-0.35)
5-1	-0.0083**	0.0050§§	-0.0086	-0.0040	-0.0232**^^	-0.0137**^^
	(-2.16)	(0.41)	(-1.24)	(-0.51)	(-2.73)	(-2.33)
5-2	-0.0057*	0.0009	-0.0064	0.0015	-0.0175*^	-0.0098*^
	(-1.68)	(0.08)	(-1.00)	(0.19)	(-1.95)	(-1.82)
5-3	-0.0024	0.0062	-0.0017	0.0043	-0.0167**^+	-0.0076
	(-0.78)	(0.64)	(-0.28)	(0.58)	(-2.07)	(-1.49)
5-4	-0.0011	0.0074	0.0022	0.0057	-0.0113	-0.0052
	(-0.39)	(0.86)	-0.4100	(0.81)	(-1.68)	(-1.06)
5-5	-0.0005	0.0078	0.0027	0.0082	-0.0093	-0.0041
	(-0.20)	(0.97)	-0.5000	(1.20)	(-1.47)	(-0.84)
5-6	-0.0005	0.0058	0.0002	0.0098	-0.0079	-0.0043
	(-0.18)	(0.75)	-0.0300	(1.47)	(-1.31)	(-0.94)
5-7	-0.0004	0.0054	-0.0013	0.0105	-0.0055	-0.0032
	(-0.15)	(0.71)	(-0.24)	(1.65)	(-0.92)	(-0.71)
5-8	-0.0002	0.0040	-0.0027	0.0106*	-0.0045	-0.0017
	(-0.08)	(0.54)	(-0.52)	(1.70)	(-0.73)	(-0.39)

Table A1 Continued						
5-9	-0.0004	0.0028	-0.0029	0.0094	-0.0047	-0.0009
	(-0.16)	(0.37)	(-0.57)	(1.54)	(-0.76)	(-0.22)
5-10	-0.0003	0.0040	-0.0021	0.0101	-0.0034	-0.0013
	(-0.12)	(-0.56)	(-0.44)	(1.68)	(-0.54)	(-0.31)
5-11	-0.0009	0.0004	-0.0023	0.0108*^+§	-0.0053	-0.0016
	(-0.40)	(0.05)	(-0.48)	(1.81)	(-0.82)	(-0.37)
5-12	-0.0008	0.0017	-0.0031	0.0112*^+§	-0.0083	-0.0020
	(-0.37)	(0.24)	(-0.65)	(1.87)	(-1.44)	(-0.48)
6-1	-0.0085**	-0.0051	-0.0049	0.0019	-0.0216**^^	-0.0136**^^
	(-2.23)	(-0.38)	(-0.74)	(0.22)	(-2.23)	(-2.43)
6-2	-0.0042	0.0069§§	-0.0032	0.0044	-0.0205**^^+	-0.0103*^
	(-1.24)	(0.63)	(-0.50)	(0.54)	(-2.39)	(-1.89)
6-3	-0.0020	0.0075§	0.0005	0.0068	-0.0137*^	-0.0057
	(-0.61)	(0.75)	-0.0700	(0.87)	(-1.84)	(-1.09)
6-4	-0.0008	0.0086	0.0023	0.0096	-0.0108	-0.0045
	(-0.25)	(0.94)	-0.3800	(1.27)	(-1.57)	(-0.87)
6-5	-0.0008	0.0059	0.0000	0.0111	-0.0092	-0.0048
	(-0.26)	(0.69)	0.0000	(1.50)	(-1.35)	(-0.95)
6-6	-0.0004	0.0055	-0.0013	0.0125*+	-0.0062	-0.0036
	(-0.16)	(0.65)	(-0.22)	(1.75)	(-0.91)	(-0.72)
6-7	-0.0001	0.0053	-0.0025	0.0124*, +	-0.0053	-0.0020
	(-0.04)	(0.62)	(-0.42)	(1.77)	(-0.75)	(-0.41)
6-8	-0.0007	0.0019	-0.0031	0.0111	-0.0055	-0.0007
	(-0.25)	(0.23)	(-0.53)	(1.62)	(-0.78)	(-0.15)
6-9	-0.0005	0.0033	-0.0026	0.0120*+§	-0.0039	-0.0011
	(-0.19)	(0.41)	(-0.46)	(1.78)	(-0.54)	(-0.24)
6-10	-0.0012	-0.0010	-0.0034	0.0124*^+§	-0.0055	-0.0014
	(-0.49)	(-0.13)	(-0.61)	(1.88)	(-0.76)	(-0.29)
6-11	-0.0011	0.0009	-0.0040	0.0129*^++§§	-0.0094^	-0.0017
	(-0.44)	(0.11)	(-0.73)	(1.94)	(-1.43)	(-0.36)
6-12	-0.0016	-0.0013	-0.0025	0.0128*^++§§	-0.0080	-0.0027
	(-0.68)	(-0.17)	(-0.49)	(1.93)	(-1.24)	(-0.60)
7-1	-0.0056	0.0056§	-0.0028	0.0034	-0.0247**^^+§	-0.0130**^^
	(-1.46)	(0.43)	(-0.40)	(0.39)	(-2.58)	(-2.22)
7-2	-0.0034	0.0086§	-0.0011	0.0056	-0.0166**^	-0.0078
	(-0.97)	(0.76)	(-0.16)	(0.67)	(-2.05)	(-1.42)
7-3	-0.0011	0.0120§	0.0007	0.0095	-0.0135**^^	-0.0050
	(-0.34)	(1.15)	-0.1000	(1.19)	(-1.77)	(-0.91)
7-4	-0.0008	0.0081	-0.0006	0.0113	-0.0112	-0.0049
	(-0.25)	(0.82)	(-0.09)	(1.44)	(-1.53)	(-0.89)

Table A1 Continued						
7-5	-0.0008	0.0061	-0.0021	0.0128*+	-0.0075	-0.0038
	(-0.25)	(0.63)	(-0.32)	(1.70)	(-1.02)	(-0.70)
7-6	0.0020	0.0056	-0.0031	0.0133*+	-0.0062	-0.0021
	-0.5400	(0.58)	(-0.48)	(1.79)	(-0.80)	(-0.40)
7-7	-0.0007	0.0029	-0.0037	0.0120	-0.0063	-0.0008
	(-0.23)	(0.31)	(-0.58)	(1.63)	(-0.81)	(-0.15)
7-8	-0.0008	0.0028	-0.0034	0.0130*^+§	-0.0044	-0.0010
	(-0.27)	(0.30)	(-0.56)	(1.82)	(-0.56)	(-0.19)
7-9	-0.0014	-0.0007	-0.0044	0.0136*^+§	-0.0061	-0.0011
	(-0.50)	(-0.07)	(-0.74)	(1.92)	(-0.78)	(-0.21)
7-10	-0.0013	0.0010	-0.0053	0.0139*^++§§	-0.0099^	-0.0014
	(-0.48)	(0.11)	(-0.90)	(1.95)	(-1.40)	(-0.28)
7-11	-0.0017	-0.0004	-0.0034	0.0138*^++§§	-0.0088	-0.0026
	(-0.64)	(-0.05)	(-0.61)	(1.94)	(-1.25)	(-0.53)
7-12	-0.0022	-0.0035	-0.0044^	0.0145**^++§§	-0.0082	-0.0082
	(-0.84)	(-0.38)	(-0.83)	(2.05)	(-1.17)	(-0.55)
8-1	-0.0055	-0.0082	-0.0024	0.0049	-0.0200**^^	-0.0088
	(-1.40)	(-0.26)	(-0.32)	(0.55)	(-2.31)	(-1.49)
8-2	-0.0033	0.0094	-0.0019	0.0083	-0.0161*^^	0.0362
	(-0.92)	(0.82)	(-0.26)	(-0.97)	(-2.01)	(-0.99)
8-3	-0.0017	0.0088	-0.0027	0.0110	-0.0130^	-0.0050
	(-0.50)	(-0.82)	(-0.37)	(1.32)	(-1.68)	(-0.87)
8-4	-0.0011	0.0068	-0.0032	0.0132	-0.0093	-0.0035
	(-0.35)	(0.65)	(-0.45)	(1.64)	(-1.20)	(-0.62)
8-5	-0.0005	0.0062	-0.0039	0.0136*	-0.0074	-0.0019
	(-0.15)	(0.60)	(-0.57)	(1.72)	(-0.90)	(-0.34)
8-6	-0.0007	0.0035	-0.0040	0.0128	-0.0076	-0.0007
	(-0.23)	(0.34)	(-0.58)	(1.64)	(-0.90)	(-0.12)
8-7	-0.0008	0.0043	-0.0033	0.0138*^+§	-0.0056	-0.0011
	(-0.25)	(0.43)	(-0.50)	(1.81)	(-0.65)	(-0.20)
8-8	-0.0017	-0.0013	-0.0045	0.0146*^++§	-0.0072	-0.0010
	(-0.58)	(-0.14)	(-0.69)	(1.94)	(-0.84)	(-0.18)
8-9	-0.0015	0.0009	-0.0057	0.0151*^++§§	-0.0110^	-0.0015
	(-0.51)	(0.10)	(-0.89)	(1.99)	(-1.43)	(-0.28)
8-10	-0.0021	-0.0014	-0.0042	0.0148*^ ++§§	-0.0091	-0.0028
	(-0.73)	(-0.14)	(-0.70)	(1.94)	(-1.19)	(-0.53)
8-11	-0.0025	-0.0044	-0.0051	0.0154*^++§§	-0.0090	-0.0028
	(-0.91)	(-0.44)	(-0.87)	(2.03)	(-1.16)	(-0.53)
8-12	-0.0021	-0.0010	-0.0045	0.0146*^++§§	-0.0089	-0.0027
	(-0.78)	(-0.10)	(-0.79)	(1.91)	(-1.13)	(-0.53)

Table A1 Continued						
9-1	-0.0054	0.0116	-0.0051	0.0056	-0.0196**^^	-0.0075
	(-1.44)	(0.96)	(-0.67)	(0.63)	(-2.35)	(-1.27)
9-2	-0.0033	0.0114	-0.0059	0.0092	-0.0152*^^	-0.0066
	(-0.93)	(0.98)	(-0.82)	(1.05)	(-1.90)	(-1.13)
9-3	-0.0016	0.0105	-0.0057	0.0126	-0.0106	-0.0037
	(-0.47)	(0.92)	(-0.80)	(1.50)	(-1.31)	(-0.63)
9-4	-0.0006	0.0082	-0.0051	0.0134	-0.0087	-0.0016
	(-0.19)	(0.72)	(-0.74)	(1.62)	(-1.02)	(-0.28)
9-5	-0.0010	0.0045	-0.0046	0.0124	-0.0083	-0.0005
	(-0.29)	(0.40)	(-0.67)	(1.52)	(-0.94)	(-0.09)
9-6	-0.0009	0.0049	-0.0037	0.0143*+§	-0.0059	-0.0008
	(-0.28)	(0.45)	(-0.55)	(1.79)	(-0.64)	(-0.14)
9-7	-0.0017	0.0004	0.0004	0.0152*^+§	-0.0076	-0.0011
	(-0.55)	(0.04)	(-0.71)	(1.93)	(-0.83)	(-0.18)
9-8	-0.0019	0.0008	-0.0061	0.0157*^++§§	-0.0117^	-0.0014
	(-0.62)	(0.07)	(-0.92)	(1.99)	(-1.42)	(-0.24)
9-9	-0.0024	-0.0014	-0.0048	0.0155*^++§§	-0.0094	-0.0029
	(-0.80)	(-0.13)	(-0.76)	(1.95)	(-1.15)	(-0.52)
9-10	-0.0029	-0.0049	-0.0060^	0.0160*^ ++§§	-0.0089	-0.0028
	(-0.99)	(-0.45)	(-0.99)	(2.02)	(-1.06)	(-0.52)
9-11	-0.0025	-0.0009	-0.0051^	0.0151*^++§§	-0.0090	-0.0027
	(-0.86)	(-0.09)	(-0.86)	(1.89)	(-1.06)	(-0.50)
9-12	-0.0034	-0.0077	-0.0059^	0.0148*++§§	-0.0097	-0.0045
	(-1.23)	(-0.82)	(-0.99)	(1.84)	(-1.12)	(-0.90)
10-1	-0.0055	0.0057	-0.0065	0.0089	-0.0199**^^	-0.0091^
	(-1.43)	(0.48)	(-0.82)	(0.94)	(-2.14)	(-1.53)
10-2	-0.0036	0.0071	-0.0071	0.0119	-0.0136	-0.0059
	(-0.97)	(0.57)	(-0.93)	(1.34)	(-1.52)	(-1.01)
10-3	-0.0017	0.0069	-0.0059	0.0127	-0.0112	-0.0026
	(-0.47)	(0.57)	(-0.82)	(1.46)	(-1.22)	(-0.44)
10-4	-0.0018	0.0023	-0.0048	0.0118	-0.0106	-0.0013
	(-0.51)	(0.19)	(-0.66)	(1.38)	(-1.14)	(-0.21)
10-5	-0.0015	0.0038	-0.0036	0.0138	-0.0077	-0.0018
	(-0.44)	(0.32)	(-0.50)	(1.67)	(-0.80)	(-0.30)
10-6	-0.0023	-0.0018	-0.0018	0.0154*+§	-0.0095	-0.0020
	(-0.70)	(-0.16)	(-0.64)	(1.88)	(-0.98)	(-0.33)
10-7	-0.0022	-0.0002	-0.0057	0.0161*^++§§	-0.0136^	-0.0021
	(-0.68)	(-0.01)	(-0.80)	(1.95)	(-1.57)	(-0.35)
10-8	-0.0030	-0.0036	-0.0045	0.0160*^++§§	-0.0112	-0.0036
	(-0.94)	(-0.32)	(-0.66)	(1.93)	(-1.31)	(-0.60)

Table A1 Continued						
10-9	-0.0033	-0.0060	-0.0060^	0.0166*^++§§	-0.0101	-0.0035
	(-1.04)	(-0.51)	(-0.92)	(2.01)	(-1.16)	(-0.59)
10-10	-0.0027	-0.0018	-0.0055^	0.0157*^++§§	-0.0098	-0.0031
	(-0.88)	(-0.16)	(-0.85)	(1.89)	(-1.09)	(-0.54)
10-11	-0.0037	-0.0092	-0.0062^	0.0153*^++§§	-0.0107	-0.0049
	(-1.27)	(-0.92)	(-0.99)	(1.83)	(-1.16)	(-0.90)
10-12	-0.0036	-0.0079	-0.0055^	0.01405533++§§	-0.0102	-0.0053
	(-1.23)	(-0.78)	(-0.88)	(1.67)	(-1.08)	(-1.00)
11-1	-0.0057	0.0047	-0.0070	0.0108	-0.0182*^	-0.0084
	(-1.45)	(0.38)	(-0.85)	(1.15)	(-1.80)	(-1.40)
11-2	-0.0032	0.0064	-0.0074	0.0118	-0.0132	-0.0044
	(-0.86)	(0.52)	(-0.96)	(1.31)	(-1.33)	(-0.76)
11-3	-0.0027	0.0027	-0.0062	0.0106	-0.0125	-0.0019
	(-0.75)	(0.22)	(-0.82)	(1.21)	(-1.25)	(-0.33)
11-4	-0.0027	0.0034	-0.0043	0.0134	-0.0096	-0.0023
	(-0.75)	(0.27)	(-0.57)	(1.56)	(-0.95)	(-0.39)
11-5	-0.0031	-0.0033	-0.0053	0.0153+§	-0.0109	-0.0025
	(-0.90)	(-0.30)	(-0.71)	(1.79)	(-1.07)	(-0.42)
11-6	-0.0030	-0.0021	-0.0064	0.0165*^++§§	-0.0153^	-0.0027
	(-0.88)	(-0.19)	(-0.86)	(1.92)	(-1.67)	(-0.43)
11-7	-0.0035	-0.0045	-0.0046	0.0166*^++§§	-0.0123	-0.0038
	(-1.04)	(-0.40)	(-0.65)	(1.92)	(-1.36)	(-0.62)
11-8	-0.0041	-0.0090	-0.0064^	0.0174*^++§§	-0.0114	-0.0038
	(-1.26)	(-0.77)	(-0.93)	(2.03)	(-1.23)	(-0.63)
11-9	-0.0034	-0.0041	-0.0061^	0.0165*^ ++§§	-0.0106	-0.0033
	(-1.06)	(-0.35)	(-0.90)	(1.90)	(-1.11)	(-0.55)
11-10	-0.0043	-0.0108	-0.0070^	0.0159*^++§§	-0.0113	-0.0051
	(-1.39)	(-1.02)	(-1.06)	(1.83)	(-1.16)	(-0.88)
11-11	-0.0041	-0.0051	-0.0060^	0.0146++§§	-0.0110	-0.0055
	(-1.33)	(-0.86)	(-0.91)	(1.66)	(-1.10)	(-0.98)
11-12	-0.0043	-0.0107	-0.0060^	0.0144++§§	-0.0111	-0.0046
	(-1.42)	(-0.96)	(-0.91)	(1.63)	(-1.08)	(-0.86)
12-1	-0.0047	-0.0046	-0.0074	0.0113	-0.0157	-0.0053
	(-1.20)	-0.2800	(-0.94)	(1.21)	(-1.45)	(-0.87)
12-2	-0.0045	-0.0004	-0.0076	0.0097	-0.0146	-0.0030
	(-1.20)	(-0.04)	(-0.98)	(1.05)	(-1.38)	(-0.52)
12-3	-0.0032	0.0020	-0.0054	0.0128§	-0.0108	-0.0030
	(-0.88)	-0.1600	(-0.70)	(1.44)	(-1.01)	(-0.49)
12-4	-0.0038	-0.0050	-0.0057	0.0150* +§	-0.0123	-0.0029
	(-1.05)	(-0.44)	(-0.75)	(1.70)	-1.1500	(-0.47)

Table A1 Continued						
12-5	-0.0035	-0.0031	-0.0068	0.0164*^ ++§§	-0.0164^	-0.0030
	(-0.99)	(-0.26)	(-0.90)	(1.85)	(-1.76)	(-0.48)
12-6	-0.0038	-0.0049	-0.0047	0.0171*^ ++§§	-0.0139	-0.0043
	(-1.09)	(-0.40)	(-0.65)	(1.90)	(-1.45)	(-0.69)
12-7	-0.0042	-0.0077	-0.0062^	0.0181*^ ++§§	-0.0125	-0.0040
	(-1.20)	(-0.62)	(-0.87)	(2.03)	(-1.27)	(-0.65)
12-8	-0.0037	-0.0046	-0.0062	0.0171*^ ++§§	-0.0117	-0.0036
	(-1.10)	(-0.39)	(-0.87)	(1.91)	(-1.16)	(-0.58)
12-9	-0.0046	-0.0036	-0.0072^	0.0166*^ ++§§	-0.0123	-0.0055
	(-1.43)	(-1.03)	(-1.03)	(1.85)	(-1.19)	(-0.94)
12-10	-0.0043	-0.0090	-0.0062^	0.0152++§§	-0.0116	-0.0058
	(-1.34)	(-0.83)	(-0.89)	(1.68)	(-1.10)	(-1.01)
12-11	-0.0044	-0.0105	-0.0062^	0.0149++§§	-0.0121	-0.0049
	(-1.42)	(-0.93)	(-0.89)	(1.64)	(-1.11)	(-0.88)
12-12	-0.0050	-0.0155	-0.0064^	0.0128+§§	-0.0152^	-0.0075
	(-1.64)	(-1.37)	(-0.90)	(1.41)	(-1.41)	(-1.57)

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then equally divided into quintiles (5 groups). Then the group with the highest past returns are denoted as winners, while the groups with the lowest past returns are denoted as losers. The figures in the table are average returns of the winners minus the losers. Figures in parentheses are T values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at the 10%, 5% and 1% levels using t-test respectively. ^, ^^, ^^^ denotes the coefficient is significant at the 10%, 5% 1% levels respectively using Wilcoxon rank sum test. +, ++, +++ denotes the return of sub period is significantly different from the returns of the whole sample period (1993-2012) at the 10%, 5% and 1% levels respectively using t-test. §, §§, §§§ denotes return of a sub period is significantly different from the return of the whole sample period at the 10%, 5% and 1% levels respectively using Wilcoxon two sample test. All the strategies are computed without any filters.*

Appendix A2

Table A2 Average returns of value-weighted momentum strategies of sub-sample periods

Strategy J-K	1993-2012 value-weighted	1993-1996 sub-period 1	1997-2000 sub-period 2	2001-2004 sub-period 3	2005-2008 sub-period 4	2009-2012 sub-period 5
1-1	-0.0103	-0.0247	0.0061	-0.0049	-0.0122	-0.0170
	(-2.20)	(-1.42)	(0.96)	(-0.82)	(-1.02)	(-2.60)
1-2	-0.0086	-0.0098	-0.0032	-0.0064	-0.0094	-0.0150***^^^
	(-2.51)	(-0.82)	(-0.59)	(-1.47)	(-0.94)	(-3.13)
1-3	-0.0040	-0.0021	-0.0020	-0.0015	-0.0104	-0.0075*^
	(-1.49)	(-0.26)	(-0.39)	(-0.40)	(-1.21)	(-1.98)
1-4	-0.0026	-0.0012	-0.0020	0.0000	-0.0110	-0.0048
	(-1.10)	(-0.18)	(-0.50)	(-0.01)	(-1.46)	(-1.50)
1-5	-0.0025	0.0027	-0.0014	0.0007	-0.0123*	-0.0065**^
	(-1.24)	(0.48)	(-0.38)	(0.22)	(-1.83)	(-2.11)
1-6	-0.0015	0.0024	-0.0013	0.0032	-0.0117**^^+§	-0.0037
	(-0.89)	(0.47)	(-0.44)	(0.93)	(-2.18)	(-1.36)
1-7	-0.0005	0.0073*^^+§§	0.0003	0.0029	-0.0120**^^^++§§§	-0.0032
	(-0.30)	(1.76)	(0.1066)	(0.87)	(-2.58)	(-1.19)
1-8	-0.0011	0.0019	-0.0002	0.0032	-0.0086**^^+§	-0.0012
	(-0.74)	-0.427147	(-0.09)	(1.00)	(-2.06)	(-0.51)
1-9	-0.0005	0.0041	-0.0003	0.0201	-0.0075*^+§	-0.0004
	(-0.35)	(1.02)	(-0.11)	(1.17)	(-1.81819)	(-0.14)
1-10	-0.0002	0.0031	-0.0011	0.0039	-0.0054	-0.0005
	(-0.14)	(0.80)	(-0.46)	(1.25)	(-1.47)	(-0.19)
1-11	0.0003	0.0036	-0.0012	0.0042	-0.0037	-0.0001
	(0.27)	(0.94)	(-0.54)	(1.36)	(-1.02)	(-0.05)
1-12	0.0006	0.0021	-0.0018	0.0045	-0.0024	0.0010
	(0.49)	(0.62)	(-0.89)	(1.55)	(-0.69)	(0.41)
2-1	-0.0112**	-0.0077	-0.0036	-0.0106^	-0.0152	-0.0180**^^^
	(-2.35)	(-0.44)	(-0.46)	(-1.59)	(-1.23)	(-2.59)
2-2	-0.0060	0.0036§	-0.0076	-0.0038	-0.0138	-0.0129**^^
	(-1.56)	(0.28)	(-0.01)	(-0.66)	(-1.25)	(-2.31)
2-3	-0.0060	0.0010	-0.0069	0.0010	-0.0126	-0.0042
	(-1.56)	(0.10)	(-1.24)	(0.20)	(-1.26)	(-0.88)
2-4	-0.0021	0.0026	-0.0042	0.0031	-0.0124	-0.0290
	(-0.70)	(0.31)	(-0.86)	(0.65)	(-1.29)	(-1.29)
2-5	-0.0019	0.0013	-0.0032	0.0061	-0.0143*	-0.0041
	(-0.77)	(0.19)	(-0.79)	(1.24)	(-1.80)	(-0.97)

Table A2 Continued						
2-6	-0.0010	0.0059	0.0000	0.0064	-0.0166**^++§§	-0.0044
	(-0.47)	(1.03)	(-0.00)	(1.33)	(-2.53)	(-1.09)
2-7	-0.0004	0.0063	0.0014	0.0067	-0.0138**^^++§§	-0.0007
	(-0.22)	(1.18)	(0.48)	(1.45)	(-2.46)	(-0.21)
2-8	-0.0002	0.0062	0.0004	0.0073	-0.0113**^^++§§	0.0002
	(-0.08)	(1.12)	(0.14)	(1.62)	(-2.23)	(0.05)
2-9	0.0006	0.0061	-0.0004	0.0082*	-0.0082*^+§	-0.0000
	(0.31)	(1.12)	(-0.14)	(1.85)	(-1.80)	(-0.01)
2-10	0.0011	0.0050	-0.0012	0.0086*^	-0.0047	0.0004
	(0.61)	(0.92)	(-0.42)	(1.95)	(-1.07)	(0.11)
2-11	0.0017	0.0052	-0.0018	0.0086*^	-0.0031	0.0023
	(1.02)	(0.99)	(-0.67)	(1.99)	(-0.71)	(0.63)
2-12	0.0012	0.0029	-0.0019	0.0078*	-0.0037	0.0027
	(0.75)	(0.59)	(-0.70)	(1.83)	(-0.82)	(0.77)
3-1	-0.0085*	-0.0126	-0.0041	-0.0031	-0.0137	-0.0135*
	(-1.84)	(-0.79)	(-0.48)	(-0.46)	(-1.12)	(-1.77)
3-2	-0.0035	0.0003	-0.0094	0.0018	-0.0126	-0.0069
	(-0.86)	(0.03)	(-1.33)	(0.28)	(-1.03)	(-1.03)
3-3	-0.0013	0.0035	-0.0060	0.0049	-0.0113	-0.0051
	(-0.36)	(0.35)	(-0.95)	(0.76)	(-0.10)	(-0.83)
3-4	-0.0007	0.0029	-0.0039	0.0083	-0.0131	-0.0034
	(-0.24)	(0.35)	(-0.72)	(1.29)	(-1.32)	(-0.58)
3-5	0.0000	0.0073	0.0003	0.0092	-0.0163*+§	-0.0047
	(-0.01)	(1.02)	(0.06)	(1.47)	(-1.96)	(-0.84)
3-6	0.0003	0.0068	0.0031	0.0103	-0.0123*+	-0.0010
	(0.12)	(1.06)	(0.80)	(1.66)	(-1.76)	(-0.19)
3-7	0.0013	0.0101	0.0025	0.0110*	-0.0096	-0.0000
	(0.50)	(1.56)	(0.62)	(1.84)	(-1.48)	(-0.00)
3-8	0.0015	0.0078	0.0006	0.0118*^	-0.0074	0.0003
	(0.62)	(1.21)	(0.15)	(2.01)	(-1.17)	(0.06)
3-9	0.0025	0.0096	-0.0006	0.0126**^^	-0.0034	0.0011
	(1.07)	(1.40)	(-0.15)	(2.17)	(-0.59)	(0.21)
3-10	0.0025	0.0056	-0.0016	0.0123**^	-0.0018	0.0027
	(1.15)	(0.92)	(-0.45)	(2.16)	(-0.31)	(0.54)
3-11	0.0024	0.0047	-0.0015	0.0113*^	-0.0017	0.0038
	(1.16)	(0.81)	(-0.42)	(1.99)	(-0.31)	(0.78)
3-12	0.0019	0.0043	-0.0003	0.0120**^+	-0.0027	0.0024
	-0.94	(0.78)	(-0.10)	(2.18)	(-0.46)	(0.49)
4-1	-0.0054	-0.0093	-0.0054	0.0019	-0.0149	-0.0103
	(-1.13)	(-0.63)	(-0.69)	(0.25)	(-1.03)	(-1.37)

Table A2 Continued						
4-2	-0.0029	0.0044	-0.0069	0.0039	-0.0138	-0.0103
	(-0.68)	(0.37)	(-0.94)	(0.54)	(-1.03)	(-1.49)
4-3	-0.0023	0.0028	-0.0045	0.0084	-0.0200*	-0.0052
	(-0.63)	(0.27)	(-0.71)	(1.16)	(-1.74)	(-0.79)
4-4	-0.0009	0.0069	0.0012	0.0098	-0.0232**^^++§§	-0.0057
	(-0.28)	(0.77)	(0.20)	(1.41)	(-2.36)	(-0.88)
4-5	-0.0002	0.0075	0.0053	0.0110	-0.0184**^++§§	-0.0021
	(-0.07)	(0.95)	(1.10)	(1.62)	(-2.16)	(-0.36)
4-6	0.0007	0.0093	0.0049	0.0129*^	-0.0153*^++§	-0.0011
	(0.24)	(1.20)	(1.00)	(1.94)	(-1.97)	(-0.18)
4-7	0.0013	0.0099	0.0027	0.0137**^+	-0.012875*	-0.0010
	(0.48)	(1.25)	(0.55)	(2.12)	(-1.72)	(-0.17)
4-8	0.0018	0.0075	0.0006	0.0145**^^+	-0.0076	0.0003
	-0.69	(0.92)	(0.12)	(2.29)	(-1.10)	(0.05)
4-9	0.0028	0.0086	-0.0009	0.0146**^^+	-0.0047	0.0024
	(1.08)	(1.05)	(-0.21)	(2.31)	(-0.72)	(0.41)
4-10	0.0024	0.0053	-0.0015	0.0133**^	-0.0044	0.0039
	(0.95)	(0.68)	(-0.33)	(2.08)	(-0.69)	(0.67)
4-11	0.0022	0.0061	-0.0003	0.0138**^^+	-0.0045	0.0025
	(0.90)	(0.80)	(-0.08)	(2.20)	(-0.68)	(0.43)
4-12	0.0012	0.0020	-0.0014	0.0143**^^++§	-0.0072	0.0021
	(0.50)	(0.29)	(-0.34)	(2.31)	(-1.09)	(0.37)
5-1	-0.0033	0.0065	-0.0073	-0.9487	-0.0129	-0.0128
	(-0.72)	(0.48)	(-0.95)	(0.39)	(-0.91))	(-1.61)
5-2	-0.0031	0.0045	-0.0064	0.0084	-0.0200	-0.0070
	(-0.78)	(0.39)	(-0.91)	(1.06)	(-1.65)	(-0.94)
5-3	-0.0012	0.0095	-0.0008	0.0104	-0.0254**^^++§§	-0.0051
	(-0.35)	(1.00)	(-0.12)	(1.37)	(-2.43)	(-0.72)
5-4	-0.0001	0.0101	0.0041	0.0122	-0.0200**^^++§§	-0.0010
	(-0.04)	(1.16)	(0.71)	(1.65)	(-2.14)	(-0.16)
5-5	0.0005	0.0115	0.0038	0.0140*	-0.0169*++§	-0.0003
	(0.17)	(1.30)	(0.65)	(1.94)	(-1.89)	(-0.05)
5-6	0.0012	0.0106	0.0015	0.0157**^+	-0.0143+	-0.0006
	(0.37)	(1.23)	(0.27)	(2.21)	(-1.65)	(-0.09)
5-7	0.0016	0.0097	-0.0001	0.0161**^^+	-0.0098	0.0005
	(0.54)	(1.08)	(-0.03)	(2.32)	(-1.16)	(0.07)
5-8	0.0024	0.0088	-0.0025	0.0158**^^+	-0.0065	0.0029
	(0.84)	(0.98)	(-0.46)	(2.31)	(-0.83)	(0.44)
5-9	0.0024	0.0067	-0.0032	0.0147**^	-0.0051	0.0051
	(0.84)	(0.74)	(-0.61)	(2.14)	(-0.69)	(0.79)

Table A2 Continued						
5-10	0.0024	0.0069	-0.0022	0.0154**^^+§	-0.0041	0.0040
	(0.87)	(0.79)	(-0.44)	(2.26)	(-0.57)	(0.61)
5-11	0.0017	0.0032	-0.0029	0.0160**^^+§	-0.0062	0.0038
	(0.67)	(0.39)	(-0.59)	(2.36)	(-0.86)	(0.59)
5-12	0.0016	0.0048	-0.0037	0.0162**^^++§§	-0.0103	0.0027
	(0.61)	(0.59)	(-0.75)	(2.36)	(-1.59)	(0.42)
6-1	-0.0066	-0.0032	-0.0046	0.0088	-0.0273**^^+§	-0.0102
	(-1.50)	(-0.22)	(-0.64)	(0.96)	(-2.16)	(-1.33)
6-2	-0.0036	0.0106§	-0.0016	0.0101	-0.0332***^^^+++§§§	-0.0076
	(-0.93)	(1.05)	(-0.23)	(1.18)	(-3.01)	(-0.99)
6-3	-0.0017	0.0095	0.0031	0.0130	-0.0276**^^++§§	-0.0002
	(-0.45)	(0.97)	(0.49)	(1.54)	(-2.63)	(-0.02)
6-4	-0.0002	0.0121	0.0039	0.0149*	-0.0221**^^++§§	0.0001
	(-0.05)	(1.21)	(0.61)	(1.83)	(-2.19)	(0.01)
6-5	0.0003	0.0101	0.0016	0.0164**^+	-0.0182*+	-0.0008
	(0.09)	(1.04)	(0.25)	(2.05)	(-1.82)	(-0.11)
6-6	0.0011	0.0100	0.0000	0.0175**^+	-0.0137	0.0007
	(0.31)	(0.10)	(-0.01)	(2.23)	(-1.37)	(0.09)
6-7	0.0017	0.0093	-0.0021	0.0168**^+	-0.0110	0.0031
	(0.52)	(0.93)	(-0.34)	(2.18)	(-1.11)	(0.41)
6-8	0.0017	0.0063	-0.0034	0.0154*^	-0.0085	0.0060
	(0.52)	(0.64)	(-0.56)	(2.02)	(-0.94)	(0.82)
6-9	0.0020	0.0070	-0.0025	0.0165**^^+	-0.0063	0.0050
	(0.64)	(0.70)	(-0.43)	(2.19)	(-0.74)	(0.68)
6-10	0.0014	0.0030	-0.0037	0.0170**^^+§	-0.0076	0.0049
	(0.47)	(0.31)	(-0.66)	(2.27)	(-0.93)	(0.67)
6-11	0.0015	0.0058	-0.0043	0.0174**^^+§	-0.0126*+§	0.0042
	(0.53)	(0.61)	(-0.77)	(2.30)	(-1.73)	(0.59)
6-12	0.0005	0.0032	-0.0026	0.0173**^^++§§	-0.0120	0.0024
	(0.19	(0.35)	(-0.51)	(2.29)	(-1.66)	(0.34)
7-1	-0.0040	0.0097	-0.0003	0.0108	-0.0360***^^^+++§§§	-0.0097
	(-0.90)	(0.75)	(-0.04)	(1.18)	(-2.90)	(-1.20)
7-2	-0.0027	0.0110	0.0011	0.0127	-0.0300**^^++§§	-0.0031
	(-0.64)	(0.92)	(0.16)	(1.45)	(-2.49)	(-0.41)
7-3	-0.0004	0.0148	0.0024	0.0163*	-0.0264**^++§§	-0.0007
	(-0.11)	(1.26)	(0.34)	(1.91)	(-2.24)	(-0.09)
7-4	0.0007	0.0125	0.0013	0.0182**^+	-0.0211**++§	-0.0016
	(0.17)	(1.09)	(0.190)	(2.16)	(-1.92)	(-0.20)
7-5	0.0009	0.0095	-0.0007	0.0192**^^++§	-0.0153	0.0002
	(0.24)	(0.81)	(-0.10)	(2.33)	(-1.42)	(0.02)

Table A2 Continued						
7-6	0.0020	0.0096	-0.0028	0.0188**^^+	-0.0122	0.0031
	(0.54)	(0.83)	(-0.42)	(2.31)	(-1.13)	(0.39)
7-7	0.0019	0.0073	-0.0039	0.0173**^	-0.0104	0.0061
	(0.54)	(0.64)	(-0.59)	(2.15)	(-1.00)	(0.77)
7-8	0.0022	0.0067	-0.0032	0.0183**^^+§	-0.0073	0.0056
	(0.64)	(0.60)	(-0.54)	(2.32)	(-0.75)	(0.70)
7-9	0.0017	0.0031	-0.0048	0.0192**^^+§§	-0.0082	0.0056
	(0.52)	(0.29)	(-0.78)	(2.43)	(-0.90)	(0.70)
7-10	0.0019	0.0057	-0.0055	0.0194**^^++§§	-0.0123	0.0050
	(0.6)	(0.53)	(-0.91)	(2.43)	(-1.55)	(0.64)
7-11	0.0014	0.0054	-0.0034	0.0194**^^++§§	-0.0111	0.0033
	(0.46)	(0.51)	(-0.60)	(2.41)	(-1.41)	(0.43)
7-12	0.0004	0.0015	-0.0039	0.0202**^^++§§	-0.0112	0.0036
	(0.15)	(0.15)	(-0.69)	(2.50)	(-1.42)	(0.48)
8-1	-0.0029	0.0056	0.0012	0.0148	-0.0311**^^++§§	-0.0017
	(-0.64)	(0.38)	(0.158)	(1.49)	(-2.61)	(-0.21)
8-2	-0.0017	0.0111	0.0007	0.0160*	-0.0279**^^++§§	0.0003
	(-0.39)	(0.90)	(0.090)	(1.73)	(-2.29)	(0.04)
8-3	0.0000	0.0120	0.0004	0.0178*^+	-0.0245**^++§	0.0000
	(0.00)	(0.99)	(0.052)	(1.96)	(-2.09)	(-0.01)
8-4	0.0012	0.0107	-0.0007	0.0193**^^+	-0.0170	0.0006
	(0.31)	(0.88)	(-0.09)	(2.19)	(-1.52)	(0.07)
8-5	0.0021	0.0096	-0.0029	0.0189**^^	-0.0134	0.0039
	(0.54)	(0.80)	(-0.42)	(2.17)	(-1.20)	(0.47)
8-6	0.0019	0.0072	-0.0038	0.0177**^	-0.0129	0.0068
	(0.50)	(0.61)	(-0.54)	(2.07)	(-1.13)	(0.83)
8-7	0.0021	0.0078	-0.0027	0.0187**^^+§	-0.0102	0.0057
	(0.59)	(0.67)	(-0.40)	(2.22)	(-0.92)	(0.70)
8-8	0.0016	0.0027	-0.0046	0.0195**^^+§	-0.0094	0.0059
	(0.47)	(0.25)	(-0.71)	(2.32)	(-0.90)	(0.71)
8-9	0.0019	0.0061	-0.0057	0.0199**^^+§§	-0.0132	0.0053
	(0.58)	(0.55)	(-0.88)	(2.33)	(-1.45)	(0.63)
8-10	0.0012	0.0043	-0.0039	0.0197**^^++§§	-0.0115	0.0038
	(0.37)	(0.38)	(-0.65)	(2.29)	(-1.32)	(0.46)
8-11	0.0004	0.0008	-0.0042	0.0202**^^++§§	-0.0115	0.0048
	(0.14)	(0.08)	(-0.70)	(2.33)	(-1.32)	(0.59)
8-12	0.0006	0.0041	-0.0041	0.0192**^^++§§	-0.0128	0.0029
	(0.19)	(0.38)	(-0.69)	(2.21)	(-1.45)	(0.37)
9-1	-0.0020	0.0166	-0.0016	0.0153	-0.0270**^^++§§	-0.0007
	(-0.46)	(1.30)	(-0.21)	(1.59)	(-2.18)	(-0.08)

Table A2 Continued						
9-2	-0.0003	0.0171	-0.0025	0.0170*	-0.0224*^+§	-0.0009
	(-0.07)	(1.32)	(-0.33)	(1.84)	(-1.98)	(-0.11)
9-3	0.0013	0.0155	-0.0027	0.0190**^^	-0.0183+	0.0016
	(0.31)	(1.20)	(-0.36)	(2.13)	(-1.65)	(0.19)
9-4	0.0025	0.0121	-0.0036	0.0192**^^	-0.0127	0.0045
	(0.63)	(0.95)	(-0.51)	(2.18)	(-1.20)	(0.52)
9-5	0.0021	0.0081	-0.0043	0.0177**^	-0.0103	0.0065
	(0.55)	(0.65)	(-0.60)	(2.04)	(-0.97)	(0.77)
9-6	0.0019	0.0081	-0.0030	0.0194**^^+	-0.0093	0.0055
	(0.52)	(0.65)	(-0.44)	(2.25)	(-0.85)	(0.64)
9-7	0.0016	0.0051	-0.0046	0.0204**^^+§	-0.0095	0.0056
	(0.45)	(0.44)	(-0.68)	(2.39)	(-0.91)	(0.65)
9-8	0.0017	0.0063	-0.0059	0.0208**^^+§§	-0.0128	0.0053
	(0.49)	(0.55)	(-0.87)	(2.41)	(-1.39)	(0.61)
9-9	0.0011	0.0047	-0.0043	0.0207**^^++§§	-0.0100	0.0039
	(0.33)	(0.40)	(-0.68)	(2.37)	(-1.13)	(0.45)
9-10	0.0004	0.0007	-0.0049	0.0210**^^++§§	-0.0091	0.0052
	(0.11)	(0.06)	(-0.78)	(2.38)	(-1.06)	(0.61)
9-11	0.0006	0.0041	-0.0045	0.0201**^^++§§	-0.0104	0.0035
	(0.18)	(0.35)	(-0.74)	(2.25)	(-1.19)	(0.42)
9-12	-0.0006	-0.0030	-0.0062	0.0198**^^++§§	-0.0119	-0.0007
	(-0.18)	(-0.28)	(-1.03)	(2.20)	(-1.33)	(-0.09)
10-1	0.0000	0.0133	-0.0039	0.0160	-0.0151	-0.0018
	(-0.01)	(1.05)	(-0.49)	(1.60)	(-1.26)	(-0.21)
10-2	0.0010	0.0125	-0.0051	0.0172*^	-0.0112	0.0017
	(0.23)	(0.94)	(-0.66)	(1.86)	(-0.99)	(0.20)
10-3	0.0024	0.0100	-0.0051	0.0176*^	-0.0107	0.0066
	(0.6)	(0.78)	(-0.68)	(1.97)	(-0.99)	(0.76)
10-4	0.0021	0.0060	-0.0051	0.0168*^	-0.0097	0.0080
	(0.53)	(0.47)	(-0.68)	(1.89)	(-0.92)	(0.93)
10-5	0.0019	0.0071	-0.0035	0.0185**^^	-0.0096	0.0060
	(0.50)	(0.55)	(-0.48)	(2.11)	(-0.89)	(0.69)
10-6	0.0013	0.0029	-0.0049	0.0199**^^+§	-0.0121	0.0062
	(0.35)	(0.24)	(-0.68)	(2.28)	(-1.11)	(0.69)
10-7	0.0014	0.0050	-0.0058	0.0204**^^+§	-0.015838+	0.0057
	(0.38)	(0.41)	(-0.80)	(2.30)	(-1.62)	(0.64)
10-8	0.0005	0.0023	-0.0042	0.0205**^^+§§	-0.0139	0.0043
	(0.13)	(0.19)	(-0.64)	(2.29)	(-1.45)	(0.47)
10-9	0.0000	-0.0006	-0.0049	0.0210**^^++§§	-0.0115	0.0053
	(0.01)	(-0.05)	(-0.75)	(2.33)	(-1.23)	(0.59)

Table A2 Continued						
10-10	0.0004	0.0035	-0.0049	0.0201**^^+§§	-0.0120	0.0040
	(0.12)	(0.28)	(-0.74)	(2.20)	(-1.27)	(0.45)
10-11	-0.0007	-0.0040	-0.0065	0.0196**^^++§§	-0.0128	0.0000
	(-0.21)	(-0.36)	(-1.03)	(2.14)	(-1.34)	(-0.01)
10-12	-0.0011	-0.0052	-0.0050	0.0181*^+§	-0.0140	-0.0013
	(-0.33)	(-0.46)	(-0.81)	(1.96)	(-1.43)	(-0.16)
11-1	-0.0012	0.0095	-0.0054	0.0167*^	-0.0178	0.0003
	(-0.27)	(0.71)	(-0.67)	(1.71)	(-1.28)	(0.03)
11-2	0.0007	0.0101	-0.0071	0.0176*^	-0.0149	0.0054
	(0.17)	(0.79)	(-0.94)	(1.86)	(-1.25)	(0.63)
11-3	0.0004	0.0071	-0.0064	0.0161*	-0.0174	0.0077
	(0.11)	(0.55)	(-0.84)	(1.73)	(-1.51)	(0.90)
11-4	0.0007	0.0082	-0.0042	0.0183*^	-0.0162	0.0052
	(0.18)	(0.63)	(-0.57)	(2.00)	(-1.43)	(0.58)
11-5	0.0003	0.0034	-0.0058	0.0201**^^+§	-0.0166	0.0053
	(0.08)	(0.28)	(-0.78)	(2.20)	(-1.49)	(0.58)
11-6	0.0002	0.0046	-0.0068	0.0211**^^+§§	-0.021769**^^++§	0.0047
	(0.06)	(0.39)	(-0.92)	(2.27)	(-2.09)	(0.52)
11-7	-0.0005	0.0025	-0.0046	0.0214**^^++§§	-0.0188831*^+	0.0036
	(-0.13)	(0.21)	(-0.67)	(2.29)	(-1.77)	(0.39)
11-8	-0.0011	-0.0021	-0.0055	0.0221**^^++§§	-0.0167	0.0049
	(-0.31)	(-0.17)	(-0.81)	(2.35)	(-1.59)	(0.54)
11-9	-0.0005	0.0027	-0.0055	0.0213**^^++§§	-0.0161	0.0036
	(-0.14)	(0.21)	(-0.81)	(2.22)	(-1.51)	(0.39)
11-10	-0.0012	-0.0034	-0.0072	0.0207**^^++§§	-0.0157	-0.0005
	(-0.35)	(-0.29)	(-1.09)	(2.15)	(-1.48)	(-0.06)
11-11	-0.0013	-0.0043	-0.0054	0.0194*^++§§	-0.0158	-0.0017
	(-0.38)	(-0.36)	(-0.83)	(1.99)	(-1.45)	(-0.20)
11-12	-0.0015	-0.0056	-0.0062	0.0188*^++§§	-0.0142	-0.0019
	(-0.46)	(-0.47)	(-0.97)	(1.91)	(-1.28)	(-0.23)
12-1	-0.0003	0.0090	-0.0070	0.0175*	-0.0204+	0.0062
	(-0.08)	(0.76)	(-0.87)	(1.76)	(-1.66)	(0.69)
12-2	-0.0013	0.0035	-0.0081	0.0154	-0.0208*^+§	0.0074
	(-0.31)	(0.30)	(-1.03)	(1.57)	(-1.81)	(0.84)
12-3	-0.0006	0.0062	-0.0053	0.0179*^+	-0.0221*^+§	0.0055
	(-0.16)	(0.50)	(-0.69)	(1.88)	(-1.89594)	(0.62)
12-4	-0.0005	0.0016	-0.0061	0.0203**^^+§	-0.0201*^^+§	0.0060
	(-0.12)	(0.13)	(-0.80)	(2.14)	(-1.77)	(0.65)
12-5	-0.0001	0.0042	-0.0068	0.0214**^^+§§	-0.0239**^^++§§	0.0050
	(-0.03)	(0.33)	(-0.89)	(2.24)	(-2.26)	(0.54)

Table A2 Continued						
12-6	-0.0010	0.0023	-0.0044	0.0222**^^++§§	-0.0223**^^++§	0.0035
	(-0.26)	(0.18)	(-0.61)	(2.30)	(-2.07)	(0.38)
12-7	-0.0015	-0.0003	-0.0051	0.0230**^^++§§	-0.0194*^§	0.0049
	(-0.39)	(-0.02)	(-0.70)	(2.38)	(-1.76)	(0.53)
12-8	-0.0010	0.0029	-0.0054	0.0221**^^++§§	-0.0184^§	0.0037
	(-0.27)	(0.24)	(-0.75)	(2.24)	(-1.64)	(0.40)
12-9	-0.0017	-0.0027	-0.0071	0.0218**^^++§§	-0.0182§	-0.0006
	(-0.47)	(-0.24)	(-1.02)	(2.19)	(-1.61)	(-0.07)
12-10	-0.0015	-0.0029	-0.0054	0.0204*^++§§	-0.0175§	-0.0017
	(-0.41)	(-0.25)	(-0.79)	(2.02)	(-1.54)	(-0.21)
12-11	-0.0016	-0.0040	-0.0064	0.0200*^++§§	-0.0156	-0.0016
	(-0.46)	(-0.34)	(-0.92)	(1.95)	(-1.32)	(-0.20)
12-12	-0.0022	-0.0092	-0.0070	0.0178*^+§§	-0.0190^§	-0.0049
	(-0.65)	(-0.76)	(-1.00)	(1.73)	(-1.62)	(-0.61)

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with the lowest past returns are denoted as losers. The figures in the table are average returns of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at the 10%, 5% and 1% levels using T-test respectively. ^, ^^, ^^^ denotes the coefficient is significant at the 10%, 5% 1% levels respectively using Wilcoxon rank sum test. +, ++, +++ denotes the return of sub period is significantly different from the returns of the whole sample period (1993-2012) at the 10%, 5% and 1% levels respectively using T-test. §, §§, §§§ denotes return of a sub period is significantly different from the return of the whole sample period at the 10%, 5% and 1% levels respectively using Wilcoxon two sample test. All the strategies are computed without any filters.*

Appendix A3

Table A3 Average Returns of Momentum Strategies Based on Different Sample Periods and Different Filters Applying to Sample Data

Strategy J-K	Equal Weighted 1995-2009	Equal Weighted 1995-2001	Equal Weighted 2002-2009	Value weighted 1995-2009	Exclude First 6-months' IPOs	Skipping 1 month
1-1	-0.0078**	0.0022	-0.0174***	-0.0030	-0.0087**	-0.0109***
	(-2.18)	-0.47	(-3.32)	(-0.69)	(-2.47)	(-3.03)
1-2	-0.0094***	-0.0056	-0.0125***	-0.0064**	-0.0099***	-0.0040
	(-3.16)	(-1.18)	(-3.33)	(-1.72)	(-3.34)	(-1.57)
1-3	-0.0052**	-0.0014	-0.0082**	-0.0026	-0.0055**	-0.0024
	(-2.17)	(-0.37)	(-2.61)	(-0.84)	(-2.29)	(-1.19)
1-4	-0.0038*	-0.0006	-0.0065**	-0.0014	-0.0039*	-0.0029
	(-1.83)	(-0.20)	(-2.16)	(-0.50)	(-1.91)	(-1.63)
1-5	-0.0040**	-0.0009	-0.0066**	-0.0023	-0.0040**	-0.0007
	(-2.16)	(-0.34)	(-2.44)	(-0.91)	(-2.17)	(-0.49)
1-6	-0.0019	0.0004	-0.0038	-0.0012	-0.0020	-0.0004
	(-1.24)	(0.19)	(-1.62)	(-0.56)	(-1.25)	(-0.29)
1-7	-0.0015	0.0007	-0.0033	-0.0012	-0.0015	-0.0009
	(-1.04)	(0.35)	(-1.47)	(-0.64)	(-1.00)	(-0.66)
1-8	-0.0019	-0.0005	-0.0029	-0.0013	-0.0019	-0.0007
	(-1.32)	(-0.24)	(-1.41)	(-0.73)	(-1.30)	(-0.57)
1-9	-0.0017	-0.0011	-0.0021	-0.0013	-0.0016	-0.0007
	(-1.26)	(-0.59)	(-1.08)	(-0.74)	(-1.23)	(-0.57)
1-10	-0.0016	-0.0012	-0.0018	-0.0007	-0.0015	-0.0002
	(-1.24)	(-0.70)	(-0.93)	(-0.42)	(-1.22)	(-0.22)
1-11	-0.0011	-0.0003	-0.0019	0.0003	-0.0010	0.0002
	(-0.90)	(-0.20)	(-1.03)	(0.17)	(-0.85)	(0.17)
1-12	-0.0006	-0.0003	-0.0013	0.0006	-0.0006	-0.0002
	(-0.56)	(-0.17)	(-0.67)	(0.43)	(-0.55)	(-0.20)
2-1	-0.0135***	-0.0086	-0.0179***	-0.0101**	-0.0148***	-0.0060
	(-3.17)	(-1.26)	(-3.32)	(-1.98)	(-3.44)	(-1.60)
2-2	-0.0094***	-0.0066	-0.0112**	-0.0068	-0.0100***	-0.0016
	(-2.62)	(-1.12)	(-2.48)	(-1.53)	(-2.75)	(-0.50)
2-3	-0.0054*	-0.0024	0.0075*	-0.0026	-0.0057*	-0.0018
	(-1.77)	(-0.52)	(-1.79)	(-0.68)	(-1.86)	(-0.68)
2-4	-0.0048*	-0.0021	-0.0069*	-0.0023	-0.0050*	-0.0007
	(-1.80)	(-0.55)	(-1.75)	(-0.66)	(-1.87)	(-0.30)
2-5	-0.0033	-0.0011	-0.0047	-0.0018	-0.0034	0.0007
	(-1.41)	(-0.35)	(-1.33)	(-0.58)	(-1.44)	-0.37

Table A3 Continued						
2-6	-0.0017	0.0005	-0.0033	-0.0016	-0.0018	0.0006
	(-0.83)	(0.20)	(-1.01)	(-0.60)	(-0.84)	(0.30)
2-7	-0.0016	0.0003	-0.0029	-0.0012	-0.0016	0.0002
	(-0.82)	(0.11)	(-0.93)	(-0.49)	(-0.81)	(0.09)
2-8	-0.0018	-0.0010	-0.0022	-0.0011	-0.0017	0.0003
	(-0.94)	(-0.39)	(-0.77)	(-0.47)	(-0.90)	(0.15)
2-9	-0.0015	-0.0014	-0.0015	-0.0001	-0.0015	0.0008
	(-0.84)	(-0.58)	(-0.55)	(-0.05)	(-0.81)	(0.47)
2-10	-0.0008	-0.0002	-0.0015	0.0012	-0.0008	0.0012
	(-0.48)	(-0.10)	(-0.54)	(0.57)	(-0.45)	(0.77)
2-11	-0.0003	0.0003	-0.0011	0.0018	-0.0003	0.0010
	(-0.17)	(0.15)	(-0.39)	(0.88)	(-0.16)	(0.62)
2-12	-0.0004	0.0001	-0.0007	0.0013	-0.0004	0.0005
	(-0.23)	(0.05)	(-0.25)	(0.68)	(-0.24)	(0.30)
3-1	-0.0097**	-0.0035	-0.0145**	-0.0056	-0.0099**	-0.0036
	(-2.25)	(-0.53)	(-2.57)	(-1.11)	(-2.29)	(-0.93)
3-2	-0.0067*	-0.0035	-0.0089*	-0.0029	-0.0068*	-0.0017
	(-1.72)	(-0.58)	(-1.69)	(-0.61)	(-1.71)	(-0.50)
3-3	-0.0047	-0.0010	-0.0071	-0.0009	-0.0046	-0.0002
	(-1.32)	(-0.20)	(-1.42)	(-0.22)	(-1.27)	(-0.08)
3-4	-0.0027	0.0003	-0.0048	-0.0017	-0.0026	0.0005
	(-0.89)	(0.09)	(-1.03)	(-0.61)	(-0.83)	(0.20)
3-5	-0.0017	0.0013	-0.0037	-0.0006	-0.0015	-0.0001
	(-0.58)	(0.37)	(-0.88)	(-0.25)	(-0.55)	(-0.02)
3-6	-0.0006	0.0019	-0.0023	0.0004	-0.0005	0.0009
	(-0.25)	(0.57)	(-0.59)	(0.14)	(-0.21)	-0.37
3-7	-0.0009	0.0006	-0.0018	0.0005	-0.0007	0.0005
	(-0.35)	(0.19)	(-0.48)	(0.18)	(-0.28)	(0.22)
3-8	-0.0010	-0.0007	-0.0012	0.0010	-0.0009	0.0010
	(-0.44)	(-0.21)	(-0.34)	(0.36)	(-0.39)	(0.46)
3-9	-0.0004	0.0001	-0.0009	0.0023	-0.0003	0.0013
	(-0.17)	(0.04)	(-0.27)	(0.88)	(-0.13)	(0.63)
3-10	0.0001	0.0005	-0.0006	0.0030	0.0000	0.0011
	(0.03)	(0.17)	(-0.17)	(1.18)	(0.02)	(0.56)
3-11	0.0000	0.0028	-0.0002	0.0028	9.2997305E	0.0008
	(0.01)	(0.13)	(-0.06)	(1.12)	(0.00)	(0.41)
3-12	-0.0002	0.0001	-0.0003	0.0022	-0.0002	0.0001
	(-0.08)	(0.02)	(-0.10)	(0.91)	(-0.10)	(0.05)
4-1	-0.0074*	-0.0015	-0.0119*	-0.0018	-0.0084*	-0.0053
	(-1.67)	(-0.24)	(-1.90)	(-0.32)	(-1.80)	(-1.38)

Table A3 Continued						
4-2	-0.0065	-0.0024	-0.0093	-0.0023	-0.0073*	-0.0009
	(-1.62)	(-0.41)	(-1.66)	(-0.45)	(-1.73)	(-0.25)
4-3	-0.0030	0.0009	0.0009	-0.0009	-0.0041	0.0004
	(-0.85)	(0.18)	(-1.06)	(-0.20)	(-1.09)	(0.12)
4-4	-0.0016	0.0022	-0.0042	-0.0005	-0.0030	0.0011
	(-0.50)	(0.51)	(-0.86)	(-0.12)	(-0.90)	(0.37)
4-5	-0.0007	0.0028	-0.0030	0.0000	-0.0025	0.0015
	(-0.23)	(0.71)	(-0.68)	(0.00)	(-0.84)	(0.53)
4-6	-0.0001	0.0022	-0.0015	0.0004	-0.0018	0.0012
	(-0.04)	(-0.55)	(-0.36)	(-0.13)	(-0.64)	(0.46)
4-7	-0.0001	0.0010	-0.0009	0.0009	-0.0014	0.0014
	(-0.05)	(0.27)	(-0.20)	(0.29)	(-0.53)	(0.56)
4-8	0.0003	0.0013	-0.0006	0.0022	0.0002	0.0019
	(-0.11)	(-0.36)	(-0.15)	(0.73)	(0.09)	(0.76)
4-9	0.0008	0.0015	0.0000	0.0031	0.0007	0.0015
	(0.31)	(0.44)	(0.01)	(1.06)	(0.27)	(0.63)
4-10	0.0006	0.0011	0.0003	0.0030	0.0004	0.0012
	(0.23)	(0.33)	(0.07)	(1.04)	(0.18)	(0.49)
4-11	0.0003	0.0009	-0.0001	0.0027	0.0003	0.0006
	(0.14)	(0.29)	(-0.03)	(0.96)	(0.11)	(0.25)
4-12	-0.0001	-0.0001	-0.0005	0.0018	-0.0002	0.0003
	(-0.05)	(-0.04)	(-0.12)	(0.67)	(-0.09)	(0.12)
5-1	-0.0092**	-0.0033	-0.0136**	-0.0026	0.0091**	-0.0018
	(-2.10)	(-0.54)	(-2.17)	(-0.48)	(2.07)	(-0.47)
5-2	-0.0053	-0.0018	-0.0073	-0.0022	-0.0052	0.0009
	(-1.35)	(-0.33)	(-1.29)	(-0.47)	(-1.33)	(0.26)
5-3	-0.0024	0.0014	-0.0048	-0.0015	-0.0022	0.0017
	(-0.65)	(0.28)	(-0.88)	(-0.35)	(-0.60)	(0.52)
5-4	-0.0009	0.0026	-0.0033	-0.0004	-0.0009	0.0015
	(-0.28)	(0.56)	(-0.63)	(-0.09)	(-0.26)	(0.48)
5-5	-0.0006	0.0016	-0.0020	-0.0003	-0.0005	0.0017
	(-0.20)	(0.35)	(-0.40)	(-0.08)	(-0.17)	(0.55)
5-6	-0.0002	0.0007	-0.0007	-0.0066	0.0001	0.0004
	(-0.07)	(0.17)	(-0.15)	(-1.55)	(-0.04))	(0.12)
5-7	0.0003	0.0013	-0.0006	0.0017	0.0004	0.0019
	(0.09)	(0.32)	(-0.13)	(0.48)	(0.13)	(0.67)
5-8	0.0005	0.0008	0.0001	0.0025	0.0006	0.0015
	(0.19)	(0.21)	(0.02)	(0.76)	(0.21)	(0.55)
5-9	0.0003	0.0002	0.0005	0.0025	0.0003	0.0013
	(0.11)	(0.06)	(0.10)	(0.79)	(0.11)	(0.49)

Table A3 Continued						
5-10	0.0003	0.0003	0.0003	0.0027	0.0003	0.0007
	(0.10)	(0.07)	(0.06)	(0.87)	(0.09)	(0.27)
5-11	-0.0002	-0.0006	-0.0004	0.0022	-0.0002	0.0005
	(-0.07)	(-0.16)	(-0.09)	(0.74)	(-0.08)	(0.21)
5-12	-0.0003	-0.0007	-0.0012	0.0019	-0.0004	0.0003
	(-0.12)	(-0.20)	(-0.27)	(0.63)	(-0.14)	(0.13)
6-1	-0.0066	-0.0015	0.0100	-0.0045	-0.0022	-0.0045
	(-1.55)	(-0.26)	(1.60)	(-1.13)	(-0.58)	(-0.88)
6-2	-0.0045	-0.0009	-0.0067	-0.0049	0.0042	0.0009
	(-1.13)	(-0.16)	(-1.14)	(-1.05)	(-1.04)	(0.23)
6-3	-0.0017	0.0021	-0.0041	-0.0025	-0.0015	0.0012
	(-0.44)	-0.39	(-0.72)	(-0.55)	-0.39	(-0.34)
6-4	-0.0009	0.0015	-0.0023	-0.0016	-0.0007	0.0010
	(-0.24)	-0.3	(-0.43)	(-0.38)	(-0.20)	-0.31
6-5	-0.0006	0.0002	-0.0011	-0.0007	-0.0004	0.0017
	(-0.19)	-0.04	(-0.20)	(-0.17)	(-0.13)	-0.52
6-6	0.0003	0.0012	-0.0004	0.0008	0.0005	0.0019
	(0.09)	(0.27)	(-0.08)	(0.20)	(0.14)	(0.58)
6-7	0.0006	0.0011	0.0001	0.0016	0.0008	0.0010
	(0.19)	(0.24)	(0.02)	(0.41)	(0.24)	(0.33)
6-8	1.1300E	-0.0005	0.0006	0.0014	0.0002	0.0009
	(-0.00)	(-0.13)	(0.12)	(0.40)	(0.05)	(0.29)
6-9	0.0000	-0.0006	0.0005	0.0019	0.0001	0.0003
	(0.00)	(-0.15)	(0.10)	(0.55)	(0.02)	(0.10)
6-10	-0.0004	-0.0015	-0.0001	0.0017	-0.0004	0.0002
	(-0.14)	(-0.38)	(-0.01)	(0.51)	-0.13	(0.06)
6-11	-0.0005	-0.0012	-0.0012	0.0016	-0.0004	-0.0005
	(-0.17)	(-0.31)	(-0.25)	(0.50)	(-0.14)	(-0.16)
6-12	-0.0011	-0.0023	-0.0013	0.0004	-0.0010	-0.0011
	(-0.37)	(-0.60)	(-0.28)	(0.14)	(-0.36)	(-0.40)
7-1	-0.0054	0.0004	-0.0092	0.0040	-0.0052	0.0021
	(-1.25)	(0.06)	(-1.41)	(0.79)	(-1.19)	(0.53)
7-2	-0.0038	-0.0001	-0.0060	-0.0035	-0.0036	0.0004
	(-0.93)	(-0.01)	(-0.99)	(-0.72)	(-0.89)	(0.09)
7-3	-0.0017	0.0013	-0.0037	-0.0018	-0.0015	0.0008
	(-0.43)	(0.23)	(-0.63)	(-0.37)	(-0.38)	(0.22)
7-4	-0.0009	0.0005	-0.0019	-0.0002	-0.0009	0.0011
	(-0.25)	(0.09)	(-0.33)	(-0.05)	(-0.23)	(0.33)
7-5	-0.0002	0.0010	-0.0012	0.0010	0.0000	0.0018
	(-0.05)	(0.20)	(-0.22)	(0.22)	(-0.01)	(0.52)

Table A3 Continued						
7-6	0.0006	0.0011	-0.0001	0.0020	0.0007	0.0010
	(0.17)	(0.23)	(-0.02)	(0.48)	(0.19)	(0.29)
7-7	5.4136E	-0.0004	0.0004	0.0017	0.0000	0.0006
	(0.00)	(-0.08)	(0.07)	(0.43)	(0.01)	(0.17)
7-8	-0.0002	-0.0011	0.0004	0.0022	-0.0002	-0.0001
	(-0.06)	(-0.25)	(0.08)	(0.59)	(-0.05)	(-0.03)
7-9	-0.0007	-0.0023	-0.0001	0.0020	-0.0007	-0.0001
	(-0.22)	(-0.53)	(-0.03)	(0.56)	(-0.22)	(-0.04)
7-10	-0.0007	-0.0018	-0.0013	0.0023	-0.0007	-0.0007
	(-0.21)	(-0.44)	(-0.25)	(0.65)	(-0.21)	(-0.24)
7-11	-0.0012	-0.0026	-0.0016	0.0013	-0.0012	-0.0013
	(-0.39)	(-0.65)	(-0.31)	(0.38)	(-0.40)	(-0.43)
7-12	-0.0017	-0.0040	-0.0016	0.0002	-0.0018	0.0014
	(-0.58)	(-0.99)	(-0.31)	(0.05)	(-0.58)	(0.46)
8-1	-0.0051	-0.0004	-0.0083	-0.0027	-0.0052	-0.0031
	(-0.16)	(-0.06)	(-1.26)	(-0.53)	(-1.19)	(-0.76)
8-2	-0.0042	-0.0022	-0.0055	-0.0034	-0.0041	-0.0004
	(-1.02)	(-0.36)	(-0.91)	(-0.69)	(-0.98)	(-0.10)
8-3	-0.0022	-0.0011	-0.0030	-0.0014	-0.0021	0.0007
	(-0.54)	(-0.19)	(-0.50)	(-0.28)	(-0.52)	(0.19)
8-4	-0.0008	0.0004	-0.0020	0.0011	-0.0007	0.0012
	(-0.20)	(0.07)	(-0.34)	(0.24)	(-0.18)	(0.33)
8-5	-0.0001	0.0002	-0.0008	0.0019	-0.0001	0.0008
	(-0.02)	(0.05)	(-0.13)	(0.44)	(-0.02)	(0.22)
8-6	-0.0003	-0.0003	0.0001	0.0015	-0.0003	0.0002
	(-0.07)	(-0.06)	(0.01)	(0.35)	(-0.08)	(0.05)
8-7	-0.0005	-0.0012	-0.0001	0.0019	-0.0005	-0.0006
	(-0.13)	(-0.25)	(-0.01)	(0.46)	(-0.14)	(-0.17)
8-8	-0.0012	-0.0030	-0.0006	0.0018	-0.0012	-0.0004
	(-0.34)	(-0.63)	(-0.10)	(0.45)	(-0.36)	(-0.13)
8-9	-0.0010	-0.0024	-0.0016	0.0021	-0.0011	-0.0011
	(-0.29)	(-0.53)	(-0.29)	(0.55)	(-0.32)	(-0.33)
8-10	-0.0015	-0.0035	-0.0017	0.0011	-0.0017	-0.0017
	(-0.46)	(-0.79)	(-0.32)	(0.30)	(-0.50)	(-0.52)
8-11	-0.0021	-0.0046	-0.0020	0.0000	-0.0022	-0.0016
	(-0.65)	(-1.07)	(-0.36)	(-0.00)	(-0.68)	(-0.51)
8-12	-0.0021	-0.0045	-0.0025	0.0004	-0.0022	-0.0022
	(-0.65)	(-1.06)	(-0.46)	(-0.12)	(-0.69)	(-0.72)
9-1	-0.0073*	-0.0052	-0.0090	-0.0048	-0.0090*	-0.0023
	(-1.69)	(-0.82)	(-1.40)	(-0.95)	(-1.66)	(-0.56)

Table A3 Continued						
9-2	-0.0050	-0.0048	-0.0050	-0.0032	-0.0050	0.0004
	(-1.19)	(-0.78)	(-0.81)	(-0.67)	(-1.18)	(0.09)
9-3	-0.0021	-0.0009	-0.0034	-0.0001	-0.0020	0.0014
	(-0.52)	(-0.16)	(-0.55)	(-0.03)	(-0.51)	(0.36)
9-4	-0.0007	-0.0001	-0.0018	0.0019	-0.0007	0.0006
	(-0.18)	(-0.02)	(-0.28)	(0.42)	(-0.17)	(0.17)
9-5	-0.0010	-0.0014	-0.0006	0.0015	-0.0010	0.0003
	(-0.25)	(-0.28)	(-0.09)	(0.35)	(-0.26)	(0.09)
9-6	-0.0009	-0.0018	-0.0003	0.0015	-0.0010	-0.0005
	(-0.24)	(-0.37)	(-0.05)	(0.36)	(-0.26)	(-0.15)
9-7	-0.0015	-0.0034	-0.0008	0.0013	-0.0016	-0.0008
	(-0.41)	(-0.70)	(-0.14)	(0.33)	(-0.43)	(-0.23)
9-8	-0.0016	-0.0035	-0.0019	0.0016	-0.0016	-0.0014
	(-0.45)	(-0.75)	(-0.33)	(0.40)	(-0.45)	(-0.41)
9-9	-0.0021	-0.0047	-0.0019	0.0007	-0.0021	-0.0020
	(-0.60)	(-1.01)	(-0.32)	(0.81)	(-0.61)	(-0.57)
9-10	-0.0026	-0.0058	-0.0020	-0.0002	-0.0026	-0.0018
	(-0.76)	(-1.28)	(-0.34)	(-0.06)	(-0.76)	(-0.55)
9-11	-0.0025	-0.0054	-0.0027	0.0005	-0.0026	-0.0024
	(-0.75)	(-1.21)	(-0.48)	(0.15)	(-0.76)	(-0.73)
9-12	-0.0030	-0.0066	-0.0025	-0.0012	-0.0031	-0.0026
	(-0.32)	(-1.52)	(-0.44)	(-0.32)	(-0.94)	(-0.81)
10-1	-0.0061	-0.0042	-0.0074	-0.0015	-0.0062	-0.0023
	(-1.34)	(-0.64)	(-1.07)	(-0.29)	(-1.34)	(-0.56)
10-2	-0.0039	-0.0023	-0.0055	-0.0002	-0.0038	0.0005
	(-0.90)	(-0.37)	(-0.83)	(-0.05)	(-0.87)	(0.11)
10-3	-0.0015	0.0003	-0.0034	0.0019	-0.0013	0.0001
	(-0.36)	(0.04)	(-0.53)	(0.41)	(-0.31)	(0.02)
10-4	-0.0014	-0.0008	-0.0018	0.0017	-0.0013	-0.0004
	(-0.34)	(-0.14)	(-0.29)	(0.38)	(-0.32)	(-0.10)
10-5	-0.0014	-0.0015	-0.0015	0.0014	-0.0013	-0.0010
	(-0.35)	(-0.28)	(-0.23)	(0.33)	(-0.34)	(-0.26)
10-6	-0.0018	-0.0031	-0.0017	0.0011	-0.0017	-0.0011
	(-0.46)	(-0.57)	(-0.26)	(0.25)	(-0.45)	(-0.30)
10-7	-0.0018	-0.0030	-0.0027	0.0012	-0.0017	-0.0020
	(-0.46)	(-0.59)	(-0.43)	(0.30)	(-0.45)	(-0.53)
10-8	-0.0024	-0.0047	-0.0026	0.0000	-0.0024	-0.0024
	(-0.66)	(-0.92)	(-0.43)	(0.01)	(-0.64)	(-0.65)
10-9	-0.0028	-0.0059	-0.0025	0.0007	-0.0028	-0.0020
	(-0.78)	(-1.17)	(-0.41)	(0.16)	(-0.76)	(-0.58)

Table A3 Continued						
10-10	-0.0026	-0.0054	-0.0030	-0.0008	-0.0026	-0.0026
	(-0.73)	(-1.11)	(-0.50)	(-0.21)	(-0.73)	(-0.75)
10-11	-0.0031	-0.0065	-0.0029	-0.0013	-0.0031	-0.0028
	(-0.88)	(-1.37)	(-0.49)	(-0.35)	(-0.89)	(-0.81)
10-12	-0.0033	-0.0071	-0.0030	-0.0016	-0.0034	-0.0028
	(-0.94)	(-1.49)	(-0.50)	(-0.43)	(-0.97)	(-0.81)
11-1	-0.0055	-0.0022	-0.0089	-0.0019	-0.0055	-0.0016
	(-1.19)	(-0.34)	(-1.26)	(-0.35)	(-1.18)	(-0.38)
11-2	-0.0035	-0.0024	-0.0052	-0.0006	-0.0038	-0.0010
	(-0.80)	(-0.38)	(-0.76)	(-0.12)	(-0.85)	(-0.23)
11-3	-0.0026	-0.0018	-0.0032	-0.0006	-0.0034	-0.0011
	(-0.60)	(-0.29)	(-0.48)	(-0.13)	(-0.77)	(-0.27)
11-4	-0.0022	-0.0021	-0.0026	-0.0002	-0.0025	-0.0020
	(-0.54)	(-0.37)	(-0.39)	(-0.04)	(-0.59)	(-0.49)
11-5	-0.0027	-0.0041	-0.0026	-0.0004	-0.0038	-0.0017
	(-0.67)	(-0.72)	(-0.39)	(-0.08)	(-0.94)	(-0.44)
11-6	-0.0024	-0.0038	-0.0032	-0.0001	-0.0035	-0.0024
	(-0.60)	(-0.69)	(-0.50)	(-0.02)	(-0.88)	(-0.62)
11-7	-0.0029	-0.0052	-0.0031	-0.0010	-0.0040	-0.0031
	(-0.74)	(-0.96)	(-0.48)	(-0.24)	(-1.01)	(-0.80)
11-8	-0.0035	-0.0070	-0.0030	-0.0019	-0.0046	-0.0026
	(-0.91)	(-1.30)	(-0.47)	(-0.45)	(-1.19)	(-0.70)
11-9	-0.0032	-0.0064	-0.0034	-0.0019	-0.0037	-0.0031
	(-0.84)	(-1.24)	(-0.54)	(-0.45)	(-0.97)	(-0.84)
11-10	-0.0036	-0.0074	-0.0032	-0.0020	-0.0048	-0.0032
	(-0.96)	(-1.47)	(-0.51)	(-0.50)	(-1.31)	(-0.89)
11-11	-0.0037	-0.0077	-0.0035	-0.0021	-0.0043	-0.0031
	(-1.00)	(-1.53)	(-0.56)	(-0.52)	(-1.22)	(-0.87)
11-12	-0.0035	-0.0074	-0.0044	-0.0021	-0.0047	-0.0034
	(-0.98)	(-1.51)	(-0.73)	(-0.53)	(-1.33)	(-0.98)
12-1	-0.0047	-0.0026	-0.0073	-0.0018	-0.0045	-0.0039
	(-1.00)	(-0.40)	(-1.01)	(-0.36)	(-0.97)	(-0.87)
12-2	-0.0045	-0.0041	-0.0047	-0.0027	-0.0056	-0.0021
	(-0.99)	(-0.63)	(-0.68)	(-0.56)	(-1.24)	(-0.50)
12-3	-0.0030	-0.0027	-0.0036	-0.0016	-0.0038	-0.0025
	(-0.70)	(-0.44)	(-0.52)	(-0.35)	(-0.85)	(-0.60)
12-4	-0.0032	-0.0042	-0.0033	-0.0012	-0.0048	-0.0025
	(-0.74)	(-0.70)	(-0.49)	(-0.26)	(-1.15)	(-0.60)
12-5	-0.0029	-0.0041	-0.0039	-0.0006	-0.0044	-0.0029
	(-0.69)	(-0.72)	(-0.59)	(-0.14)	(-1.07)	(-0.70)

Table A3 Continued						
12-6	-0.0032	-0.0053	-0.0035	-0.0018	-0.0045	-0.0033
	(-0.77)	(-0.92)	(-0.53)	(-0.41)	(-1.10)	(-0.83)
12-7	-0.0036	-0.0068	-0.0034	-0.0027	-0.0047	-0.0030
	(-0.90)	(-1.21)	(-0.51)	(-0.61)	(-1.16)	(-0.76)
12-8	-0.0034	-0.0066	-0.0037	-0.0026	-0.0040	-0.0036
	(-0.86)	(-1.21)	(-0.56)	(-0.60)	(-1.02)	(-0.92)
12-9	-0.0039	-0.0080	-0.0034	-0.0028	-0.0051	-0.0036
	(-1.00)	(-1.50)	(-0.52)	(-0.67)	(-1.35)	(-0.94)
12-10	-0.0039	-0.0082	-0.0035	-0.0025	-0.0046	-0.0034
	(-1.01)	(-1.56)	(-0.54)	(-0.61)	(-1.25)	(-0.91)
12-11	-0.0037	-0.0078	-0.0047	-0.0025	-0.0049	-0.0037
	(-0.98)	(-1.49)	(-0.74)	(-0.60)	(-1.34)	(-1.01)
12-12	-0.0040	-0.0085	-0.0046	-0.0026	-0.0058	-0.0040
	(-1.08)	(-1.65)	(-0.72)	(-0.66)	(-1.62)	(-1.11)

*Note: Returns are computed using monthly data January 1995 – December 2009. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) equally for equal-weighted strategies or by their market value for value-weighted strategies. Then the group with the highest past returns are denoted as winners, while the groups with the lowest past returns are denoted as losers. The figures in the table are average returns of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at the 10%, 5% and 1% levels respectively. +, ++, +++ denotes the statistics is significantly different from returns of equal-weighted whole sample period momentum strategies in Column 1 at the 10%, 5% and 1% levels respectively. All strategies are equal-weighted strategies except the strategies in Column 4.*

Appendix B1

Table B1 Average Monthly Momentum Returns Based on Past 3 Months' Market States: January 1993 to December 2012

Panel A: Average Monthly Momentum Profits Following 3-month UP Markets												
J-K	**1-1**	**1-2**	**1-3**	**1-4**	**1-5**	**1-6**	**1-7**	**1-8**	**1-9**	**1-10**	**1-11**	**1-12**
N	103	102	102	102	102	102	102	102	102	102	102	102
Mean	-0.0105	-0.0125**	-0.0076*	-0.0072**	-0.0634**	-0.0050**	-0.0035*	-0.0037*	-0.0027	-0.0025	-0.0016	-0.0016
J-K	**1-13**	**1-14**	**1-15**	**1-16**	**1-17**	**1-18**	**1-19**	**1-20**	**1-21**	**1-22**	**1-23**	**1-24**
N	102	102	102	102	102	102	102	101	100	99	99	99
Mean	-0.0018	-0.0019	-0.0022	-0.0019	-0.0025*	-0.0023*	-0.0021	-0.0017	-0.0016	-0.0016	-0.0019	-0.0020*
J-K	**2-1**	**2-2**	**2-3**	**2-4**	**2-5**	**2-6**	**2-7**	**2-8**	**2-9**	**2-10**	**2-11**	**2-12**
N	102	102	102	102	102	102	102	102	102	102	102	102
Mean	-0.0178**	-0.0124**	-0.0089*	-0.0086**	-0.0072**	-0.0051*	-0.0044*	-0.0037	-0.0031	-0.0022	-0.0016	-0.0018
J-K	**2-13**	**2-14**	**2-15**	**2-16**	**2-17**	**2-18**	**2-19**	**2-20**	**2-21**	**2-22**	**2-23**	**2-24**
N	102	102	102	102	102	101	100	99	99	99	99	99
Mean	-0.0019	-0.0022	-0.0021	-0.0024	-0.0024	-0.0022	-0.0021	-0.0019	-0.0021	-0.0024	-0.0021	-0.0021
J-K	**3-1**	**3-2**	**3-3**	**3-4**	**3-5**	**3-6**	**3-7**	**3-8**	**3-9**	**3-10**	**3-11**	**3-12**
N	102	102	102	102	102	102	102	102	102	102	102	102
Mean	-0.0144*	-0.0119*	-0.0089*	-0.0080*	-0.0059*	-0.0046	-0.0036	-0.0032	-0.0022	-0.0019	-0.0016	-0.0019
J-K	**3-13**	**3-14**	**3-15**	**3-16**	**3-17**	**3-18**	**3-19**	**3-20**	**3-21**	**3-22**	**3-23**	**3-24**
N	102	102	102	102	102	101	100	99	99	99	99	99
Mean	-0.0024	-0.0022	-0.0027	-0.0029	-0.0028	-0.0026	-0.0025	-0.0025	-0.0026	-0.0028	-0.0028	-0.0028
J-K	**4-1**	**4-2**	**4-3**	**4-4**	**4-5**	**4-6**	**4-7**	**4-8**	**4-9**	**4-10**	**4-11**	**4-12**
N	102	102	102	102	102	102	102	102	102	102	102	102
Mean	-0.0136**	-0.0119**	-0.0093*	-0.00721*	-0.0054	-0.0039	-0.0030	-0.0020	-0.0011	-0.0011	-0.0012	-0.0017
J-K	**4-13**	**4-14**	**4-15**	**4-16**	**4-17**	**4-18**	**4-19**	**4-20**	**4-21**	**4-22**	**4-23**	**4-24**
N	102	102	102	102	101	100	99	99	99	99	99	99
Mean	-0.0019	-0.0022	-0.0026	-0.0023	-0.0030	-0.0026	-0.0025	-0.0026	-0.0027	-0.0027	-0.0028	-0.0030
J-K	**5-1**	**5-2**	**5-3**	**5-4**	**5-5**	**5-6**	**5-7**	**5-8**	**5-9**	**5-10**	**5-11**	**5-12**
N	102	102	102	102	102	102	102	102	102	102	102	102
Mean	-0.0160**	-0.0128**	-0.0084**	-0.0065	-0.0049	-0.0037	-0.0025	-0.0017	-0.0012	-0.0012	-0.0014	-0.0014
J-K	**5-13**	**5-14**	**5-15**	**5-16**	**5-17**	**5-18**	**5-19**	**5-20**	**5-21**	**5-22**	**5-23**	**5-24**
N	102	102	102	101	100	99	99	99	99	99	99	98
Mean	-0.0020	-0.0024	-0.0024	-0.0034	-0.0030	-0.0028	-0.0030	-0.0032	-0.0031	-0.0031	-0.0034	-0.0036
J-K	**6-1**	**6-2**	**6-3**	**6-4**	**6-5**	**6-6**	**6-7**	**6-8**	**6-9**	**6-10**	**6-11**	**6-12**
N	102	102	102	102	102	102	102	102	102	102	102	102
Mean	-0.0168**	-0.0119**	-0.0078	-0.0057	-0.0045	-0.0029	-0.0020	-0.0019	-0.0017	-0.0020	-0.0018	-0.0025
J-K	**6-13**	**6-14**	**6-15**	**6-16**	**6-17**	**6-18**	**6-19**	**6-20**	**6-21**	**6-22**	**6-23**	**6-24**
N	102	102	101	100	99	99	99	99	99	99	98	97
Mean	-0.0029	-0.0029	-0.0039	-0.0036	-0.0036	-0.0036	-0.0037	-0.0036	-0.0036	-0.0038	-0.0040	-0.0048

Table B1, Panel A Continued

J-K	**7-1**	**7-2**	**7-3**	**7-4**	**7-5**	**7-6**	**7-7**	**7-8**	**7-9**	**7-10**	**7-11**	**7-12**
N	102	102	102	102	102	102	102	102	102	102	102	102
Mean	-0.0132**	-0.0100*	-0.0058	-0.0046	-0.0032	-0.0021	-0.0017	-0.0017	-0.0017	-0.0017	-0.0021	-0.0027
J-K	**7-13**	**7-14**	**7-15**	**7-16**	**7-17**	**7-18**	**7-19**	**7-20**	**7-21**	**7-22**	**7-23**	**7-24**
N	102	101	100	99	99	99	99	99	99	98	97	97
Mean	-0.0027	-0.0041	-0.0036	-0.0036	-0.0037	-0.0036	-0.0036	-0.0036	-0.0039	-0.0041	-0.0052	-0.0053
J-K	**8-1**	**8-2**	**8-3**	**8-4**	**8-5**	**8-6**	**8-7**	**8-8**	**8-9**	**8-10**	**8-11**	**8-12**
N	102	102	102	102	102	102	102	102	102	102	102	102
Mean	-0.0125*	-0.0082	-0.0052	-0.0036	-0.0024	-0.0020	-0.0019	-0.0022	-0.0020	-0.0025	-0.0029	-0.0030
J-K	**8-13**	**8-14**	**8-15**	**8-16**	**8-17**	**8-18**	**8-19**	**8-20**	**8-21**	**8-22**	**8-23**	**8-24**
N	101	100	99	99	99	99	99	99	98	97	97	96
Mean	-0.0045	-0.0042	-0.0041	-0.0043	-0.0044	-0.0042	-0.0041	-0.0043	-0.0045	-0.0056	-0.0059	-0.0059
J-K	**9-1**	**9-2**	**9-3**	**9-4**	**9-5**	**9-6**	**9-7**	**9-8**	**9-9**	**9-10**	**9-11**	**9-12**
N	102	102	102	102	102	102	102	102	102	102	102	101
Mean	-0.0103*	-0.0070	-0.0039	-0.0025	-0.0020	-0.0021	-0.0020	-0.0023	-0.0029	-0.0032	-0.0031	-0.0048
J-K	**9-13**	**9-14**	**9-15**	**9-16**	**9-17**	**9-18**	**9-19**	**9-20**	**9-21**	**9-22**	**9-23**	**9-24**
N	100	99	99	99	99	99	99	98	97	97	96	96
Mean	-0.0044	-0.0044	-0.0045	-0.0046	-0.0045	-0.0043	-0.0045	-0.0048	-0.0060	-0.0062	-0.0063	-0.0065
J-K	**10-1**	**10-2**	**10-3**	**10-4**	**10-5**	**10-6**	**10-7**	**10-8**	**10-9**	**10-10**	**10-11**	**10-12**
N	102	102	102	102	102	102	102	102	102	102	101	100
Mean	-0.0097	-0.0060	-0.0036	-0.0031	-0.0028	-0.0027	-0.0027	-0.0035	-0.0035	-0.0034	-0.0052	-0.0046
J-K	**10-13**	**10-14**	**10-15**	**10-16**	**10-17**	**10-18**	**10-19**	**10-20**	**10-21**	**10-22**	**10-23**	**10-24**
N	99	99	99	99	99	99	98	97	97	96	96	95
Mean	-0.0046	-0.0048	-0.0049	-0.0048	-0.0047	-0.0047	-0.0051	-0.0063	-0.0065	-0.0065	-0.0068	-0.0065
J-K	**11-1**	**11-2**	**11-3**	**11-4**	**11-5**	**11-6**	**11-7**	**11-8**	**11-9**	**11-10**	**11-11**	**11-12**
N	102	102	102	102	102	102	102	102	102	101	100	99
Mean	-0.0072	-0.0058	-0.0043	-0.0040	-0.0041	-0.0039	-0.0043	-0.0048	-0.0044	-0.0060	-0.0052	-0.0053
J-K	**11-13**	**11-14**	**11-15**	**11-16**	**11-17**	**11-18**	**11-19**	**11-20**	**11-21**	**11-22**	**11-23**	**11-24**
N	99	99	99	99	99	98	97	97	96	96	95	95
Mean	-0.0055	-0.0057	-0.0056	-0.0054	-0.0055	-0.0057	-0.0070	-0.0072	-0.0071	-0.0073	-0.0071	-0.0073
J-K	**12-1**	**12-2**	**12-3**	**12-4**	**12-5**	**12-6**	**12-7**	**12-8**	**12-9**	**12-10**	**12-11**	**12-12**
N	102	102	102	102	102	102	102	102	101	100	99	99
Mean	-0.0087	-0.0072	-0.0054	-0.0051	-0.0046	-0.0047	-0.0050	-0.0049	-0.0065	-0.0055	-0.0054	-0.0056
J-K	**12-13**	**12-14**	**12-15**	**12-16**	**12-17**	**12-18**	**12-19**	**12-20**	**12-21**	**12-22**	**12-23**	**12-24**
N	99	99	99	99	98	97	97	96	96	95	95	95
Mean	-0.0059	-0.0059	-0.0058	-0.0059	-0.0062	-0.0073	-0.0074	-0.0073	-0.0075	-0.0072	-0.0075	-0.0077
J-K	**13-1**	**13-2**	**13-2**	**13-4**	**13-5**	**13-6**	**13-7**	**13-8**	**13-9**	**13-10**	**13-11**	**13-12**
N	102	102	102	102	102	102	102	101	100	99	99	99
Mean	-0.0101	-0.0080	-0.0060	-0.0054	-0.0059	-0.0059	-0.0055	-0.0072	-0.0061	-0.0060	-0.0059	-0.0061

Table B1, Panel A Continued

J-K	**13-13**	**13-14**	**13-15**	**13-16**	**13-17**	**13-18**	**13-19**	**13-20**	**13-21**	**13-22**	**13-23**	**13-24**
N	99	99	99	98	97	97	96	96	95	95	95	95
Mean	-0.0062	-0.0062	-0.0063	-0.0066	-0.0079	-0.0080	-0.0079	-0.0081	-0.0078	-0.0080	-0.0082	-0.0083
J-K	**14-1**	**14-2**	**14-3**	**14-4**	**14-5**	**14-6**	**14-7**	**14-8**	**14-9**	**14-10**	**14-11**	**14-12**
N	102	102	102	102	102	102	101	100	99	99	99	99
Mean	-0.0101	-0.0086	-0.0061	-0.0062	-0.0060	-0.0056	-0.0073	-0.0061	-0.0060	-0.0059	-0.0060	-0.0060
J-K	**14-13**	**14-14**	**14-15**	**14-16**	**14-17**	**14-18**	**14-19**	**14-20**	**14-21**	**14-22**	**14-23**	**14-24**
N	99	99	98	97	97	96	96	95	95	95	95	95
Mean	-0.0062	-0.0064	-0.0068	-0.0082	-0.0082	-0.0080	-0.0083	-0.0080	-0.0082	-0.0084	-0.0086	-0.0087
J-K	**15-1**	**15-2**	**15-3**	**15-4**	**15-5**	**15-6**	**15-7**	**15-8**	**15-9**	**15-10**	**15-11**	**15-12**
N	102	102	102	102	102	101	100	99	99	99	99	99
Mean	-0.0099	-0.0077	-0.0067	-0.0066	-0.0058	-0.0072	-0.0063	-0.0062	-0.0061	-0.0062	-0.0061	-0.0062
J-K	**15-13**	**15-14**	**15-15**	**15-16**	**15-17**	**15-18**	**15-19**	**15-20**	**15-21**	**15-22**	**15-23**	**15-24**
N	99	98	97	97	96	96	95	95	95	95	95	95
Mean	-0.0064	-0.0068	-0.0083	-0.0084	-0.0082	-0.0084	-0.0081	-0.0083	-0.0084	-0.0086	-0.0088	-0.0089*
J-K	**16-1**	**16-2**	**16-3**	**16-4**	**16-5**	**16-6**	**16-7**	**16-8**	**16-9**	**16-10**	**16-11**	**16-12**
N	102	102	102	102	101	100	99	99	99	99	99	99
Mean	-0.0099	-0.0093	-0.0080	-0.0069	-0.0081	-0.0066	-0.0067	-0.0068	-0.0067	-0.0065	-0.0064	-0.0066
J-K	**16-13**	**16-14**	**16-15**	**16-16**	**16-17**	**16-18**	**16-19**	**16-20**	**16-21**	**16-22**	**16-23**	**16-24**
N	98	97	97	96	96	95	95	95	95	95	95	95
Mean	-0.0070	-0.0086	-0.0087	-0.0086	-0.0088	-0.0083	-0.0085	-0.0088	-0.0089	-0.0091*	-0.0092*	-0.0094*
J-K	**17-1**	**17-2**	**17-3**	**17-4**	**17-5**	**17-6**	**17-7**	**17-8**	**17-9**	**19-10**	**17-11**	**17-12**
N	102	102	102	101	100	99	99	99	99	99	99	98
Mean	-0.0126**	-0.0108*	-0.0077	-0.0083	-0.0069	-0.0066	-0.0068	-0.0069	-0.0067	-0.0064	-0.0065	-0.0070
J-K	**17-13**	**17-14**	**17-15**	**17-16**	**17-17**	**17-18**	**17-19**	**17-20**	**17-21**	**17-22**	**17-23**	**17-24**
N	97	97	96	96	95	95	95	95	95	95	95	94
Mean	-0.0087	-0.0089	-0.0087	-0.0089	-0.0085	-0.0087	-0.0089	-0.0091	-0.0092	-0.0092	-0.00938*	-0.0086
J-K	**1-18**	**2-18**	**3-18**	**4-18**	**5-18**	**6-18**	**7-18**	**8-18**	**9-18**	**10-18**	**11-18**	**12-18**
N	102	102	101	100	99	99	99	99	99	99	98	97
Mean	-0.0134**	-0.0100	-0.0085	-0.0070	-0.0067	-0.0066	-0.0067	-0.0066	-0.0064	-0.0066	-0.0070	-0.0087
J-K	**18-13**	**18-14**	**18-15**	**18-16**	**18-17**	**18-18**	**18-19**	**18-20**	**18-21**	**18-22**	**18-23**	**18-24**
N	97	96	96	95	95	95	95	95	95	95	94	93
Mean	-0.0090	-0.0089	-0.0091	-0.0087	-0.0089	-0.0091	-0.0093	-0.0094	-0.0094	-0.0096	-0.0089	-0.0093
J-K	**19-1**	**19-2**	**19-3**	**19-4**	**19-5**	**19-6**	**19-7**	**19-8**	**19-9**	**19-10**	**19-11**	**19-12**
N	102	101	100	99	99	99	99	99	99	98	97	97
Mean	-0.0103	-0.0091	-0.0068	-0.0066	-0.0067	-0.0067	-0.0065	-0.0064	-0.0065	-0.0069	-0.0087	-0.0090
J-K	**19-13**	**19-14**	**19-15**	**19-16**	**19-17**	**19-18**	**19-19**	**19-20**	**19-21**	**19-22**	**19-23**	**19-24**
N	96	96	95	95	95	95	95	95	95	94	93	92
Mean	-0.0091	-0.0094	-0.0090	-0.0092	-0.0094	-0.0094	-0.0096	-0.0097	-0.0098	-0.0090	-0.0095	-0.0094

Table B1, Panel A Continued

J-K	**20-1**	**20-2**	**20-3**	**20-4**	**20-5**	**20-6**	**20-7**	**20-8**	**20-9**	**20-10**	**20-11**	**20-12**
N	101	100	99	99	99	99	99	99	98	97	97	96
Mean	-0.0095	-0.0081	-0.0065	-0.0067	-0.0069	-0.0064	-0.0063	-0.0066	-0.0071	-0.0089	-0.0092	-0.0092
J-K	**20-13**	**20-14**	**20-15**	**20-16**	**20-17**	**20-18**	**20-19**	**20-20**	**20-21**	**20-22**	**20-23**	**20-24**
N	96	95	95	95	95	95	95	95	94	93	92	91
Mean	-0.0096	-0.0093	-0.0094	-0.0096	-0.0097	-0.0099	-0.0099	-0.0101	-0.0091	-0.0095	-0.0095	-0.0068
J-K	**21-1**	**21-2**	**21-3**	**21-4**	**21-5**	**21-6**	**21-7**	**21-8**	**21-9**	**21-10**	**21-11**	**21-12**
N	100	99	99	99	99	99	99	98	97	97	96	96
Mean	-0.0107*	-0.0083	-0.0074	-0.0073	-0.0068	-0.0066	-0.0070	-0.0076	-0.0094	-0.0095	-0.0096	-0.0098
J-K	**21-13**	**21-14**	**21-15**	**21-16**	**21-17**	**21-18**	**21-19**	**21-20**	**21-21**	**21-22**	**21-23**	**21-24**
N	95	95	95	95	95	95	95	94	93	92	91	90
Mean	-0.0096	-0.0099	-0.0100	-0.0102	-0.0103	-0.0103	-0.0105	-0.0095	-0.0098	-0.0098	-0.0071	-0.0075
J-K	**22-1**	**22-2**	**22-3**	**22-4**	**22-5**	**22-6**	**22-7**	**22-8**	**22-9**	**22-10**	**22-11**	**22-12**
N	99	99	99	99	99	99	98	97	97	96	96	95
Mean	-0.0095	-0.0091	-0.0081	-0.0074	-0.0073	-0.0074	-0.0079	-0.0100	-0.0102	-0.0101	-0.0102	-0.0098
J-K	**22-13**	**22-14**	**22-15**	**22-16**	**22-17**	**22-18**	**22-19**	**22-20**	**22-21**	**22-22**	**22-23**	**22-24**
N	95	95	95	95	95	95	94	93	92	91	90	89
Mean	-0.0102	-0.0105	-0.0106	-0.0108	-0.0108	-0.0109	-0.0098	-0.0101	-0.0100	-0.0072	-0.0077	-0.0077
J-K	**23-1**	**23-2**	**23-3**	**23-4**	**23-5**	**23-6**	**23-7**	**23-8**	**23-9**	**23-10**	**23-11**	**23-12**
N	99	99	99	99	99	98	97	97	96	96	95	95
Mean	-0.0126*	-0.0105	-0.0086	-0.0085	-0.0087	-0.0090	-0.0110*	-0.0113*	-0.0113*	-0.0112*	-0.0107	-0.0110
J-K	**23-13**	**23-14**	**23-15**	**23-16**	**23-17**	**23-18**	**23-19**	**23-20**	**23-21**	**23-22**	**23-23**	**23-24**
N	95	95	95	95	95	94	93	92	91	90	89	88
Mean	-0.0114*	-0.0115*	-0.0116*	-0.0117*	-0.0118*	-0.0105	-0.0108	-0.0108	-0.0077	-0.0082	-0.0082	-0.0054
J-K	**24-1**	**24-2**	**24-3**	**24-4**	**24-5**	**24-6**	**24-7**	**24-8**	**24-9**	**24-10**	**24-11**	**24-12**
N	99	99	99	99	98	97	97	96	96	95	95	95
Mean	-0.0115*	-0.0095	-0.0083	-0.0083	-0.0089	-0.0108	-0.0111*	-0.0113*	-0.0113*	-0.0107	-0.0109	-0.0111
J-K	**24-13**	**24-14**	**24-15**	**24-16**	**24-17**	**24-18**	**24-19**	**24-20**	**24-21**	**24-22**	**24-23**	**24-24**
N	95	95	95	95	94	93	92	91	90	89	88	87
Mean	-0.0114	-0.0116*	-0.0116*	-0.0117*	-0.0105	-0.0108	-0.0107	-0.0077	-0.0082	-0.0082	-0.0054	-0.0047

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with the lowest past returns are denoted as losers. The figures of mean in the table are average returns of the winners minus the losers. The market states are defined by past 3 months' cumulative returns *, **, *** denotes the coefficient is significant at the 10%, 5% and 1% significant levels respectively using T-test respectively.*

Table B1 Continued

Panel B: Average Monthly Momentum Profits Following 3-month DOWN Markets												
J-K	**1-1**	**1-2**	**1-3**	**1-4**	**1-5**	**1-6**	**1-7**	**1-8**	**1-9**	**1-10**	**1-11**	**1-12**
N	136	136	135	134	133	132	131	130	129	128	127	126
Mean	-0.0140***	-0.0101***	-0.0059**	-0.0029	-0.0018	-0.0008	0.0001	-0.0009	-0.0004	-0.0009	-0.0010	-0.0005
J-K	**1-13**	**1-14**	**1-15**	**1-16**	**1-17**	**1-18**	**1-19**	**1-20**	**1-21**	**1-22**	**2-23**	**1-24**
N	125	124	123	122	121	120	119	119	119	119	118	117
Mean	-0.0008	-0.0008	-0.0011	-0.0009	-0.0011	-0.0010	-0.0009	-0.0011	-0.0011	-0.0012	-0.0013	-0.0012
J-K	**2-1**	**2-2**	**2-3**	**2-4**	**2-5**	**2-6**	**2-7**	**2-8**	**2-9**	**2-10**	**2-11**	**2-12**
N	136	135	134	133	132	131	130	129	128	127	126	125
Mean	-0.01309**	-0.00644*	-0.0035	-0.0010	-0.0002	0.0014	0.0014	0.0009	0.0005	-0.0001	0.0035	0.0000
J-K	**2-13**	**2-14**	**2-15**	**2-16**	**2-17**	**2-18**	**2-19**	**2-20**	**2-21**	**2-22**	**2-23**	**2-24**
N	124	123	122	121	120	119	119	119	119	118	117	116
Mean	0.0000	-0.0073	-0.0008	-0.0011	-0.0012	-0.0005	-0.0007	-0.0009	-0.0010	-0.0013	-0.0012	-0.0009
J-K	**3-1**	**3-2**	**3-3**	**3-4**	**3-5**	**3-6**	**3-7**	**3-8**	**3-9**	**3-10**	**3-11**	**3-12**
N	135	134	133	132	131	130	129	128	127	126	125	124
Mean	-0.01123**	-0.0043	-0.0015	0.0004	0.0016	0.0018	0.0019	0.0072	0.0007	0.0040	0.0003	0.0005
J-K	**3-13**	**3-14**	**3-15**	**3-16**	**3-17**	**3-18**	**3-19**	**3-20**	**3-21**	**3-22**	**3-23**	**3-24**
N	123	122	121	120	119	119	119	119	118	117	116	115
Mean	-0.0002	-0.0002	-0.0006	-0.0008	-0.0004	-0.0005	-0.0006	-0.0009	-0.0012	-0.0012	-0.0009	-0.0007
J-K	**4-1**	**4-2**	**4-3**	**4-4**	**-45**	**4-6**	**4-7**	**4-8**	**4-9**	**4-10**	**4-11**	**4-12**
N	134	133	132	131	130	129	128	127	126	125	124	123
Mean	-0.0067	-0.0016	0.0001	0.0021	0.0027	0.0027	0.0020	0.0010	0.0012	0.0005	0.0079	0.0000
J-K	**4-13**	**4-14**	**4-15**	**4-16**	**4-17**	**4-18**	**4-19**	**4-20**	**4-21**	**4-22**	**4-23**	**4-24**
N	122	121	120	119	119	119	119	118	117	116	115	114
Mean	-0.0002	-0.0007	-0.0011	-0.0004	-0.0007	-0.0007	-0.0010	-0.0015	-0.0014	-0.0011	-0.0009	-0.0013
J-K	**5-1**	**5-2**	**5-3**	**5-4**	**5-5**	**5-6**	**5-7**	**5-8**	**5-9**	**5-10**	**5-11**	**5-12**
N	133	132	131	130	129	128	127	126	125	124	123	122
Mean	-0.0023	-0.0002	0.0022	0.0031	0.0029	0.0021	0.0013	0.0010	0.0003	0.0005	-0.0005	-0.0003
J-K	**5-13**	**5-14**	**5-15**	**5-16**	**5-17**	**5-18**	**5-19**	**5-20**	**5-21**	**5-22**	**5-23**	**5-24**
N	121	120	119	119	119	119	118	117	116	115	114	114
Mean	-0.0009	-0.0013	-0.0007	-0.0010	-0.0011	-0.0013	-0.0018	-0.0018	-0.0014	-0.0012	-0.0018	-0.0018
J-K	**6-1**	**6-2**	**6-3**	**6-4**	**6-5**	**6-6**	**6-7**	**6-8**	**6-9**	**6-10**	**6-11**	**6-12**
N	132	131	130	129	128	127	126	125	124	123	122	121
Mean	-0.0020	-0.0018	0.0026	0.0032	0.0022	0.0016	0.0014	0.0003	0.0045	-0.0006	-0.0005	-0.0009
J-K	**6-13**	**6-14**	**6-15**	**6-16**	**6-17**	**6-18**	**6-19**	**6-20**	**6-21**	**6-22**	**6-23**	**6-24**
N	120	119	119	119	119	118	117	116	115	114	114	114
Mean	-0.0015	-0.0008	-0.0011	-0.0013	-0.0015	-0.0020	-0.0020	-0.0017	-0.0015	-0.0022	-0.0021	-0.0021

Table B1, Panel B Continued

J-K	**7-1**	**7-2**	**7-3**	**7-4**	**7-5**	**7-6**	**7-7**	**7-8**	**7-9**	**7-10**	**7-11**	**7-12**
N	131	130	129	128	127	126	125	124	123	122	102	103
Mean	0.0003	0.0018	0.0026	0.0022	0.0012	0.0013	0.0002	0.0000	-0.0011	-0.0009	-0.0021	-0.0027
J-K	**7-13**	**7-14**	**7-15**	**7-16**	**7-17**	**7-18**	**7-19**	**7-20**	**7-21**	**7-22**	**7-23**	**7-24**
N	102	101	100	99	99	99	99	99	99	98	97	97
Mean	-0.0027	-0.0041	-0.0036	-0.0036	-0.0037	-0.0036	-0.0036	-0.0036	-0.0039	-0.0041	-0.0052	-0.0053
J-K	**8-1**	**8-2**	**8-3**	**8-4**	**8-5**	**8-6**	**8-7**	**8-8**	**8-9**	**8-10**	**8-11**	**8-12**
N	130	129	128	127	126	125	124	123	122	121	120	119
Mean	0.0000	0.0007	0.0011	0.0008	0.0011	0.0003	0.0002	-0.0013	-0.0011	-0.0017	-0.0022	-0.0014
J-K	**8-13**	**8-14**	**8-15**	**8-16**	**8-17**	**8-18**	**8-19**	**8-20**	**8-21**	**8-22**	**8-23**	**8-24**
N	119	119	119	118	117	116	115	114	114	114	113	113
Mean	-0.0017	-0.0020	-0.0023	-0.0031	-0.0030	-0.0026	-0.0024	-0.0032	-0.0031	-0.0032	-0.0026	-0.0026
J-K	**9-1**	**9-2**	**9-3**	**9-4**	**9-5**	**9-6**	**9-7**	**9-8**	**9-9**	**9-10**	**9-11**	**9-12**
N	129	128	127	126	125	124	123	122	121	120	119	119
Mean	-0.0015	-0.0004	0.0002	0.0009	-0.0001	0.0002	-0.0015	-0.0015	-0.0021	-0.0027	-0.0019	-0.0022
J-K	**9-13**	**9-14**	**9-15**	**9-16**	**9-17**	**9-18**	**9-19**	**9-20**	**9-21**	**9-22**	**9-23**	**9-24**
N	119	119	118	117	116	115	114	114	114	113	113	112
Mean	-0.0025	-0.0028	-0.0037	-0.0037	-0.0033	-0.0029	-0.0038	-0.0038	-0.0037	-0.0031	-0.0031	-0.0025
J-K	**10-1**	**10-2**	**10-3**	**10-4**	**10-5**	**10-6**	**10-7**	**10-8**	**10-9**	**10-10**	**10-11**	**10-12**
N	128	127	126	125	124	123	122	121	120	119	119	119
Mean	-0.0021	-0.0017	-0.0001	-0.0007	-0.0045	-0.0020	-0.0019	-0.0026	-0.0032	-0.0021	-0.0025	-0.0027
J-K	**10-13**	**10-14**	**10-15**	**10-16**	**10-17**	**10-18**	**10-19**	**10-20**	**10-21**	**10-22**	**10-23**	**10-24**
N	119	118	117	116	115	114	114	114	113	113	112	112
Mean	-0.0031	-0.0040	-0.0040	-0.0037	-0.0033	-0.0042	-0.0042	-0.0042	-0.0035	-0.0036	-0.0029	-0.0029
J-K	**11-1**	**11-2**	**11-3**	**11-4**	**11-5**	**11-6**	**11-7**	**11-8**	**11-9**	**11-10**	**11-11**	**11-12**
N	127	126	125	124	123	122	121	120	119	119	119	119
Mean	-0.0044	-0.0011	-0.0015	-0.0008	-0.0023	-0.0022	-0.0028	-0.0036	-0.0025	-0.0029	-0.0031	-0.0034
J-K	**11-13**	**11-14**	**11-15**	**11-16**	**11-17**	**11-18**	**11-19**	**11-20**	**11-21**	**11-22**	**11-23**	**11-24**
N	118	117	116	115	114	114	114	113	113	112	112	111
Mean	-0.0044	-0.0044	-0.0042	-0.0038	-0.0048	-0.0046	-0.0046	-0.0040	-0.0040	-0.0032	-0.0032	-0.0029
J-K	**12-1**	**12-2**	**12-3**	**12-4**	**12-5**	**12-6**	**12-7**	**12-8**	**12-9**	**12-10**	**12-11**	**12-12**
N	126	125	124	124	123	122	121	120	119	119	119	118
Mean	-0.0015	-0.0024	-0.0015	-0.0015	-0.0026	-0.0026	-0.0030	-0.0035	-0.0027	-0.0032	-0.0036	-0.0046
J-K	**12-13**	**12-14**	**12-15**	**12-16**	**12-17**	**12-18**	**12-19**	**12-20**	**12-21**	**12-22**	**12-23**	**12-24**
N	117	116	115	114	114	114	113	113	112	112	111	110
Mean	-0.0046	-0.0043	-0.0040	-0.0051	-0.0050	-0.0048	-0.0043	-0.0043	-0.0036	-0.0036	-0.0033	-0.0035
J-K	**13-1**	**13-2**	**13-3**	**13-4**	**13-5**	**13-6**	**13-7**	**13-8**	**18-9**	**13-10**	**13-11**	**13-12**
N	125	124	123	122	121	120	119	119	119	119	118	117
Mean	-0.0056	-0.0036	-0.0042	-0.0034	-0.0039	-0.0044	-0.0034	-0.0038	-0.0039	-0.0043	-0.0052	-0.0051

Table B1, Panel B Continued												
J-K	**13-13**	**13-14**	**13-15**	**13-16**	**13-17**	**13-18**	**13-19**	**13-20**	**13-21**	**13-22**	**13-23**	**13-24**
N	116	115	114	114	114	113	113	112	112	111	110	109
Mean	-0.0049	-0.0046	-0.0058	-0.0057	-0.0056	-0.0048	-0.0048	-0.0042	-0.0041	-0.0038	-0.0040	-0.0037
J-K	**14-1**	**14-2**	**14-3**	**14-4**	**14-5**	**14-6**	**14-7**	**14-8**	**14-9**	**14-10**	**14-11**	**14-12**
N	124	123	122	121	120	119	119	119	119	118	117	116
Mean	-0.0054	-0.0060	-0.0045	-0.0045	-0.0047	-0.0038	-0.0041	-0.0043	-0.0047	-0.0057	-0.0056	-0.0052
J-K	**14-13**	**14-14**	**14-15**	**14-16**	**14-17**	**14-18**	**14-19**	**14-20**	**14-21**	**14-22**	**14-23**	**14-24**
N	115	114	114	114	113	113	112	112	111	110	109	108
Mean	-0.0050	-0.0062	-0.0061	-0.0061	-0.0053	-0.0052	-0.0046	-0.0046	-0.0043	-0.0044	-0.0041	-0.0036
J-K	**15-1**	**15-2**	**15-3**	**15-4**	**15-4**	**15-6**	**15-7**	**15-8**	**15-9**	**15-10**	**15-11**	**15-12**
N	123	122	121	120	119	119	119	119	118	117	116	115
Mean	-0.0076	-0.0066	-0.0057	-0.0055	-0.0041	-0.0043	-0.0045	-0.0048	-0.0059	-0.0058	-0.0055	-0.0052
J-K	**15-13**	**15-14**	**15-15**	**15-16**	**15-17**	**15-18**	**15-19**	**15-20**	**15-21**	**15-22**	**15-23**	**15-24**
N	114	114	114	113	113	112	112	111	110	109	108	107
Mean	-0.0065	-0.0065	-0.0065	-0.0058	-0.0057	-0.0050	-0.0050	-0.0047	-0.0049	-0.0046	-0.0040	-0.0042
J-K	**16-1**	**16-2**	**16-3**	**16-4**	**16-5**	**16-6**	**16-7**	**16-8**	**16-9**	**16-10**	**16-11**	**16-12**
N	122	121	120	119	119	119	119	118	115	116	115	114
Mean	-0.0074	-0.0066	-0.0061	-0.0044	-0.0045	-0.0046	-0.0495	-0.0061	-0.0052	-0.0056	-0.0053	-0.0065
J-K	**16-13**	**16-14**	**16-15**	**16-16**	**16-17**	**16-18**	**16-19**	**16-20**	**16-21**	**16-22**	**16-23**	**16-24**
N	114	114	113	113	112	112	111	110	109	108	107	106
Mean	-0.00661*	-0.00666*	-0.0060	-0.0059	-0.0052	-0.0051	-0.0049	-0.0051	-0.0048	-0.0043	-0.0045	-0.0045
J-K	**17-1**	**17-2**	**17-3**	**17-4**	**17-5**	**17-6**	**17-7**	**17-8**	**17-9**	**17-10**	**17-11**	**17-12**
N	121	120	119	119	119	119	118	117	116	115	114	114
Mean	-0.0076	-0.0075	-0.0054	-0.0051	-0.0051	-0.0052	-0.0064	-0.0064	-0.0059	-0.0055	-0.0068	-0.00683*
J-K	**17-13**	**17-14**	**17-15**	**17-16**	**17-17**	**17-18**	**17-19**	**17-20**	**17-21**	**17-22**	**17-23**	**17-24**
N	114	113	113	112	112	111	110	109	108	107	106	106
Mean	-0.00691*	-0.0063	-0.00628*	-0.0056	-0.0055	-0.0052	-0.0054	-0.0051	-0.0046	-0.0048	-0.0048	-0.0047
J-K	**18-1**	**18-2**	**18-3**	**18-4**	**18-5**	**18-6**	**18-7**	**18-8**	**18-9**	**18-10**	**18-11**	**18-12**
N	120	119	119	119	119	118	117	116	115	114	114	114
Mean	-0.0086	-0.0065	-0.0058	-0.0056	-0.0057	-0.0066	-0.0063	-0.0060	-0.0057	-0.0069	-0.0070*	-0.0071*
J-K	**18-13**	**18-14**	**18-15**	**18-16**	**18-17**	**18-18**	**18-19**	**18-20**	**18-21**	**18-22**	**18-23**	**18-24**
N	113	113	112	112	111	110	109	108	107	106	106	106
Mean	-0.0065	-0.0065*	-0.0059	-0.0059	-0.0056	-0.0057	-0.0054	-0.0050	-0.0052	-0.0052	-0.0050	-0.0049
J-K	**19-1**	**19-2**	**19-3**	**19-4**	**19-5**	**19-6**	**19-7**	**19-8**	**19-9**	**19-10**	**19-11**	**19-12**
N	119	119	119	119	118	117	116	115	114	114	114	113
Mean	-0.0077	-0.0069	-0.0058	-0.0057	-0.0067	-0.0064	-0.0059	-0.0058	-0.0071	-0.00713*	-0.00724*	-0.0066
J-K	**19-13**	**19-14**	**19-15**	**19-16**	**19-17**	**19-18**	**19-19**	**19-20**	**19-21**	**19-22**	**19-23**	**19-24**
N	113	112	112	111	110	109	108	107	106	106	106	106
Mean	-0.0068*	-0.0061	-0.0062	-0.0059	-0.0061	-0.0057	-0.0053	-0.0055	-0.0055	-0.0054	-0.0053	-0.0051

Table B1, Panel B Continued

J-K	**20-1**	**20-2**	**20-3**	**20-4**	**20-5**	**20-6**	**20-7**	**20-8**	**20-9**	**20-10**	**20-11**	**20-12**
N	119	119	119	118	117	116	115	114	114	114	113	113
Mean	-0.0093*	-0.0074	-0.0067	-0.0074	-0.0070	-0.0061	-0.0059	-0.0073	-0.0074	-0.0075	-0.0069	-0.0069*
J-K	**20-13**	**20-14**	**20-15**	**20-16**	**20-17**	**20-18**	**20-19**	**20-20**	**20-21**	**20-22**	**20-23**	**20-24**
N	112	112	111	110	109	108	107	106	106	106	106	106
Mean	-0.0064	-0.0065*	-0.0063	-0.0065*	-0.0061	-0.0057	-0.0059*	-0.0059*	-0.0058*	-0.0057*	-0.0055*	-0.0053*
J-K	**21-1**	**21-2**	**21-3**	**21-4**	**21-5**	**21-6**	**21-7**	**21-8**	**21-9**	**21-10**	**21-11**	**21-12**
N	119	119	118	117	116	115	114	114	114	113	113	112
Mean	-0.0082	-0.0075	-0.0078	-0.0068	-0.0058	-0.0054	-0.0068	-0.0070	-0.0073	-0.0067	-0.0068	-0.0063
J-K	**21-13**	**21-14**	**21-15**	**21-16**	**21-17**	**21-18**	**21-19**	**21-20**	**21-21**	**21-22**	**21-23**	**21-24**
N	112	111	110	109	108	107	106	106	106	106	106	106
Mean	-0.0065	-0.0064	-0.0065*	-0.0062	-0.0058	-0.0061	-0.0061*	-0.0060*	-0.0059*	-0.0057*	-0.0054*	-0.0052
J-K	**22-1**	**22-2**	**22-3**	**22-4**	**22-5**	**22-6**	**22-7**	**22-8**	**22-9**	**22-10**	**22-11**	**22-12**
N	119	118	117	116	115	114	114	114	113	113	112	112
Mean	-0.0093*	-0.0089*	-0.0077	-0.0060	-0.0055	-0.0068	-0.0070	-0.0073	-0.0068	-0.0068	-0.0064	-0.0066
J-K	**22-13**	**22-14**	**22-15**	**22-16**	**22-17**	**22-18**	**22-19**	**22-20**	**22-21**	**22-22**	**22-23**	**22-24**
N	111	110	109	108	107	106	106	106	106	106	106	106
Mean	-0.0065	-0.0068*	-0.0065	-0.0062	-0.0064*	-0.0063*	-0.0062*	-0.0061*	-0.0059*	-0.0058*	-0.0055*	-0.0054*
J-K	**23-1**	**23-2**	**23-3**	**23-4**	**23-5**	**23-6**	**23-7**	**23-8**	**23-9**	**23-10**	**23-11**	**23-11**
N	118	117	116	115	114	114	114	113	113	112	112	111
Mean	-0.0101*	-0.0082	-0.0063	-0.0054	-0.0069	-0.0070	-0.0073	-0.0069	-0.0070	-0.0066	-0.0068	-0.0067
J-K	**23-13**	**23-14**	**23-15**	**23-16**	**23-17**	**23-18**	**23-19**	**23-20**	**23-21**	**23-22**	**23-23**	**23-24**
N	110	109	108	107	106	106	106	106	106	106	106	106
Mean	-0.0070*	-0.0067	-0.0063	-0.0066*	-0.0066*	-0.0064*	-0.0062*	-0.0061*	-0.0059*	-0.0057*	-0.0055*	-0.0053
J-K	**24-1**	**24-2**	**24-3**	**24-4**	**24-5**	**24-6**	**24-7**	**24-8**	**24-9**	**24-10**	**24-11**	**24-12**
N	117	116	115	114	114	114	113	113	112	112	111	110
Mean	-0.0088*	-0.0068	-0.0055	-0.0065	-0.0066	-0.0068	-0.0064	-0.0066	-0.0062	-0.0065	-0.0065	-0.0068
J-K	**24-13**	**24-14**	**24-15**	**24-16**	**24-17**	**24-18**	**24-19**	**24-20**	**24-21**	**24-22**	**24-23**	**24-24**
N	109	108	107	106	106	106	106	106	106	106	106	106
Mean	-0.0067	-0.0064	-0.0067*	-0.0068*	-0.0066*	-0.0064*	-0.0062*	-0.0061*	-0.0059*	-0.0057*	-0.0055*	-0.0053

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with the lowest past returns are denoted as losers. The figures in the table are average returns of the winners minus the losers. The market states are defined by past 3 months' cumulative returns *, **, *** denotes the coefficient is significant at the 10%, 5% and 1% significant levels respectively using T-test respectively.*

Appendix B2

Table B2 Average Monthly Momentum Returns Based on Past 6 Months' Market States: January 1993 to December 2012

Panel A: Average Monthly Momentum Profits Following 6-month UP Markets												
J-K	**1-1**	**1-2**	**1-3**	**1-4**	**1-5**	**1-6**	**1-7**	**1-8**	**1-9**	**1-10**	**1-11**	**1-12**
N	111	111	111	111	111	111	111	111	111	111	111	111
Mean	-0.0086	-0.0112**	-0.0066*	-0.0057*	-0.0057**	-0.0041*	-0.0026	-0.0029	-0.0025	-0.0023	-0.0015	-0.0018
J-K	**1-13**	**1-14**	**1-15**	**1-16**	**1-17**	**1-18**	**1-19**	**1-20**	**1-21**	**1-22**	**1-23**	**1-24**
N	111	111	111	111	111	111	111	110	109	108	107	106
Mean	-0.0016	-0.0016	-0.0022*	-0.0018	-0.0023*	-0.0022*	-0.0020*	-0.0018	-0.0018	-0.0020*	-0.0023**	-0.0023**
J-K	**2-1**	**2-2**	**2-3**	**2-4**	**2-5**	**2-6**	**2-7**	**2-8**	**2-9**	**2-10**	**2-11**	**2-12**
N	111	111	111	111	111	111	111	111	111	111	111	111
Mean	-0.0165**	-0.0114**	-0.0072	-0.0074**	-0.0064**	-0.0041*	-0.0035	-0.0033	-0.0028	-0.0021	-0.0017	-0.0018
J-K	**2-13**	**2-14**	**2-15**	**2-16**	**2-17**	**2-18**	**2-19**	**2-20**	**2-21**	**2-22**	**2-23**	**2-24**
N	111	111	111	111	111	111	110	109	108	107	106	105
Mean	-0.0017	-0.0020	-0.0021	-0.0023	-0.0024	-0.0019	-0.0022	-0.0024	-0.0025	-0.0030*	-0.0032*	-0.0027*
J-K	**3-1**	**3-2**	**3-3**	**3-4**	**3-5**	**3-6**	**3-7**	**3-8**	**3-9**	**3-10**	**3-11**	**3-12**
N	111	111	111	111	111	111	111	111	111	111	111	111
Mean	-0.0129*	-0.01012*	-0.0074	-0.00676*	-0.0049	-0.0036	-0.0030	-0.0029	-0.0021	-0.0020	-0.0018	-0.0020
J-K	**3-13**	**3-14**	**3-15**	**3-16**	**3-17**	**3-18**	**3-19**	**3-20**	**3-21**	**3-22**	**3-23**	**3-24**
N	111	111	111	111	111	110	109	108	107	106	105	105
Mean	-0.0024	-0.0022	-0.0028	-0.0029	-0.0029	-0.0029	-0.0030	-0.0032	-0.00375*	-0.0039*	-0.0036*	-0.0034*
J-K	**4-1**	**4-2**	**4-3**	**4-4**	**4-5**	**4-6**	**4-7**	**4-8**	**4-9**	**4-10**	**4-11**	**4-12**
N	111	111	111	111	111	111	111	111	111	111	111	111
Mean	-0.0125*	-0.0104*	-0.0077*	-0.0059	-0.0046	-0.0033	-0.0027	-0.0020	-0.0014	-0.0015	-0.0014	-0.0020
J-K	**4-13**	**4-14**	**4-15**	**4-16**	**4-17**	**4-18**	**4-19**	**4-20**	**4-21**	**4-22**	**4-23**	**4-24**
N	111	111	111	111	110	109	108	107	106	105	105	105
Mean	-0.0021	-0.0025	-0.0028	-0.0027	-0.0035	-0.0033	-0.0035	-0.0041	-0.00433*	-0.0039	-0.0039	-0.0039
J-K	**5-1**	**5-2**	**5-3**	**5-4**	**5-5**	**5-6**	**5-7**	**5-8**	**5-9**	**5-10**	**5-11**	**5-12**
N	111	111	111	111	111	111	111	111	111	111	111	111
Mean	-0.0149**	-0.0119**	-0.0073	-0.0058	-0.0048	-0.0037	-0.0028	-0.0024	-0.0020	-0.0019	-0.0021	-0.0021
J-K	**5-13**	**5-14**	**5-15**	**5-16**	**5-17**	**5-18**	**5-19**	**5-20**	**5-21**	**5-22**	**5-23**	**5-24**
N	111	111	111	110	109	108	107	106	105	105	105	105
Mean	-0.0026	-0.0030	-0.0031	-0.0042	-0.0041	-0.0041	-0.0049*	-0.0052*	-0.0047	-0.0046	-0.0047*	-0.0045
J-K	**6-1**	**6-2**	**6-3**	**6-4**	**6-5**	**6-6**	**6-7**	**6-8**	**6-9**	**6-10**	**6-11**	**6-12**
N	111	111	111	111	111	111	111	111	111	111	111	111
Mean	-0.0146**	-0.0101**	-0.0063	-0.0048	-0.0042	-0.0029	-0.0023	-0.0024	-0.0021	-0.0025	-0.0025	-0.0031
J-K	**6-13**	**6-14**	**6-15**	**6-16**	**6-17**	**6-18**	**6-19**	**6-20**	**6-21**	**6-22**	**6-23**	**6-24**
N	111	111	110	109	108	107	106	105	105	105	105	104
Mean	-0.0034	-0.0035	-0.0046	-0.0045	-0.0047	-0.0055*	-0.0056*	-0.0052	-0.0051	-0.0052*	-0.0051	-0.0057*

Table B2, Panel A Continued												
J-K	**7-1**	**7-2**	**7-3**	**7-4**	**7-5**	**7-6**	**7-7**	**7-8**	**7-9**	**7-10**	**7-11**	**7-12**
N	111	111	111	111	111	111	111	111	111	111	111	111
Mean	-0.0111*	-0.0086*	-0.0049	-0.0043	-0.0036	-0.0028	-0.0025	-0.0026	-0.0026	-0.0027	-0.0030	-0.0035
J-K	**7-13**	**7-14**	**7-15**	**7-16**	**7-17**	**7-18**	**7-19**	**7-20**	**7-21**	**7-22**	**7-23**	**7-24**
N	111	110	109	108	107	106	105	105	105	105	104	104
Mean	-0.0035	-0.0049	-0.0048	-0.0051	-0.0059*	-0.0059*	-0.0055	-0.0055	-0.5570	-0.0056	-0.0064*	-0.0063*
J-K	**8-1**	**8-2**	**8-3**	**8-4**	**8-5**	**8-6**	**8-7**	**8-8**	**8-9**	**8-10**	**8-11**	**8-12**
N	111	111	111	111	111	111	111	111	111	111	111	111
Mean	-0.0107*	-0.0078	-0.0051	-0.0040	-0.0035	-0.0030	-0.0029	-0.0033	-0.0031	-0.0036	-0.0041	-0.0042
J-K	**8-13**	**8-14**	**8-15**	**8-16**	**8-17**	**8-18**	**8-19**	**8-20**	**8-21**	**8-22**	**8-23**	**8-24**
N	110	109	108	107	106	105	105	105	105	104	104	106
Mean	-0.0055	-0.0055	-0.0057	-0.0067*	-0.0068*	-0.0062	-0.0061	-0.0062*	-0.0062*	-0.0070*	-0.0071*	-0.0014
J-K	**9-1**	**9-2**	**9-3**	**9-4**	**9-5**	**9-6**	**9-7**	**9-8**	**9-9**	**9-10**	**9-11**	**9-12**
N	111	111	111	111	111	111	111	111	111	111	111	110
Mean	-0.0102*	-0.0073	-0.0046	-0.0038	-0.0035	-0.0033	-0.0036	-0.0039	-0.0043	-0.0047	-0.0046	-0.0063
J-K	**9-13**	**9-14**	**9-15**	**9-16**	**9-17**	**9-18**	**9-19**	**9-20**	**9-21**	**9-22**	**9-23**	**9-24**
N	109	108	107	106	105	105	105	105	104	104	103	102
Mean	-0.0060	-0.0063	-0.0073*	-0.0075*	-0.0070*	-0.0067*	-0.0068*	-0.0068*	-0.0077	-0.0077**	-0.0076**	-0.00702*
J-K	**10-1**	**10-2**	**10-3**	**10-4**	**10-5**	**10-6**	**10-7**	**10-8**	**10-9**	**10-10**	**10-11**	**10-12**
N	111	111	111	111	111	111	111	111	111	111	110	109
Mean	-0.0101*	-0.0072	-0.0049	-0.0046	-0.0044	-0.0044	-0.0044	-0.0052	-0.0052	-0.0051	-0.0069	-0.0064
J-K	**10-13**	**10-14**	**10-15**	**10-16**	**10-17**	**10-18**	**10-19**	**10-20**	**10-21**	**10-22**	**10-23**	**10-24**
N	108	107	106	105	105	105	105	104	104	103	102	101
Mean	-0.0067	-0.0077*	-0.0079*	-0.0075*	-0.0073*	-0.0072*	-0.0073*	-0.0083**	-0.0082**	-0.0081**	-0.0076*	-0.0072
J-K	**11-1**	**11-2**	**11-3**	**11-4**	**11-5**	**11-6**	**11-7**	**11-8**	**11-9**	**11-10**	**11-11**	**11-12**
N	111	111	111	111	111	111	111	111	111	110	109	108
Mean	-0.0083	-0.0072	-0.0056	-0.0055	-0.0059	-0.0057	-0.0060	-0.0066	-0.0062	-0.0077	-0.0072	-0.0075
J-K	**11-13**	**11-14**	**11-15**	**11-16**	**11-17**	**11-18**	**11-19**	**11-20**	**11-21**	**11-22**	**11-23**	**11-24**
N	107	106	105	105	105	105	104	104	103	102	101	100
Mean	-0.0085*	-0.0087*	-0.0083*	-0.0081*	-0.0081*	-0.0080*	-0.0090**	-0.0090**	-0.0088**	-0.0082*	-0.0079*	-0.0078*
J-K	**12-1**	**12-2**	**12-3**	**12-4**	**12-5**	**12-6**	**12-7**	**12-8**	**12-9**	**12-10**	**12-11**	**12-12**
N	111	111	111	111	111	111	111	111	110	109	108	107
Mean	-0.00967*	-0.0082	-0.0064	-0.0066	-0.0064	-0.0063	-0.0065	-0.0065	-0.0081	-0.0074	-0.0075	-0.0087*
J-K	**12-13**	**12-14**	**12-15**	**12-16**	**12-17**	**12-18**	**12-19**	**12-20**	**12-21**	**12-22**	**12-23**	**12-24**
N	106	105	105	105	105	104	104	103	102	101	100	100
Mean	-0.0089*	-0.0086*	-0.0085*	-0.0084*	-0.0084*	-0.0093**	-0.0093**	-0.0091**	-0.0085*	-0.0081*	-0.0081*	-0.0082*
J-K	**13-1**	**13-2**	**13-3**	**13-4**	**13-5**	**13-6**	**13-7**	**13-8**	**13-9**	**13-10**	**13-11**	**13-12**
N	111	111	111	111	111	111	111	110	109	108	107	106
Mean	-0.0109*	-0.0090	-0.0075	-0.0071	-0.0077	-0.0076	-0.0073	-0.0090*	-0.0081	-0.0083	-0.0091*	-0.0094*

Table B2, Panel A Continued												
J-K	**13-13**	**13-14**	**13-15**	**13-16**	**13-17**	**13-18**	**13-19**	**13-20**	**13-21**	**13-22**	**13-23**	**13-24**
N	105	105	105	105	104	104	103	102	101	100	100	100
Mean	-0.0091*	-0.0090*	-0.009*	-0.0090*	-0.0101**	-0.0100**	-0.0098**	-0.0093**	-0.0089*	-0.0087*	-0.0088*	-0.0088*
J-K	**14-1**	**14-2**	**14-3**	**14-4**	**14-5**	**14-6**	**14-7**	**14-8**	**14-9**	**14-10**	**14-11**	**14-12**
N	111	111	111	111	111	111	110	109	108	107	106	105
Mean	-0.0107*	-0.0101*	-0.0077	-0.0077	-0.0077	-0.0074	-0.0092*	-0.0084	-0.0084	-0.0095*	-0.0095*	-0.0090
J-K	**14-13**	**14-14**	**14-15**	**14-16**	**14-17**	**14-18**	**14-19**	**14-20**	**14-21**	**14-22**	**14-23**	**14-24**
N	105	105	105	104	104	103	102	101	100	100	100	100
Mean	-0.0091*	-0.0092*	-0.0093*	-0.0105**	-0.0104**	-0.0101**	-0.0096**	-0.0093*	-0.0092*	-0.0093*	-0.0093*	-0.0094*
J-K	**15-1**	**15-2**	**15-3**	**15-4**	**15-5**	**15-6**	**15-7**	**15-8**	**15-9**	**15-10**	**15-11**	**15-12**
N	111	111	111	111	111	110	109	108	107	106	105	105
Mean	-0.0119*	-0.0098	-0.0085	-0.0083	-0.0077	-0.0092	-0.0086	-0.0088	-0.0097*	-0.0098*	-0.0093*	-0.0094*
J-K	**15-13**	**15-14**	**15-15**	**15-16**	**15-17**	**15-18**	**15-19**	**15-20**	**15-21**	**15-22**	**15-23**	**15-24**
N	105	105	104	104	103	102	101	100	100	100	100	100
Mean	-0.0094*	-0.0095*	-0.0108**	-0.0107**	-0.0104**	-0.0099*	-0.0096*	-0.0095*	-0.0096*	-0.0096*	-0.0096*	-0.0096*
J-K	**16-1**	**16-2**	**16-3**	**16-4**	**16-5**	**16-6**	**16-7**	**16-8**	**16-9**	**16-10**	**16-11**	**16-12**
N	111	111	111	111	110	109	108	107	105	105	105	105
Mean	-0.0109*	-0.0103*	-0.0089	-0.0082	-0.0096*	-0.0086	-0.0091	-0.01033*	-0.0098*	-0.0096*	-0.0095*	-0.0096*
J-K	**16-13**	**16-14**	**16-15**	**16-16**	**16-17**	**16-18**	**16-19**	**16-20**	**16-21**	**16-22**	**16-23**	**16-24**
N	105	104	104	103	102	101	100	100	100	100	100	100
Mean	-0.0096*	-0.0111**	-0.0111**	-0.0108**	-0.0102*	-0.0097*	-0.0098*	-0.00991*	-0.0099*	-0.0099*	-0.0099*	-0.0100*
J-K	**17-1**	**17-**	**3-17**	**4-17**	**5-17**	**6-17**	**7-17**	**8-17**	**9-17**	**10-17**	**11-17**	**12-17**
N	111	111	111	110	109	108	107	106	105	105	105	105
Mean	-0.0130**	-0.0117*	-0.0091	-0.0099*	-0.0091	-0.0092	-0.0106*	-0.0107*	-0.0099*	-0.0097*	-0.0098*	-0.0099*
J-K	**17-13**	**17-14**	**17-15**	**17-16**	**17-17**	**17-18**	**17-19**	**17-20**	**17-21**	**17-22**	**17-23**	**17-24**
N	104	104	103	102	101	100	100	100	100	100	100	99
Mean	-0.0113**	-0.0114**	-0.0112**	-0.0106**	-0.01018*	-0.0101*	-0.0102*	-0.0103*	-0.0103*	-0.0102*	-0.0103*	-0.0094*
J-K	**18-1**	**18-2**	**18-3**	**18-4**	**18-5**	**18-6**	**18-7**	**18-8**	**18-9**	**18-10**	**18-11**	**18-12**
N	111	111	110	109	108	107	106	105	105	105	105	104
Mean	-0.0139**	-0.0114*	-0.0101	-0.0094	-0.0096	-0.0106*	-0.0106*	-0.0100*	-0.0090*	-0.0099*	-0.0100*	-0.0116**
J-K	**18-13**	**18-14**	**18-15**	**18-16**	**18-17**	**18-18**	**18-19**	**18-20**	**18-21**	**18-22**	**18-23**	**18-24**
N	104	103	102	101	100	100	100	100	100	100	99	98
Mean	-0.0117**	-0.0115**	-0.0110**	-0.0106*	-0.0105*	-0.0106*	-0.0107*	-0.0107*	-0.0106*	-0.0106*	-0.0099*	-0.0101*
J-K	**19-1**	**19-2**	**19-3**	**19-4**	**19-5**	**19-6**	**19-7**	**19-8**	**19-9**	**19-10**	**19-11**	**19-12**
N	111	110	109	108	107	106	105	105	105	105	104	104
Mean	-0.0115*	-0.0110	-0.0090	-0.0094	-0.0101*	-0.0108*	-0.0101*	-0.0102*	-0.0101*	-0.0102*	-0.0118**	-0.0119**
J-K	**19-13**	**19-14**	**19-15**	**19-16**	**19-17**	**19-18**	**19-19**	**19-20**	**19-21**	**19-22**	**19-23**	**19-24**
N	103	102	101	100	100	100	100	100	100	99	98	97
Mean	-0.0119**	-0.0115**	-0.0111*	-0.011*	-0.0111*	-0.0111*	-0.0111*	-0.0111*	-0.0111*	-0.0102*	-0.0106*	-0.0103*

Table B2, Panel A Continued

J-K	**20-1**	**20-2**	**20-3**	**20-4**	**20-5**	**20-6**	**20-7**	**20-8**	**20-9**	**20-10**	**20-11**	**20-12**
N	110	109	108	107	106	105	105	105	105	104	104	103
Mean	-0.0120*	-0.0109*	-0.0097	-0.01130*	-0.0114*	-0.0103*	-0.0102*	-0.0105*	-0.0106*	-0.0122**	-0.0123**	-0.0122**
J-K	**20-13**	**20-14**	**20-15**	**20-16**	**20-17**	**20-18**	**20-19**	**20-20**	**20-21**	**20-22**	**20-23**	**20-24**
N	102	101	100	100	100	100	100	100	99	98	97	96
Mean	-0.0119**	-0.0116*	-0.0115*	-0.0116*	-0.0116*	-0.0116*	-0.0116*	-0.0117*	-0.0106*	-0.0109*	-0.0107*	-0.0081
J-K	**21-1**	**21-2**	**21-3**	**21-4**	**21-5**	**21-6**	**21-7**	**21-8**	**21-9**	**21-10**	**21-11**	**21-12**
N	109	108	107	106	105	105	105	105	104	104	103	102
Mean	-0.0131**	-0.0114*	-0.0118*	-0.0116*	-0.0104*	-0.0103	-0.0107*	-0.0108*	-0.0126**	-0.0125**	-0.0125**	-0.0121*
J-K	**21-13**	**21-14**	**21-15**	**21-16**	**21-17**	**21-18**	**21-19**	**21-20**	**21-21**	**21-22**	**21-23**	**21-24**
N	101	100	100	100	100	100	100	99	98	97	96	95
Mean	-0.0119*	-0.0120*	-0.0121*	-0.0121*	-0.0122*	-0.0121*	-0.0121*	-0.0110*	-0.0112*	-0.0111*	-0.0084	-0.0087
J-K	**22-1**	**22-2**	**22-3**	**22-4**	**22-5**	**22-6**	**22-7**	**22-8**	**22-9**	**22-10**	**22-11**	**22-12**
N	108	107	106	105	105	105	105	104	104	103	102	101
Mean	-0.0131**	-0.0136**	-0.0124*	-0.0109*	-0.0109*	-0.0110*	-0.0111*	-0.0130**	-0.0130**	-0.0129**	-0.0124**	-0.0121*
J-K	**22-13**	**22-14**	**22-15**	**22-16**	**22-17**	**22-18**	**22-19**	**22-20**	**22-21**	**22-22**	**22-23**	**22-24**
N	101	100	100	100	100	100	99	98	97	96	95	94
Mean	-0.0121*	-0.0124*	-0.0126*	-0.0126**	-0.0128**	-0.0126**	-0.0114*	-0.0116*	-0.0114*	-0.0086	-0.0090	-0.0089
J-K	**1-23**	**2-23**	**3-23**	**4-23**	**5-23**	**6-23**	**7-23**	**8-23**	**9-23**	**10-23**	**11-23**	**12-23**
N	107	106	105	105	105	105	104	104	103	102	101	100
Mean	-0.0166**	-0.0145**	-0.0116*	-0.0116*	-0.0119*	-0.0118*	-0.0138**	-0.014**	-0.0139**	-0.0133**	-0.0129**	-0.0131**
J-K	**23-13**	**23-14**	**23-15**	**23-16**	**23-17**	**23-18**	**23-19**	**23-20**	**23-21**	**23-22**	**23-23**	**23-24**
N	100	100	100	100	100	99	98	97	96	95	94	93
Mean	-0.0133**	-0.0134**	-0.0135**	-0.0134**	-0.0134**	-0.0121*	-0.0123*	-0.0122*	-0.0092	-0.0095	-0.0094	-0.0067
J-K	**1-24**	**2-24**	**3-24**	**4-24**	**5-24**	**6-24**	**7-24**	**8-24**	**9-24**	**10-24**	**11-24**	**12-24**
N	106	105	105	105	105	104	104	103	102	101	100	100
Mean	-0.0154**	-0.0123*	-0.0110*	-0.0110*	-0.0114*	-0.0133**	-0.0136**	-0.0138**	-0.0134**	-0.0129	-0.0130*	-0.0132*
J-K	**24-13**	**24-14**	**24-15**	**24-16**	**24-17**	**24-18**	**24-19**	**24-20**	**24-21**	**24-22**	**24-23**	**24-24**
N	100	100	100	100	99	98	97	96	95	94	93	92
Mean	-0.0134**	-0.0135**	-0.0135**	-0.0135**	-0.0122*	-0.0124*	-0.0122*	-0.0093	-0.0096	-0.0096	-0.0068	-0.0059

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with the lowest past returns are denoted as losers. The figures in the table are average returns of the winners minus the losers. The market states are defined by past 6 months' cumulative returns *, **, *** denotes the coefficient is significant at the 10%, 5% and 1% significant levels respectively using T-test respectively.*

Table B2 Continued

Panel B: Average Monthly Momentum Profits Following 6-month DOWN Markets												
J-K	**1-1**	**1-2**	**1-3**	**1-4**	**1-5**	**1-6**	**1-7**	**1-8**	**1-9**	**1-10**	**1-11**	**1-12**
N	128	127	126	125	124	123	122	121	120	119	118	117
Mean	-0.0159***	-0.0111***	-0.0067**	-0.0040*	-0.0023	-0.0013	-0.0005	-0.0013	-0.0004	-0.0009	-0.0010	-0.0002
J-K	**1-13**	**1-14**	**1-15**	**1-16**	**1-17**	**1-18**	**1-19**	**1-20**	**1-21**	**1-22**	**1-23**	**1-24**
N	116	115	114	113	112	111	110	110	110	110	110	110
Mean	-0.0009	-0.0009	-0.0010	-0.0009	-0.0012	-0.0011	-0.0008	-0.0010	-0.0008	-0.0008	-0.0009	-0.0008
J-K	**2-1**	**2-2**	**2-3**	**2-4**	**2-5**	**2-6**	**2-7**	**2-8**	**2-9**	**2-10**	**2-11**	**2-12**
N	127	126	125	124	123	122	121	120	119	118	117	116
Mean	-0.0138	-0.0069*	-0.0046	-0.0015	-0.0004	-0.0010	0.0011	0.0008	0.0005	-0.0001	0.0006	0.0002
J-K	**2-13**	**2-14**	**2-15**	**2-16**	**2-17**	**2-18**	**2-19**	**2-20**	**2-21**	**2-22**	**2-23**	**2-24**
N	115	114	113	112	111	110	110	110	110	110	110	110
Mean	-0.0001	-0.0008	-0.0008	-0.0011	-0.0012	-0.0004	-0.0005	-0.0004	-0.0003	-0.0003	-0.0003	-0.0003
J-K	**3-1**	**3-2**	**3-3**	**3-4**	**3-5**	**3-6**	**3-7**	**3-8**	**3-9**	**3-10**	**3-11**	**3-12**
N	126	125	124	123	122	121	120	119	118	117	116	115
Mean	-0.0123**	-0.0054	-0.0024	-0.0002	-0.0012	0.0013	0.0017	0.0007	0.0009	0.0007	0.0007	0.0008
J-K	**3-13**	**3-14**	**3-15**	**3-16**	**3-17**	**3-18**	**3-19**	**3-20**	**3-21**	**3-22**	**3-23**	**3-24**
N	114	113	112	111	110	110	110	110	110	110	110	109
Mean	-0.0001	0.0000	-0.0004	-0.0007	-0.0001	-0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
J-K	**4-1**	**4-2**	**4-3**	**4-4**	**4-5**	**4-6**	**4-7**	**4-8**	**4-9**	**4-10**	**4-11**	**4-12**
N	125	124	123	122	121	120	119	118	117	116	115	114
Mean	-0.0086	-0.0023	-0.0006	-0.0016	0.0025	0.0026	0.0021	0.0012	0.0016	0.0010	0.0012	0.0004
J-K	**4-13**	**4-14**	**4-15**	**4-16**	**4-17**	**4-18**	**4-19**	**4-20**	**4-21**	**4-22**	**4-23**	**4-24**
N	113	112	111	110	110	110	110	110	110	110	109	108
Mean	0.0001	-0.0004	-0.0007	0.0001	0.0000	0.0002	0.0001	0.0001	0.0003	0.0002	0.0003	-0.0003
J-K	**5-1**	**5-2**	**5-3**	**5-4**	**5-5**	**5-6**	**5-7**	**5-8**	**5-9**	**5-10**	**5-11**	**5-12**
N	124	123	122	121	120	119	118	117	116	115	114	113
Mean	-0.0023	0.0000	0.0021	0.0032	0.0033	0.0026	0.0018	0.0019	0.0012	0.0012	0.0003	0.0005
J-K	**5-13**	**5-14**	**5-15**	**5-16**	**5-17**	**5-18**	**5-19**	**5-20**	**5-21**	**5-22**	**5-23**	**5-24**
N	112	111	110	110	110	110	110	110	110	109	108	107
Mean	-0.0003	-0.0007	0.0002	0.0000	0.0001	0.0001	0.0002	0.0002	0.0002	0.0003	-0.0005	-0.0007
J-K	**6-1**	**6-2**	**6-3**	**6-4**	**6-5**	**6-6**	**6-7**	**6-8**	**6-9**	**6-10**	**6-11**	**6-12**
N	123	122	121	120	119	118	117	116	115	114	113	112
Mean	-0.0029	0.0012	0.0020	0.0030	0.0025	0.0019	0.0020	0.0010	0.0011	0.0000	0.0003	-0.0002
J-K	**6-13**	**6-14**	**6-15**	**6-16**	**6-17**	**6-18**	**6-19**	**6-20**	**6-21**	**6-22**	**6-23**	**6-24**
N	111	110	110	110	110	110	110	110	109	108	107	107
Mean	-0.0008	0.0000	-0.0002	-0.0002	-0.0002	-0.0001	0.0000	-0.0001	0.0001	-0.0007	-0.0009	-0.0011

Table B2, Panel B Continued

J-K	**7-1**	**7-2**	**7-3**	**7-4**	**7-5**	**7-6**	**7-7**	**7-8**	**7-9**	**7-10**	**7-11**	**7-12**
N	122	121	120	119	118	117	116	115	114	113	112	111
Mean	-0.0006	0.0014	0.0024	0.0025	0.0019	0.0022	0.0011	0.0010	-0.0002	0.0001	-0.0004	-0.0008
J-K	**7-13**	**7-14**	**7-15**	**7-16**	**7-17**	**7-18**	**7-19**	**7-20**	**7-21**	**7-22**	**7-23**	**7-24**
N	110	110	110	110	110	110	110	109	108	107	107	106
Mean	0.0000	-0.0002	-0.0003	-0.0004	-0.0004	-0.0002	-0.0003	-0.0001	-0.0009	-0.0011	-0.0013	-0.0010
J-K	**8-1**	**8-2**	**8-3**	**8-4**	**8-5**	**8-6**	**8-7**	**8-8**	**8-9**	**8-10**	**8-11**	**8-12**
N	121	120	119	118	117	116	115	114	113	112	111	110
Mean	-0.0008	0.0009	0.0015	0.0016	0.0023	0.0014	0.0013	-0.0002	0.0001	-0.0005	-0.0010	0.0000
J-K	**8-13**	**8-14**	**8-15**	**8-16**	**8-17**	**8-18**	**8-19**	**8-20**	**8-21**	**8-22**	**8-23**	**8-24**
N	110	110	110	110	110	110	109	108	107	107	106	106
Mean	-0.0004	-0.0005	-0.0006	-0.0007	-0.0006	-0.0006	-0.0004	-0.0013	-0.0014	-0.0016	-0.0012	-0.0014
J-K	**9-1**	**9-2**	**9-3**	**9-4**	**9-5**	**9-6**	**9-7**	**9-8**	**9-9**	**9-10**	**9-11**	**9-12**
N	120	119	118	117	116	115	114	113	112	111	110	110
Mean	-0.0010	0.0004	0.0012	0.0024	0.0015	0.0014	0.0000	0.0001	-0.0006	-0.0012	-0.0003	-0.0005
J-K	**9-13**	**9-14**	**9-15**	**9-16**	**9-17**	**9-18**	**9-19**	**9-20**	**9-21**	**9-22**	**9-23**	**9-24**
N	110	110	110	110	110	109	108	107	107	106	106	106
Mean	-0.0007	-0.0008	-0.0009	-0.0009	-0.0009	-0.0006	-0.0016	-0.0018	-0.0019	-0.0015	-0.0017	-0.0018
J-K	**10-1**	**10-2**	**10-3**	**10-4**	**10-5**	**10-6**	**10-7**	**10-8**	**10-9**	**10-10**	**10-11**	**10-12**
N	119	118	117	116	115	114	113	112	111	110	110	110
Mean	-0.0012	-0.0003	-0.0013	0.0009	0.0012	-0.0003	-0.0001	-0.0009	-0.0014	-0.0003	-0.0006	-0.0007
J-K	**10-13**	**10-14**	**10-15**	**10-16**	**10-17**	**10-18**	**10-19**	**10-20**	**10-21**	**10-22**	**10-23**	**10-24**
N	110	110	110	110	109	108	107	107	106	106	106	106
Mean	-0.0010	-0.0011	-0.0010	-0.0011	-0.0007	-0.0018	-0.0019	-0.0021	-0.0016	-0.0018	-0.0019	-0.0020
J-K	**11-1**	**11-2**	**11-3**	**11-4**	**11-5**	**11-6**	**11-7**	**11-8**	**11-9**	**11-10**	**11-11**	**11-12**
N	118	117	116	115	114	113	112	111	110	110	110	110
Mean	-0.0031	0.0006	0.0000	0.0009	-0.0004	-0.0003	-0.0010	-0.0017	-0.0006	-0.0009	-0.0010	-0.0011
J-K	**11-13**	**11-14**	**11-15**	**11-16**	**11-17**	**11-18**	**11-19**	**11-20**	**11-21**	**11-22**	**11-23**	**11-24**
N	110	110	110	109	108	107	107	106	106	106	106	106
Mean	-0.0014	-0.0014	-0.0015	-0.0012	-0.0022	-0.0023	-0.0024	-0.0020	-0.0021	-0.0022	-0.0023	-0.0023
J-K	**12-1**	**12-2**	**12-3**	**12-4**	**12-5**	**12-6**	**12-7**	**12-8**	**12-9**	**12-10**	**12-11**	**12-12**
N	117	116	115	114	113	112	111	110	110	110	110	110
Mean	-0.0001	-0.0010	-0.0002	-0.0010	-0.0007	-0.0013	-0.0018	-0.0008	-0.0012	-0.0012	-0.0014	-0.0015
J-K	**12-13**	**12-14**	**12-15**	**12-16**	**12-17**	**12-18**	**12-19**	**12-20**	**12-21**	**12-22**	**12-23**	**12-24**
N	110	110	109	108	107	107	106	106	106	106	106	105
Mean	-0.0016	-0.0017	-0.0013	-0.0026	-0.0027	-0.0027	-0.0022	-0.0023	-0.0024	-0.0025	-0.0025	-0.0028
J-K	**13-1**	**13-2**	**13-3**	**13-4**	**13-5**	**13-6**	**13-7**	**13-8**	**13-9**	**1-10**	**13-11**	**13-12**
N	116	115	114	113	112	111	110	110	110	110	110	110
Mean	-0.0044	-0.0023	-0.0026	-0.0016	-0.0020	-0.0025	-0.0014	-0.0018	-0.0018	-0.0019	-0.0020	-0.0020

Table B2, Panel B Continued												
J-K	**13-13**	**13-14**	**13-15**	**13-16**	**13-17**	**13-18**	**13-19**	**13-20**	**13-21**	**13-22**	**13-23**	**13-24**
N	110	109	108	107	107	106	106	106	106	106	105	1-4
Mean	-0.0022	-0.0019	-0.0031	-0.0033	-0.0033	-0.0027	-0.0028	-0.0029	-0.0029	-0.0029	-0.0032	-0.0030
J-K	**14-1**	**14-2**	**14-3**	**14-4**	**14-5**	**14-6**	**14-7**	**14-8**	**14-9**	**14-10**	**14-11**	**14-12**
N	115	114	113	112	111	110	110	110	110	110	110	110
Mean	-0.0045	-0.0043	-0.0028	-0.0028	-0.0028	-0.0018	-0.0020	-0.0020	-0.0021	-0.0023	-0.0022	-0.0023
J-K	**14-13**	**14-14**	**14-15**	**14-16**	**14-17**	**14-18**	**14-19**	**14-20**	**14-21**	**14-22**	**14-23**	**14-24**
N	109	108	107	107	106	106	106	106	106	105	104	103
Mean	-0.0022	-0.0034	-0.0036	-0.0037	-0.0030	-0.0030	-0.0031	-0.0315	-0.0031	-0.0034	-0.0032	-0.0028
J-K	**15-1**	**15-2**	**15-3**	**15-4**	**15-5**	**15-6**	**15-7**	**15-8**	**15-9**	**15-10**	**15-11**	**15-12**
N	114	113	112	111	110	110	110	110	110	110	110	109
Mean	-0.0056	-0.0045	-0.0038	-0.0037	-0.0020	-0.0021	-0.0020	-0.0021	-0.0024	-0.0024	-0.0025	-0.0021
J-K	**15-13**	**15-14**	**15-15**	**15-16**	**15-17**	**15-18**	**15-19**	**15-20**	**15-21**	**15-22**	**15-23**	**15-24**
N	108	107	107	106	106	106	106	106	105	104	103	102
Mean	-0.0035	-0.0038	-0.0039	-0.0033	-0.0033	-0.0033	-0.0034	-0.0034	-0.0036	-0.0034	-0.0030	-0.0033
J-K	**16-1**	**16-2**	**16-3**	**16-4**	**16-5**	**16-6**	**16-7**	**16-8**	**16-9**	**16-10**	**16-11**	**16-12**
N	113	112	111	110	110	110	110	110	109	110	109	108
Mean	-0.0062	-0.0054	-0.0050	-0.0029	-0.0027	-0.0024	-0.0024	-0.0026	-0.0021	-0.0026	-0.0022	-0.0036
J-K	**16-13**	**16-14**	**16-15**	**16-16**	**16-17**	**16-18**	**16-19**	**16-20**	**16-21**	**16-22**	**16-23**	**16-24**
N	107	107	106	106	106	106	106	105	104	103	102	101
Mean	-0.0040	-0.0041	-0.0035	-0.0036	-0.0036	-0.0036	-0.0036	-0.0039	-0.0037	-0.0032	-0.0036	-0.0036
J-K	**17-1**	**17-2**	**17-3**	**17-4**	**17-5**	**17-6**	**17-7**	**17-8**	**17-9**	**17-10**	**17-11**	**17-12**
N	112	111	110	110	110	110	110	110	110	109	108	107
Mean	-0.0070	-0.0063	-0.0039	-0.0032	-0.0028	-0.0026	-0.0027	-0.0027	-0.0027	-0.0023	-0.0036	-0.0040
J-K	**17-13**	**17-14**	**17-15**	**17-16**	**17-17**	**17-18**	**17-19**	**17-20**	**17-21**	**17-22**	**17-23**	**17-24**
N	107	106	106	106	106	106	105	104	103	102	101	101
Mean	-0.0042	-0.0037	-0.0037	-0.0037	-0.0037	-0.0037	-0.0039	-0.0037	-0.0033	-0.0036	-0.0037	-0.0037
J-K	**18-1**	**18-2**	**18-3**	**18-4**	**18-5**	**18-6**	**18-7**	**18-8**	**18-9**	**18-10**	**18-11**	**18-12**
N	111	110	110	110	110	110	110	110	109	108	107	107
Mean	-0.0077	-0.0048	-0.0039	-0.0031	-0.0028	-0.0027	-0.0025	-0.0027	-0.0024	-0.0037	-0.0040	-0.0042
J-K	**18-13**	**18-14**	**18-15**	**18-16**	**18-17**	**18-18**	**18-19**	**18-20**	**18-21**	**18-22**	**18-23**	**18-24**
N	106	106	106	106	106	105	104	103	102	101	101	101
Mean	-0.0038	-0.0039	-0.0039	-0.0039	-0.0039	-0.0041	-0.0039	-0.0035	-0.0038	-0.0039	-0.0039	-0.0039
J-K	**19-1**	**19-2**	**19-3**	**19-4**	**19-5**	**19-6**	**19-7**	**19-8**	**19-9**	**19-10**	**19-11**	**19-12**
N	110	110	110	110	110	110	110	109	108	107	107	106
Mean	-0.0063	-0.0049	-0.0036	-0.0029	-0.0026	-0.0025	-0.0024	-0.0021	-0.0035	-0.0039	-0.0041	-0.0036
J-K	**19-13**	**19-14**	**19-15**	**19-16**	**19-17**	**19-18**	**19-19**	**19-20**	**19-21**	**19-22**	**19-23**	**19-24**
N	106	106	106	106	105	104	103	102	101	101	101	101
Mean	-0.0039	-0.0040	-0.0040	-0.0040	-0.0042	-0.0040	-0.0036	-0.0039	-0.0040	-0.0040	-0.0040	-0.0040

Table B2, Panel B Continued

J-K	**20-1**	**20-2**	**20-3**	**20-4**	**20-5**	**20-6**	**20-7**	**20-8**	**20-9**	**20-10**	**20-11**	**20-12**
N	110	110	110	110	110	110	109	108	107	107	106	106
Mean	-0.0068	-0.0046	-0.0036	-0.0030	-0.0026	-0.0025	-0.0021	-0.0035	-0.0040	-0.0043	-0.0037	-0.0038
J-K	**20-13**	**20-14**	**20-15**	**20-16**	**20-17**	**20-18**	**20-19**	**20-20**	**20-21**	**20-22**	**20-23**	**20-24**
N	106	106	106	105	104	103	102	101	101	101	101	101
Mean	-0.0041	-0.0042	-0.0041	-0.0044	-0.0041	-0.0037	-0.0041	-0.0042	-0.0042	-0.0042	-0.0041	-0.0040
J-K	**21-1**	**21-2**	**21-3**	**21-4**	**21-5**	**21-6**	**21-7**	**21-8**	**21-9**	**21-10**	**21-11**	**21-12**
N	110	110	110	110	110	109	108	107	107	106	106	106
Mean	-0.0056	-0.0044	-0.0036	-0.0027	-0.0023	-0.0018	-0.0032	-0.0038	-0.0041	-0.0036	-0.0038	-0.0039
J-K	**21-13**	**21-14**	**21-15**	**21-16**	**21-17**	**21-18**	**21-19**	**21-20**	**21-21**	**21-22**	**21-23**	**21-24**
N	106	106	105	104	103	102	101	101	101	101	101	101
Mean	-0.0041	-0.0042	-0.0044	-0.0042	-0.0038	-0.0041	-0.0042	-0.0043	-0.0043	-0.0042	-0.0041	-0.0040
J-K	**22-1**	**22-2**	**22-3**	**22-4**	**22-5**	**22-6**	**22-7**	**22-8**	**22-9**	**22-10**	**22-11**	**22-12**
N	110	110	110	110	109	108	107	107	106	106	106	106
Mean	-0.0058	-0.0046	-0.0035	-0.0026	-0.0019	-0.0033	-0.0038	-0.0042	-0.0037	-0.0039	-0.0040	-0.0041
J-K	**22-13**	**22-14**	**22-15**	**22-16**	**22-17**	**22-18**	**22-19**	**22-20**	**22-21**	**22-22**	**22-23**	**22-24**
N	106	105	104	103	102	101	101	101	101	101	101	101
Mean	-0.0043	-0.0046	-0.0044	-0.0041	-0.0044	-0.0045	-0.0045	-0.0045	-0.0044	-0.0043	-0.0042	-0.0041
J-K	**23-1**	**23-2**	**23-3**	**23-4**	**23-5**	**23-6**	**23-7**	**23-8**	**23-9**	**23-10**	**23-11**	**23-12**
N	110	110	110	109	108	107	107	106	106	106	106	106
Mean	-0.0061	-0.0042	-0.0033	-0.0023	-0.0037	-0.0041	-0.0044	-0.0040	-0.0041	-0.0043	-0.0044	-0.0045
J-K	**23-13**	**23-14**	**23-15**	**23-16**	**23-17**	**23-18**	**23-19**	**23-20**	**23-21**	**23-22**	**23-23**	**23-24**
N	105	104	103	102	101	101	101	101	101	101	101	101
Mean	-0.0049	-0.0046	-0.0043	-0.0047	-0.0047	-0.0046	-0.0046	-0.0045	-0.0044	-0.0043	-0.0042	-0.0041
J-K	**24-1**	**24-2**	**24-3**	**24-4**	**24-5**	**24-6**	**24-7**	**24-8**	**24-9**	**24-10**	**24-11**	**24-12**
N	110	110	109	108	107	107	106	106	106	106	106	105
Mean	-0.0049	-0.0039	-0.0027	-0.0037	-0.0040	-0.0041	-0.0037	-0.0038	-0.0040	-0.0041	-0.0043	-0.0046
J-K	**24-13**	**24-14**	**24-15**	**24-16**	**24-17**	**24-18**	**24-19**	**24-20**	**24-21**	**24-22**	**24-23**	**24-24**
N	104	103	102	101	101	101	101	101	101	101	101	101
Mean	-0.0046	-0.0043	-0.0047	-0.0048	-0.0048	-0.0047	-0.0046	-0.0045	-0.0044	-0.0043	-0.0042	-0.0042

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with the lowest past returns are denoted as losers. The figures in the table are average returns of the winners minus the losers. The market states are defined by past 6 months' cumulative returns *, **, *** denotes the coefficient is significant at the 10%, 5% and 1% significant levels respectively using T-test respectively.*

Appendix B3

Table B3 Average Monthly Momentum Returns Based on Past 12 Months Market States: January 1993 to December 2012

Panel A: Average Monthly Momentum Profits Following 12-month UP markets												
J-K	**1-1**	**1-2**	**1-3**	**1-4**	**1-5**	**1-6**	**1-7**	**1-8**	**1-9**	**1-10**	**1-11**	**1-12**
N	100	99	99	99	99	99	99	99	99	99	99	99
Mean	-0.0047	-0.0098	-0.0055	-0.0042	-0.0043*	-0.0029	-0.0023	-0.0028	-0.0028*	-0.0024	-0.0018	-0.0017
J-K	**1-13**	**1-14**	**1-15**	**1-16**	**1-17**	**1-18**	**1-19**	**1-20**	**1-21**	**1-22**	**1-23**	**1-24**
N	99	99	99	99	99	99	99	99	99	99	99	99
Mean	-0.0018	-0.0022	-0.0025*	-0.0022*	-0.0023*	-0.0021*	-0.0021*	-0.0021*	-0.0020	-0.0020*	-0.0022*	-0.0022*
J-K	**2-1**	**2-2**	**2-3**	**2-4**	**2-5**	**2-6**	**2-7**	**2-8**	**2-9**	**2-10**	**2-11**	**2-12**
N	99	99	99	99	99	99	99	99	99	99	99	99
Mean	-0.0140**	-0.011**	-0.0057	-0.0054	-0.0048	-0.0034	-0.0036	-0.0038*	-0.0033	-0.0024	-0.0018	-0.0019
J-K	**2-13**	**2-14**	**2-15**	**2-16**	**2-17**	**2-18**	**2-19**	**2-20**	**2-21**	**2-22**	**2-23**	**2-24**
N	99	99	99	99	99	99	99	99	99	99	99	99
Mean	-0.0023	-0.0027*	-0.0028	-0.0030*	-0.0028	-0.0025*	-0.0026*	-0.0027	-0.0026	-0.0027	-0.0029*	-0.0026
J-K	**3-1**	**3-2**	**3-3**	**3-4**	**3-5**	**3-6**	**3-7**	**3-8**	**3-9**	**3-10**	**3-11**	**3-12**
N	99	99	99	99	99	99	99	99	99	99	99	99
Mean	-0.0101	-0.0078	-0.0051	-0.0044	-0.0036	-0.0031	-0.0034	-0.0034	-0.0027	-0.0022	-0.0020	-0.0024
J-K	**3-13**	**3-14**	**3-15**	**3-16**	**3-17**	**3-18**	**3-19**	**3-20**	**3-21**	**3-22**	**3-23**	**3-24**
N	99	99	99	99	99	99	99	99	99	99	99	99
Mean	-0.0030	-0.0031	-0.0033	-0.0034	-0.0032	-0.0031	-0.0033	-0.0033	-0.0033	-0.0035	-0.0034	-0.0033
J-K	**4-1**	**4-2**	**4-3**	**4-4**	**4-5**	**4-6**	**4-7**	**4-8**	**4-9**	**4-10**	**4-11**	**4-12**
N	99	99	99	99	99	99	99	99	99	99	99	99
Mean	-0.0075	-0.0071	-0.0047	-0.0038	-0.0035	-0.0033	-0.0031	-0.0028	-0.0022	-0.0021	-0.0023	-0.0029
J-K	**4-13**	**4-14**	**4-15**	**4-16**	**4-17**	**4-18**	**4-19**	**4-20**	**4-21**	**4-22**	**4-23**	**4-24**
N	99	99	99	99	99	99	99	99	99	99	99	99
Mean	-0.0032	-0.0037	-0.0037	-0.0037	-0.0038	-0.0037	-0.0036	-0.0037	-0.0037	-0.0036	-0.0036	-0.0037
J-K	**5-1**	**5-2**	**5-3**	**5-4**	**5-5**	**5-6**	**5-7**	**5-8**	**5-9**	**5-10**	**5-11**	**5-12**
N	99	99	99	99	99	99	99	99	99	99	99	99
Mean	-0.01021*	-0.0081	-0.0050	-0.0044	-0.0045	-0.0040	-0.0034	-0.0031	-0.0029	-0.0029	-0.0031	-0.0035
J-K	**5-13**	**5-14**	**5-15**	**5-16**	**5-17**	**5-18**	**5-19**	**5-20**	**5-21**	**5-22**	**5-23**	**5-24**
N	99	99	99	99	99	99	99	99	99	99	99	98
Mean	-0.0040	-0.0042	-0.0043	-0.0045	-0.0045	-0.0043	-0.0044	-0.0045	-0.0043	-0.0043	-0.0044	-0.0045

Table B3, Panel A Continued

J-K	**6-1**	**6-2**	**6-3**	**6-4**	**6-5**	**6-6**	**6-7**	**6-8**	**6-9**	**6-10**	**6-11**	**6-12**
N	99	99	99	99	99	99	99	99	99	99	99	99
Mean	-0.0106*	-0.0085*	-0.0059	-0.0053	-0.0052	-0.0043	-0.0038	-0.0039	-0.0040	-0.0041	-0.0043	-0.0047
J-K	**6-13**	**6-14**	**6-15**	**6-16**	**6-17**	**6-18**	**6-19**	**6-20**	**6-21**	**6-22**	**6-23**	**6-24**
N	99	99	99	99	99	99	99	99	99	99	98	97
Mean	-0.0050	-0.0052	-0.0053	-0.0053	-0.0053	-0.0053	-0.0053	-0.0052	-0.0051	-0.0052	-0.0053	-0.0058*
J-K	**7-1**	**3-2**	**7-3**	**7-4**	**7-5**	**7-6**	**7-7**	**7-8**	**7-9**	**7-10**	**7-11**	**7-12**
N	99	99	99	99	99	99	99	99	99	99	99	99
Mean	-0.0090*	-0.0083	-0.0059	-0.0053	-0.0049	-0.0042	-0.0042	-0.0045	-0.0046	-0.0047	-0.0050	-0.0053
J-K	**7-13**	**7-14**	**7-15**	**7-16**	**7-17**	**7-18**	**7-19**	**7-20**	**7-21**	**7-22**	**7-23**	**7-24**
N	99	99	99	99	99	99	99	99	99	98	97	96
Mean	-0.0055	-0.0057	-0.0058	-0.0057	-0.0057	-0.0056	-0.0054	-0.0054	-0.0056	-0.0035	-0.0066*	-0.0062*
J-K	**8-1**	**8-2**	**8-3**	**8-4**	**8-4**	**8-6**	**8-7**	**8-8**	**8-9**	**8-10**	**8-11**	**8-12**
N	99	99	99	99	99	99	99	99	99	99	99	99
Mean	-0.0094*	-0.0088*	-0.0064	-0.0054	-0.0049	-0.0047	-0.0050	-0.0053	-0.0054	-0.0056	-0.0058	-0.0060
J-K	**8-13**	**8-14**	**8-15**	**8-16**	**8-17**	**8-18**	**8-19**	**8-20**	**8-21**	**8-22**	**8-23**	**8-24**
N	99	99	99	99	99	99	99	99	98	97	96	95
Mean	-0.0063	-0.0065	-0.0064	-0.0065	-0.0065	-0.0062	-0.0061	-0.0062	-0.0063	-0.0073*	-0.0069*	-0.0066*
J-K	**9-1**	**9-2**	**9-3**	**9-4**	**9-5**	**9-6**	**9-7**	**9-8**	**9-9**	**9-10**	**9-11**	**9-12**
N	99	99	99	99	99	99	99	99	99	99	99	99
Mean	-0.0112**	-0.0094*	-0.0067	-0.0055	-0.0055	-0.0055	-0.0058	-0.0062	-0.0065	-0.0064	-0.0065	-0.0067
J-K	**9-13**	**9-14**	**9-15**	**9-16**	**9-17**	**9-18**	**9-19**	**9-20**	**9-21**	**9-22**	**9-23**	**9-24**
N	99	99	99	99	99	99	99	98	97	96	95	95
Mean	-0.0069	-0.0070	-0.0070	-0.0070	-0.0068	-0.0065	-0.0066	-0.0068	-0.0079*	-0.0074*	-0.0073*	-0.0074*
J-K	**10-1**	**10-2**	**10-3**	**10-4**	**10-4**	**10-6**	**10-7**	**10-8**	**10-9**	**10-10**	**10-11**	**10-12**
N	99	99	99	99	99	99	99	99	99	99	99	99
Mean	-0.0104*	-0.0085	-0.0059	-0.0057	-0.0061	-0.0063	-0.0066	-0.0072	-0.0071	-0.0069	-0.0070	-0.0071
J-K	**10-13**	**10-14**	**10-15**	**10-16**	**10-17**	**10-18**	**10-19**	**10-20**	**10-21**	**10-22**	**10-23**	**10-24**
N	99	99	99	99	99	99	98	97	96	95	95	95
Mean	-0.0072	-0.0073	-0.0073	-0.0071	-0.0069	-0.0069	-0.0071	-0.0083*	-0.0077*	-0.0076*	-0.0078*	-0.0079*
J-K	**11-1**	**11-2**	**11-3**	**11-4**	**11-4**	**11-6**	**11-7**	**11-8**	**11-9**	**11-10**	**11-11**	**11-12**
N	99	99	99	99	99	99	99	99	99	99	99	99
Mean	-0.0090	-0.0081	-0.0066	-0.0069	-0.0073	-0.0076	-0.0079	-0.0083	-0.0080	-0.0080	-0.0079	-0.0080

Table B3, Panel A Continued

J-K	**11-13**	**11-14**	**11-15**	**11-16**	**11-17**	**11-18**	**11-19**	**11-20**	**11-21**	**11-22**	**11-23**	**11-24**
N	99	99	99	99	99	98	97	96	95	95	95	94
Mean	-0.0082*	-0.0083*	-0.0081*	-0.0078	-0.0077*	-0.0078*	-0.0090*	-0.0085*	-0.0083*	-0.0084*	-0.0085*	-0.0085*
J-K	**12-1**	**12-2**	**12-3**	**12-4**	**12-4**	**12-6**	**12-7**	**12-8**	**12-9**	**12-10**	**12-11**	**12-12**
N	99	99	99	99	99	99	99	99	99	99	99	99
Mean	-0.0089	-0.0089	-0.0077	-0.0078	-0.0082	-0.0083	-0.0085	-0.0085	-0.0086	-0.0085	-0.0083	-0.0084
J-K	**12-13**	**12-14**	**12-15**	**12-16**	**12-17**	**12-18**	**12-19**	**12-20**	**12-21**	**12-22**	**12-23**	**12-24**
N	99	99	99	99	98	97	96	95	95	95	94	94
Mean	-0.0086*	-0.0085*	-0.0083	-0.0083*	-0.0084*	-0.0094*	-0.0089*	-0.0087*	-0.0088*	-0.0088*	-0.0088*	-0.0089*
J-K	**13-1**	**13-2**	**13-3**	**13-4**	**13-5**	**13-6**	**13-7**	**13-8**	**13-9**	**13-10**	**13-11**	**13-12**
N	99	99	99	99	99	99	99	99	99	99	99	99
Mean	-0.0107*	-0.0105*	-0.0089	-0.0090	-0.0095*	-0.0096*	-0.0095*	-0.0096*	-0.0093*	-0.0091*	-0.0090*	-0.0089*
J-K	**13-13**	**13-14**	**13-15**	**13-16**	**13-17**	**13-18**	**13-19**	**13-20**	**13-21**	**13-22**	**13-23**	**13-24**
N	99	99	99	98	97	96	95	95	95	94	94	94
Mean	-0.0090*	-0.0089*	-0.0089*	-0.009*	-0.010**	-0.0096*	-0.0093*	-0.0095*	-0.0095*	-0.0093	-0.0094*	-0.0095**
J-K	**14-1**	**14-2**	**14-3**	**14-4**	**14-5**	**14-6**	**14-7**	**14-8**	**14-9**	**14-10**	**14-11**	**14-12**
N	99	99	99	99	99	99	99	99	99	99	99	99
Mean	-0.0119*	-0.011*	-0.0093	-0.0095	-0.0097	-0.0096*	-0.0097*	-0.0096*	-0.0092	-0.0091	-0.0089	-0.0089
J-K	**14-13**	**14-14**	**14-15**	**14-16**	**14-17**	**14-18**	**14-19**	**14-20**	**14-21**	**14-22**	**14-23**	**14-24**
N	99	99	98	97	96	95	95	95	94	94	94	94
Mean	-0.0090	-0.0091*	-0.0093*	-0.0106**	-0.0099*	-0.0095*	-0.0097*	-0.0098*	-0.0096*	-0.0097*	-0.0098*	-0.0099*
J-K	**15-1**	**15-2**	**15-3**	**15-4**	**15-5**	**15-6**	**15-7**	**15-8**	**15-9**	**15-10**	**15-11**	**15-12**
N	99	99	99	99	99	99	99	99	99	99	99	99
Mean	-0.0115*	-0.0111*	-0.0098	-0.0097	-0.0096	-0.0096	-0.0098*	-0.0096	-0.0094	-0.0094	-0.0092	-0.0092
J-K	**15-13**	**15-14**	**15-15**	**15-16**	**15-17**	**15-18**	**15-19**	**15-20**	**15-21**	**15-22**	**15-23**	**15-24**
N	99	98	97	96	95	95	95	94	94	94	94	94
Mean	-0.0093*	-0.0096*	-0.0110**	-0.0103*	-0.0099*	-0.01*	-0.0101*	-0.0100*	-0.0101*	-0.0101*	-0.0102*	-0.0102*
J-K	**16-1**	**16-2**	**16-3**	**16-4**	**16-5**	**16-6**	**16-7**	**16-8**	**16-9**	**16-10**	**16-11**	**16-12**
N	99	99	99	99	99	99	99	99	99	99	99	99
Mean	-0.0121*	-0.0116*	-0.0102*	-0.0099	-0.0099	-0.0100*	-0.0098	-0.0100*	-0.0098*	-0.0094	-0.0093	-0.0094
J-K	**16-13**	**16-14**	**16-15**	**16-16**	**16-17**	**16-18**	**16-19**	**16-20**	**16-21**	**16-22**	**16-23**	**16-24**
N	98	97	96	95	95	95	94	94	94	94	94	94
Mean	-0.0097*	-0.0112**	-0.0106*	-0.0102*	-0.0102*	-0.0102*	-0.0102*	-0.0103*	-0.0103*	-0.0104*	-0.0104*	-0.01-5*

Table B3, Panel A Continued

J-K	**17-1**	**17-2**	**17-3**	**17-4**	**17-5**	**17-6**	**17-7**	**17-8**	**17-9**	**17-10**	**17-11**	**17-12**
N	99	99	99	99	99	99	99	99	99	99	99	98
Mean	-0.0134**	-0.0122*	-0.0103*	-0.0101	-0.0103*	-0.0100	-0.0102*	-0.0102*	-0.0098	-0.0095	-0.0094	-0.0098
J-K	**17-13**	**17-14**	**17-15**	**17-16**	**17-17**	**17-18**	**17-19**	**17-20**	**17-21**	**17-22**	**17-23**	**17-24**
N	**97**	**96**	**95**	**95**	**95**	**94**	**94**	**94**	**94**	**94**	**94**	**93**
Mean	-0.0115**	-0.0109*	-0.0106*	-0.0106*	-0.0106*	-0.0105*	-0.0106*	-0.0107*	-0.0106*	-0.0106*	-0.0106*	-0.0098*
J-K	**18-1**	**18-2**	**18-3**	**18-4**	**18-5**	**18-6**	**18-7**	**18-8**	**18-9**	**18-10**	**18-11**	**18-12**
N	99	99	99	99	99	99	99	99	99	99	98	97
Mean	-0.0130**	-0.0116*	-0.0101	-0.0103	-0.0101	-0.0103	-0.0103*	-0.0101	-0.0098	-0.0098	-0.0100	-0.0117*
J-K	**18-13**	**18-14**	**18-15**	**18-16**	**18-17**	**18-18**	**18-19**	**18-20**	**18-21**	**18-22**	**18-23**	**18-24**
N	96	95	95	95	94	94	94	94	94	94	93	92
Mean	-0.0112*	-0.0110*	-0.0111*	-0.0111*	-0.0109*	-0.0111*	-0.0111*	-0.0111*	-0.0110*	-0.0110*	-0.0010*	-0.0105*
J-K	**19-1**	**19-2**	**19-3**	**19-4**	**19-5**	**19-6**	**19-7**	**19-8**	**19-9**	**19-10**	**19-11**	**19-12**
N	99	99	99	99	99	99	99	99	99	98	97	96
Mean	-0.0113*	-0.0110*	-0.0099	-0.0098	-0.0103	-0.0104	-0.0101	-0.0100	-0.0099	-0.0102	-0.0119*	-0.0114*
J-K	**19-13**	**19-14**	**19-15**	**19-16**	**19-17**	**19-18**	**19-19**	**19-20**	**19-21**	**19-22**	**19-23**	**19-24**
N	95	95	95	94	94	94	94	94	94	93	92	91
Mean	-0.0113*	-0.0114*	-0.0115*	-0.0113*	-0.0114*	-0.0114*	-0.0114*	-0.0114*	-0.0113*	-0.0104*	-0.0108*	-0.0106*
J-K	**20-1**	**20-2**	**20-3**	**20-4**	**20-5**	**20-6**	**20-7**	**20-8**	**20-9**	**20-10**	**20-11**	**20-12**
N	99	99	99	99	99	99	99	99	98	97	96	95
Mean	-0.0124*	-0.0117*	-0.0099	-0.0102	-0.0105	-0.0101	-0.0101	-0.0102	-0.0105	-0.0123*	-0.0117*	-0.0115*
J-K	**20-13**	**20-14**	**20-15**	**20-16**	**20-17**	**20-18**	**20-19**	**20-20**	**20-21**	**20-22**	**20-23**	**20-24**
N	95	95	94	94	94	94	94	94	93	92	91	90
Mean	-0.0118*	-0.0120*	-0.0118*	-0.011*	-0.0118*	-0.0118*	-0.0116*	-0.0118*	-0.0107*	-0.0109*	-0.0108*	-0.0081
J-K	**21-1**	**21-2**	**21-3**	**21-4**	**21-5**	**21-6**	**21-7**	**21-8**	**21-9**	**21-10**	**21-11**	**21-12**
N	99	99	99	99	99	99	99	98	97	96	95	95
Mean	-0.0132*	-0.0114*	-0.0106	-0.0103	-0.0099	-0.0099	-0.0102	-0.0108	-0.0126*	-0.0119*	-0.0117*	-0.0119*
J-K	**21-13**	**21-14**	**21-15**	**21-16**	**21-17**	**21-18**	**21-19**	**21-20**	**21-21**	**21-22**	**21-23**	**21-24**
N	95	94	94	94	94	94	94	93	92	91	90	89
Mean	-0.0122*	-0.0122*	-0.0123*	-0.0123*	-0.0123*	-0.0122*	-0.0122*	-0.0111*	-0.0113*	-0.0111*	-0.0083	-0.0087
J-K	**22-1**	**22-2**	**22-3**	**22-4**	**22-5**	**22-6**	**22-7**	**22-8**	**22-9**	**22-10**	**22-11**	**22-12**
N	99	99	99	99	99	99	98	97	96	95	95	95
Mean	-0.0125*	-0.0121*	-0.0109	-0.0103	-0.0104	-0.0106	-0.0111	-0.0132**	-0.0125*	-0.0122*	-0.0122*	-0.0124*

Table B3, Panel A Continued												
J-K	**22-13**	**22-14**	**22-15**	**22-16**	**22-17**	**22-18**	**22-19**	**22-20**	**22-21**	**22-22**	**22-23**	**22-24**
N	94	94	94	94	94	94	93	92	91	90	89	88
Mean	-0.0126*	-0.0128*	-0.0128*	-0.0128*	-0.0127*	-0.0126*	-0.0114*	-0.0115*	-0.0113*	-0.0084	-0.0088	-0.0088
J-K	**23-1**	**23-2**	**23-3**	**23-4**	**23-5**	**23-6**	**23-7**	**23-8**	**23-9**	**23-10**	**23-11**	**23-12**
N	99	99	99	99	99	98	97	96	95	95	95	94
Mean	-0.0150**	-0.0129*	-0.0110	-0.0110	-0.0114*	-0.0119*	-0.0141**	-0.0137**	-0.0134**	-0.0133*	-0.0132*	-0.0134*
J-K	**23-13**	**23-14**	**23-15**	**23-16**	**23-17**	**23-18**	**23-19**	**23-20**	**23-21**	**23-22**	**23-23**	**23-24**
N	94	94	94	94	94	93	92	91	90	89	88	87
Mean	-0.0137**	-0.0138**	-0.0137**	-0.0136	-0.0136**	-0.0122*	-0.0124*	-0.0122*	-0.0090	-0.0093	-0.0092	-0.0063
J-K	**24-1**	**24-2**	**24-3**	**24-4**	**24-5**	**24-6**	**24-7**	**24-8**	**24-9**	**24-10**	**24-11**	**24-12**
N	99	99	99	99	98	97	96	95	95	95	94	94
Mean	-0.0133*	-0.0116*	-0.0105	-0.0108	-0.0115*	-0.0138**	-0.0134*	-0.0134*	-0.0135*	-0.0133*	-0.0134*	-0.0135*
J-K	**24-13**	**24-14**	**24-15**	**24-16**	**24-17**	**24-18**	**24-19**	**24-20**	**24-21**	**24-22**	**24-23**	**24-24**
N	94	94	94	94	93	92	91	90	89	88	87	86
Mean	-0.0138*	-0.0139*	-0.0137*	-0.0136*	-0.0123*	-0.0124*	-0.0122*	-0.0090	-0.0094	-0.0093	-0.0064	-0.0055

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with the lowest past returns are denoted as losers. The figures in the table are average returns of the winners minus the losers. The market states are defined by past 12 months' cumulative returns *, **, *** denotes the coefficient is significant at the 10%, 5% and 1% significant levels respectively using T-test respectively*

Table B3 Continued

Panel B: Average Monthly Momentum Profits Following 12-month DOWN markets												
J-K	**1-1**	**1-2**	**1-3**	**1-4**	**1-5**	**1-6**	**1-7**	**1-8**	**1-9**	**1-10**	**1-11**	**1-12**
N	139	139	138	137	136	135	134	133	132	131	130	129
Mean	-0.018***	-0.012***	-0.0074**	-0.0052**	-0.0035*	-0.0024	-0.0008	-0.0016	-0.0004	-0.0010	-0.0008	-0.0004
J-K	**1-13**	**1-14**	**1-15**	**1-16**	**1-17**	**1-18**	**1-19**	**1-20**	**1-21**	**1-22**	**1-23**	**1-24**
N	128	127	126	125	124	123	122	121	120	119	118	117
Mean	-0.0008	-0.0005	-0.0009	-0.0007	-0.0013	-0.0012	-0.0009	-0.0009	-0.0007	-0.0008	-0.0010	-0.0010
J-K	**2-1**	**2-2**	**2-3**	**2-4**	**2-5**	**2-6**	**2-7**	**2-8**	**2-9**	**2-10**	**2-11**	**2-12**
N	139	138	137	136	135	134	133	132	131	130	129	128
Mean	-0.015***	-0.008*	-0.0059	-0.0034	-0.0021	0.0000	0.0007	0.0008	0.0006	0.0000	0.0005	0.0001
J-K	**2-13**	**2-14**	**2-15**	**2-16**	**2-17**	**2-18**	**2-19**	**2-20**	**2-21**	**2-22**	**2-23**	**2-24**
N	127	126	125	124	123	122	121	120	119	118	117	116
Mean	0.0003	-0.0003	-0.0003	-0.0007	-0.0009	-0.0001	-0.0004	-0.0004	-0.0005	-0.0008	-0.0008	-0.0005
J-K	**3-1**	**3-2**	**3-3**	**3-4**	**3-5**	**3-6**	**3-7**	**3-8**	**3-9**	**3-10**	**3-11**	**3-12**
N	138	137	136	135	134	133	132	131	130	129	128	127
Mean	-0.014***	-0.0074	-0.0045	-0.0025	-0.0003	0.0005	0.0016	0.0008	0.0011	0.0006	0.0006	0.0009
J-K	**3-13**	**3-14**	**3-15**	**3-16**	**3-17**	**3-18**	**3-19**	**3-20**	**3-21**	**2-22**	**3-23**	**3-24**
N	126	125	124	123	122	121	120	119	118	117	116	115
Mean	0.0002	0.0005	-0.0002	-0.0005	-0.0001	-0.0001	0.0000	-0.0002	-0.0006	-0.0006	-0.0004	-0.0003
J-K	**4-1**	**4-2**	**4-3**	**4-4**	**4-5**	**4-6**	**4-7**	**4-8**	**4-9**	**4-10**	**4-11**	**4-12**
N	137	136	135	134	133	132	131	130	129	128	127	126
Mean	-0.0125**	-0.0054	-0.0035	-0.0006	0.0010	0.0021	0.0020	0.0015	0.0020	0.0012	0.0017	0.0009
J-K	**4-13**	**4-14**	**4-15**	**4-16**	**4-17**	**4-18**	**4-19**	**4-20**	**4-21**	**4-22**	**4-23**	**4-24**
N	125	124	123	122	121	120	119	118	117	116	115	114
Mean	0.0008	0.0004	-0.0002	0.0006	-0.0001	0.0002	0.0000	-0.0005	-0.0005	-0.0003	-0.0002	-0.0007
J-K	**5-1**	**5-2**	**5-3**	**5-4**	**5-5**	**5-6**	**5-7**	**5-8**	**5-9**	**5-10**	**5-11**	**5-12**
N	136	135	134	133	132	131	130	129	128	127	126	125
Mean	-0.0069	-0.0039	-0.0005	0.0013	0.0024	0.0022	0.0019	0.0020	0.0016	0.0018	0.0009	0.0013
J-K	**5-13**	**5-14**	**5-15**	**5-16**	**5-17**	**5-18**	**5-19**	**5-20**	**5-21**	**5-22**	**5-23**	**5-24**
N	124	123	122	121	120	119	118	117	116	115	114	114
Mean	0.0006	0.0001	0.0008	-0.0002	0.0001	0.0000	-0.0006	-0.0007	-0.0003	-0.0002	-0.0009	-0.0010
J-K	**6-1**	**6-2**	**6-3**	**6-4**	**6-4**	**6-6**	**6-7**	**6-8**	**6-9**	**6-10**	**6-11**	**6-12**
N	135	134	133	132	131	130	129	128	127	126	125	124
Mean	-0.0069	-0.0010	0.0010	0.0027	0.0026	0.0025	0.0027	0.0019	0.0022	0.0010	0.0014	0.0008

Table B3, Panel B Continued												
J-K	**6-13**	**6-14**	**6-15**	**6-16**	**6-17**	**6-18**	**6-19**	**6-20**	**6-21**	**6-22**	**6-23**	**6-24**
N	123	122	121	120	119	118	117	116	115	114	113	114
Mean	0.0002	0.0011	0.0000	0.0001	-0.0001	-0.0006	-0.0007	-0.0004	-0.0002	-0.0009	-0.0011	-0.0012
J-K	**7-1**	**7-2**	**7-3**	**7-4**	**7-4**	**7-6**	**7-7**	**7-8**	**7-9**	**7-10**	**7-11**	**7-12**
N	134	133	132	131	130	129	128	127	126	125	124	123
Mean	-0.0030	0.0003	0.0024	0.0026	0.0024	0.0028	0.0021	0.0021	0.0012	0.0015	0.0010	0.0003
J-K	**7-13**	**7-14**	**7-15**	**7-16**	**7-17**	**7-18**	**7-19**	**7-20**	**7-21**	**7-22**	**7-23**	**7-24**
N	122	121	120	119	118	117	116	115	114	114	114	114
Mean	0.0013	0.0000	0.0002	-0.0002	-0.0009	-0.0008	-0.0006	-0.0004	-0.0012	-0.0013	-0.0014	-0.0014
J-K	**8-1**	**8-2**	**8-3**	**8-4**	**8-4**	**8-6**	**8-7**	**8-8**	**8-9**	**8-10**	**8-11**	**8-12**
N	133	132	131	130	129	128	127	126	125	124	123	122
Mean	-0.0026	0.0009	0.0019	0.0021	0.0029	0.0024	0.0025	0.0011	0.0016	0.0008	0.0001	0.0011
J-K	**8-13**	**8-14**	**8-15**	**8-16**	**8-17**	**8-18**	**8-19**	**8-20**	**8-21**	**2-22**	**8-23**	**8-24**
N	121	120	119	118	117	116	115	114	114	114	114	114
Mean	-0.0003	-0.0001	-0.0004	-0.0013	-0.0013	-0.0009	-0.0007	-0.0016	-0.0016	-0.0017	-0.0018	-0.0020
J-K	**9-1**	**9-2**	**9-3**	**9-4**	**9-4**	**9-6**	**9-7**	**9-8**	**9-9**	**9-10**	**9-11**	**9-12**
N	132	131	130	129	128	127	126	125	124	123	122	121
Mean	-0.0010	0.0013	0.0023	0.0031	0.0025	0.0027	0.0015	0.0015	0.0008	-0.0001	0.0008	-0.0007
J-K	**9-13**	**9-14**	**9-15**	**9-16**	**9-17**	**9-18**	**9-19**	**9-20**	**9-21**	**9-22**	**9-23**	**9-24**
N	120	119	118	117	116	115	114	114	114	114	114	113
Mean	-0.0004	-0.0007	-0.0016	-0.0017	-0.0014	-0.0010	-0.0020	-0.0021	-0.0021	-0.0022	-0.0024	-0.0018
J-K	**10-1**	**10-2**	**10-3**	**10-4**	**10-5**	**10-6**	**10-7**	**10-8**	**10-9**	**10-10**	**10-11**	**10-12**
N	131	130	129	128	127	126	125	124	123	122	121	120
Mean	-0.0018	0.0001	0.0016	0.0021	0.0021	0.0008	0.0012	0.0003	-0.0003	0.0007	-0.0011	-0.0006
J-K	**10-13**	**10-14**	**10-15**	**10-16**	**10-17**	**10-18**	**10-19**	**10-20**	**10-21**	**10-22**	**10-23**	**10-24**
N	119	118	117	116	115	114	114	114	114	114	113	112
Mean	-0.0010	-0.0019	-0.0020	-0.0017	-0.0014	-0.0023	-0.0024	-0.0025	-0.0025	-0.0027	-0.0021	-0.0017
J-K	**11-1**	**11-2**	**11-3**	**11-4**	**11-4**	**11-6**	**11-7**	**11-8**	**11-9**	**11-10**	**11-11**	**11-12**
N	130	129	128	127	126	125	124	123	122	121	120	119
Mean	-0.0031	0.0005	0.0003	0.0014	0.0002	0.0007	0.0001	-0.0008	0.0003	-0.0013	-0.0009	-0.0012
J-K	**11-13**	**11-14**	**11-15**	**11-16**	**11-17**	**11-18**	**11-19**	**11-20**	**11-21**	**11-22**	**11-23**	**11-24**
N	118	117	116	115	114	114	114	114	114	113	112	112
Mean	-0.0022	-0.0022	-0.0020	-0.0018	-0.0028	-0.0028	-0.0029	-0.0029	-0.0030	-0.0024	-0.0020	-0.0200

Table B3, Panel B Continued												
J-K	**12-1**	**12-2**	**12-3**	**12-4**	**12-5**	**12-6**	**12-7**	**12-8**	**12-9**	**12-10**	**12-11**	**12-12**
N	129	128	127	126	125	124	123	122	121	120	119	118
Mean	-0.0015	-0.0012	0.0002	-0.0006	0.0002	-0.0002	-0.0007	0.0003	-0.0014	-0.0008	-0.0012	-0.0022
J-K	**12-13**	**12-14**	**12-15**	**12-16**	**12-17**	**12-18**	**12-19**	**12-20**	**12-21**	**12-22**	**12-23**	**12-24**
N	117	116	115	114	114	114	114	114	113	112	112	111
Mean	-0.0024	-0.0021	-0.0019	-0.0031	-0.0031	-0.0030	-0.0031	-0.0032	-0.0026	-0.0022	-0.0022	-0.0025
J-K	**13-1**	**13-2**	**13-3**	**13-4**	**13-5**	**13-6**	**13-7**	**13-8**	**13-9**	**13-10**	**13-11**	**13-12**
N	128	127	126	125	124	123	122	121	120	119	118	117
Mean	-0.0052	-0.0018	-0.0019	-0.0007	-0.0011	-0.0015	-0.0002	-0.0019	-0.0013	-0.0017	-0.0028	-0.0028
J-K	**13-13**	**13-14**	**13-15**	**13-16**	**13-17**	**13-18**	**13-19**	**13-20**	**13-21**	**3-22**	**13-23**	**13-24**
N	116	115	114	114	114	114	114	113	112	111	111	110
Mean	-0.0026	-0.0023	-0.0035	-0.0036	-0.0036	-0.0036	-0.0037	-0.0031	-0.0027	-0.0027	-0.0030	-0.0028
J-K	**14-1**	**14-2**	**14-3**	**14-4**	**14-5**	**14-6**	**14-7**	**14-8**	**14-9**	**14-10**	**14-11**	**14-12**
N	127	126	125	124	123	122	121	120	119	118	117	116
Mean	-0.0041	-0.0042	-0.0020	-0.0019	-0.0017	-0.0006	-0.0022	-0.0015	-0.0019	-0.0031	-0.0031	-0.0028
J-K	**14-13**	**14-14**	**14-15**	**14-16**	**14-17**	**14-18**	**14-19**	**14-20**	**14-21**	**14-22**	**14-23**	**14-24**
N	115	114	114	114	114	114	113	112	112	111	110	109
Mean	-0.0026	-0.0039	-0.0040	-0.0040	-0.0040	-0.0040	-0.0034	-0.0031	-0.0031	-0.0033	-0.0031	-0.0027
J-K	**15-1**	**15-2**	**15-3**	**15-4**	**15-5**	**15-6**	**15-7**	**15-8**	**15-9**	**15-10**	**15-11**	**15-12**
N	126	125	124	123	122	121	120	119	118	117	116	115
Mean	-0.0065	-0.0040	-0.0031	-0.0030	-0.0010	-0.0024	-0.0016	-0.0020	-0.0031	-0.0031	-0.0029	-0.0026
J-K	**15-13**	**15-14**	**15-15**	**15-16**	**15-17**	**15-18**	**15-19**	**15-20**	**15-21**	**2-22**	**15-23**	**15-24**
N	114	114	114	114	114	113	112	112	111	110	109	108
Mean	-0.0040	-0.0041	-0.0042	-0.0042	-0.0042	-0.0036	-0.0321	-0.0033	-0.0035	-0.0033	-0.0029	-0.0031
J-K	**16-1**	**16-2**	**16-3**	**16-4**	**16-5**	**16-6**	**16-7**	**16-8**	**16-9**	**16-10**	**16-11**	**16-12**
N	125	124	123	122	121	120	119	118	115	116	115	114
Mean	-0.0057	-0.0048	-0.0044	-0.0021	-0.0031	-0.0018	-0.0023	-0.0034	-0.0025	-0.0031	-0.0028	-0.0041
J-K	**16-13**	**16-14**	**16-15**	**16-16**	**16-17**	**16-18**	**16-19**	**16-20**	**16-21**	**16-22**	**16-23**	**16-24**
N	114	114	114	114	113	112	112	111	110	109	108	107
Mean	-0.0043	-0.0044	-0.0045	-0.0046	-0.0040	-0.0035	-0.0036	-0.0039	-0.0036	-0.0032	-0.0035	-0.0035
J-K	**17-1**	**17-2**	**17-3**	**17-4**	**17-5**	**17-6**	**17-7**	**17-8**	**17-9**	**17-10**	**17-11**	**17-12**
N	124	123	122	121	120	119	118	117	116	115	114	114
Mean	-0.0071	-0.0064	-0.0034	-0.0037	-0.0024	-0.0024	-0.0036	-0.0036	-0.0032	-0.0029	-0.0043	-0.0044

Table B3, Panel B Continued												
J-K	**17-13**	**17-14**	**17-15**	**17-16**	**17-17**	**17-18**	**17-19**	**17-20**	**17-21**	**17-22**	**17-23**	**17-24**
N	114	114	114	113	112	112	111	110	109	108	107	107
Mean	-0.0046	-0.0046	-0.0047	-0.0042	-0.0037	-0.0037	-0.0040	-0.0038	-0.0034	-0.0037	-0.0037	-0.0037
J-K	**18-1**	**18-2**	**18-3**	**18-4**	**18-5**	**18-6**	**18-7**	**18-8**	**18-9**	**18-10**	**18-11**	**18-12**
N	123	122	121	120	119	118	117	116	115	114	114	114
Mean	-0.009*	-0.0053	-0.0045	-0.0029	-0.0029	-0.0035	-0.0032	-0.0030	-0.0028	-0.0041	-0.0043	-0.0045
J-K	**18-13**	**18-14**	**18-15**	**18-16**	**18-17**	**18-18**	**18-19**	**18-20**	**18-21**	**18-22**	**18-23**	**18-24**
N	114	114	113	112	112	111	110	109	108	107	107	107
Mean	-0.0047	-0.0049	-0.0043	-0.0039	-0.0039	-0.0041	-0.0039	-0.0036	-0.0039	-0.0040	-0.0040	-0.0039
J-K	**19-1**	**19-2**	**19-3**	**19-4**	**19-5**	**19-6**	**19-7**	**19-8**	**19-9**	**19-10**	**19-11**	**19-12**
N	122	121	120	119	118	117	116	115	114	114	114	114
Mean	-0.0069	-0.0054	-0.0033	-0.0030	-0.0037	-0.0033	-0.0029	-0.0026	-0.0041	-0.0043	-0.0045	-0.0047
J-K	**19-13**	**19-14**	**19-15**	**19-16**	**19-17**	**19-18**	**19-19**	**19-20**	**19-21**	**19-22**	**19-23**	**19-24**
N	114	113	112	112	111	110	109	108	107	107	107	107
Mean	-0.0050	-0.0045	-0.0041	-0.0041	-0.0044	-0.0041	-0.0038	-0.0041	-0.0042	-0.0042	-0.0042	-0.0041
J-K	**20-1**	**20-2**	**20-3**	**20-4**	**20-5**	**20-6**	**20-7**	**20-8**	**20-9**	**20-10**	**20-11**	**20-12**
N	121	120	119	118	117	116	115	114	114	114	114	114
Mean	-0.0069	-0.0045	-0.0039	-0.0045	-0.0039	-0.0030	-0.0027	-0.0042	-0.0044	-0.0047	-0.0049	-0.0050
J-K	**20-13**	**20-14**	**20-15**	**20-16**	**20-17**	**20-18**	**20-19**	**20-20**	**20-21**	**20-22**	**20-23**	**20-24**
N	113	112	112	111	110	109	108	107	107	107	107	107
Mean	-0.0046	-0.0042	-0.0043	-0.0046	-0.0043	-0.0040	-0.0043	-0.0045	-0.0045	-0.0045	-0.0044	-0.0042
J-K	**21-1**	**21-2**	**21-3**	**21-4**	**21-5**	**21-6**	**21-7**	**21-8**	**21-9**	**21-10**	**21-11**	**21-12**
N	120	119	118	117	116	115	114	114	114	114	114	113
Mean	-0.0062	-0.0049	-0.0051	-0.0043	-0.0031	-0.0026	-0.0040	-0.0043	-0.0045	-0.0048	-0.0051	-0.0046
J-K	**21-13**	**21-14**	**21-15**	**21-16**	**21-17**	**21-18**	**21-19**	**21-20**	**21-21**	**2-22**	**21-23**	**21-24**
N	112	112	111	110	109	108	107	107	107	107	107	107
Mean	-0.0429*	-0.0044	-0.0047	-0.0044	-0.0042	-0.0045	-0.0046	-0.0046	-0.0046	-0.0046	-0.0044	-0.0043
J-K	**22-1**	**22-2**	**22-3**	**22-4**	**22-5**	**22-6**	**22-7**	**22-8**	**22-9**	**22-10**	**22-11**	**22-12**
N	119	118	117	116	115	114	114	114	114	114	113	112
Mean	-0.0068	-0.0065	-0.0053	-0.0035	-0.0028	-0.0040	-0.0042	-0.0046	-0.0048	-0.0051	-0.0047	-0.0043
J-K	**22-13**	**22-14**	**22-15**	**22-16**	**22-17**	**22-18**	**22-19**	**22-20**	**22-21**	**22-22**	**22-23**	**22-24**
N	112	111	110	109	108	107	107	107	107	107	107	107
Mean	-0.0045	-0.0048	-0.0047	-0.0045	-0.0048	-0.0049	-0.0049	-0.0049	-0.0048	-0.0048	-0.0047	-0.0045

Table B3, Panel B Continued												
J-K	**23-1**	**23-2**	**23-3**	**23-4**	**23-5**	**23-6**	**23-7**	**23-8**	**23-9**	**23-10**	**23-11**	**23-12**
N	118	117	116	115	114	114	114	114	114	113	112	112
Mean	-0.0081	-0.0062	-0.0042	-0.0032	-0.0045	-0.0045	-0.0047	-0.0049	-0.0052	-0.0049	-0.0046	-0.0047
J-K	**23-13**	**23-14**	**23-15**	**23-16**	**23-17**	**23-18**	**23-19**	**23-20**	**23-21**	**2-22**	**23-23**	**23-24**
N	111	110	109	108	107	107	107	107	107	107	107	107
Mean	-0.0050	-0.0048	-0.0046	-0.0049	-0.0051	-0.0050	-0.0050	-0.0049	-0.0048	-0.0048	-0.0047	-0.0046
J-K	**24-1**	**24-2**	**24-3**	**24-4**	**24-5**	**24-6**	**24-7**	**24-8**	**24-9**	**24-10**	**24-11**	**24-12**
N	117	116	115	114	114	114	114	114	113	112	112	111
Mean	-0.0073	-0.0049	-0.0036	-0.0044	-0.0043	-0.0042	-0.0045	-0.0049	-0.0045	-0.0042	-0.0044	-0.0048
J-K	**24-13**	**24-14**	**24-15**	**24-16**	**24-17**	**24-18**	**24-19**	**24-20**	**24-21**	**24-22**	**24-23**	**24-24**
N	110	109	108	107	107	107	107	107	107	107	107	107
Mean	-0.0047	-0.0045	-0.0049	-0.0051	-0.0052	-0.0051	-0.0050	-0.0050	-0.0049	-0.0048	-0.0047	-0.0047

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with the lowest past returns are denoted as losers. The figures in the table are average returns of the winners minus the losers. The market states are defined by past 12 months' cumulative returns *, **, *** denotes the coefficient is significant at the 10%, 5% and 1% significant levels respectively using T-test respectively.*

Appendix B4

Table B4 Average Monthly Momentum Returns Based on Past 24 Months Market States: January 1993 to December 2012

Panel A: Average Monthly Momentum Profits Following 24-month UP Markets												
J-K	**1-1**	**1-2**	**1-3**	**1-4**	**1-5**	**1-6**	**1-7**	**1-8**	**1-9**	**1-10**	**1-11**	**1-12**
N	113	112	111	110	109	108	107	106	105	105	105	105
Mean	-0.0118*	-0.0134***	-0.0063*	-0.0049*	-0.0039*	-0.0026	-0.0016	-0.0020	-0.0022	-0.0018	-0.0016	-0.0014
J-K	**1-13**	**1-14**	**1-15**	**1-16**	**1-17**	**1-18**	**1-19**	**1-20**	**1-21**	**1-22**	**1-23**	**1-24**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0016	-0.0021*	-0.0025**	-0.0024**	-0.0025**	-0.0024**	-0.0025**	-0.0026**	-0.0024**	-0.0024**	-0.0027**	-0.0027***
J-K	**2-1**	**2-2**	**2-3**	**2-4**	**2-5**	**2-6**	**2-7**	**2-8**	**2-9**	**2-10**	**2-11**	**2-12**
N	112	111	110	109	108	107	106	105	105	105	105	105
Mean	-0.0181***	-0.0095*	-0.0052	-0.0045	-0.0039	-0.0021	-0.0017	-0.0027	-0.0024	-0.0019	-0.0015	-0.0016
J-K	**2-13**	**2-14**	**2-15**	**2-16**	**2-17**	**2-18**	**2-19**	**2-20**	**2-21**	**2-22**	**2-23**	**2-24**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0021	-0.0027	-0.0030*	-0.0033**	-0.0032**	-0.003*	-0.0032**	-0.0033**	-0.0032**	-0.0034**	-0.0037**	-0.0035**
J-K	**3-1**	**3-2**	**3-3**	**3-4**	**3-5**	**3-6**	**3-7**	**3-8**	**3-9**	**3-10**	**3-11**	**3-12**
N	111	110	109	108	107	106	105	105	105	105	105	105
Mean	-0.0127**	-0.0077	-0.0049	-0.0039	-0.0023	-0.0013	-0.0019	-0.0024	-0.0022	-0.0019	-0.0018	-0.0023
J-K	**3-13**	**3-14**	**3-15**	**3-16**	**3-17**	**3-18**	**3-19**	**3-20**	**3-21**	**3-22**	**3-23**	**3-24**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0030	-0.0034	-0.0038*	-0.0040*	-0.0039*	-0.0040*	-0.0042**	-0.0043**	-0.0044**	-0.0046**	-0.0046**	-0.0046**
J-K	**4-1**	**4-2**	**4-3**	**4-4**	**4-5**	**4-6**	**4-7**	**4-8**	**4-9**	**4-10**	**4-11**	**4-12**
N	110	109	108	107	106	105	105	105	105	105	105	105
Mean	-0.0097*	-0.0061	-0.0039	-0.0025	-0.0012	-0.0015	-0.0016	-0.0018	-0.0015	-0.0015	-0.0021	-0.0028
J-K	**4-13**	**4-14**	**4-15**	**4-16**	**4-17**	**4-18**	**4-19**	**4-20**	**4-21**	**4-22**	**4-23**	**4-24**
N	105	105	106	105	105	105	105	105	105	105	105	105
Mean	-0.0034	-0.0040	-0.0043*	-0.0044*	-0.0046*	-0.0047*	-0.0047**	-0.0050**	-0.0051**	-0.0051**	-0.0053**	-0.0053**
J-K	**5-1**	**5-2**	**5-3**	**5-4**	**5-5**	**5-6**	**5-7**	**5-8**	**5-9**	**5-10**	**5-11**	**5-12**
N	109	108	107	106	105	105	105	105	105	105	105	105
Mean	-0.0077	-0.0069	-0.0032	-0.0017	-0.0026	-0.0023	-0.0022	-0.0024	-0.0024	-0.0027	-0.0033	-0.0038
J-K	**5-13**	**5-14**	**5-15**	**5-16**	**5-17**	**5-18**	**5-19**	**5-20**	**5-21**	**5-22**	**5-23**	**5-24**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0046	-0.0050*	-0.0053*	-0.0056**	-0.0058**	-0.0057**	-0.0060**	-0.0062**	-0.0062**	-0.0062**	-0.0065**	-0.0065**

Table B4, Panel A Continued

J-K	**6-1**	**6-2**	**6-3**	**6-4**	**6-5**	**6-6**	**6-7**	**6-8**	**6-9**	**6-10**	**6-11**	**6-12**
N	108	107	106	105	105	105	105	105	105	105	105	105
Mean	-0.0095*	-0.0064	-0.0030	-0.0032	-0.0031	-0.0028	-0.0027	-0.0032	-0.0036	-0.0040	-0.0046	-0.0051
J-K	**6-13**	**6-14**	**6-15**	**6-16**	**6-17**	**6-18**	**6-19**	**6-20**	**6-21**	**6-22**	**6-23**	**6-24**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0057*	-0.0062*	-0.0065**	-0.0067**	-0.0067**	0.0070**	-0.0071**	-0.0072**	-0.0072**	-0.0074**	-0.0075***	-0.0076***
J-K	**7-1**	**7-2**	**7-3**	**7-4**	**7-5**	**7-6**	**7-7**	**7-8**	**7-9**	**7-10**	**7-11**	**7-12**
N	107	106	105	105	105	105	105	105	105	105	105	105
Mean	-0.0077	-0.0051	-0.0037	-0.0032	-0.0033	-0.0029	-0.0033	-0.0041	-0.0047	-0.0051	-0.0057	-0.0062*
J-K	**7-13**	**7-14**	**7-15**	**7-16**	**7-17**	**7-18**	**7-19**	**7-20**	**7-21**	**7-22**	**7-23**	**7-24**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0067*	-0.0072**	-0.0074**	-0.0076**	-0.0078**	-0.0079**	-0.0079**	-0.0080**	-0.0084***	-0.0084***	-0.0086***	-0.0085***
J-K	**8-1**	**8-2**	**8-3**	**8-4**	**8-5**	**8-6**	**8-7**	**8-8**	**8-9**	**8-10**	**8-11**	**8-12**
N	106	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0061	-0.0070	-0.0046	-0.0042	-0.0040	-0.0040	-0.0047	-0.0056	-0.0061	-0.0066*	-0.0071*	-0.0076**
J-K	**8-13**	**8-14**	**8-15**	**8-16**	**8-17**	**8-18**	**8-19**	**8-20**	**8-21**	**8-22**	**8-23**	**8-24**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0081**	-0.0085**	-0.0087**	-0.0089**	-0.0091**	-0.0091**	-0.0090***	-0.0093***	-0.0094***	-0.0095***	-0.0096***	-0.0096***
J-K	**9-1**	**9-2**	**9-3**	**9-4**	**9-5**	**9-6**	**9-7**	**9-8**	**9-9**	**9-10**	**9-11**	**9-12**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.01*	-0.0078	-0.0057	-0.0048	-0.0050	-0.0054	-0.0061	-0.0070	-0.0076*	-0.00792*	-0.00829**	-0.00876**
J-K	**9-13**	**9-14**	**9-15**	**9-16**	**9-17**	**9-18**	**9-19**	**9-20**	**9-21**	**9-22**	**9-23**	**9-24**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0092**	-0.0095**	-0.0100**	-0.0100***	-0.0100***	-0.0100***	-0.0101***	0.0103***	-0.0104***	-0.0104***	-0.0106***	-0.0106***
J-K	**10-1**	**10-2**	**10-3**	**10-4**	**10-5**	**10-6**	**10-7**	**10-8**	**10-9**	**10-10**	**10-11**	**10-12**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0084	-0.0075	-0.0054	-0.0055	-0.0061	-0.0068	-0.0075	-0.0084*	-0.0087**	-0.0088**	-0.0093**	-0.0100**
J-K	**10-13**	**10-14**	**10-15**	**10-16**	**10-17**	**10-18**	**10-19**	**10-20**	**10-21**	**10-22**	**10-23**	**10-24**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0099**	-0.0104**	-0.1064***	-0.0107***	-0.0106***	-0.0108***	-0.0109***	-0.0111***	-0.0111***	-0.0113***	-0.0114***	-0.0113***
J-K	**11-1**	**11-2**	**11-3**	**11-4**	**11-5**	**11-6**	**11-7**	**11-8**	**11-9**	**11-10**	**11-11**	**11-12**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0093	-0.0079	-0.0067	-0.0073	-0.0081	-0.0087*	-0.0093*	-0.010**	-0.0101**	-0.0104**	-0.0107**	-0.0110**

Table B4, Panel A Continued

J-K	**11-13**	**11-14**	**11-15**	**11-16**	**11-17**	**11-18**	**11-19**	**11-20**	**11-21**	**11-22**	**11-23**	**11-24**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0114***	-0.0118***	-0.0119***	-0.0118***	-0.0119***	-0.0120***	-0.0121***	-0.0122***	-0.0123***	-0.0123***	-0.0123***	-0.0123***
J-K	**12-1**	**12-2**	**12-3**	**12-4**	**12-5**	**12-6**	**12-7**	**12-8**	**12-9**	**12-10**	**12-11**	**12-12**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0093	-0.0090	-0.0081	-0.00868*	-0.00939*	-0.0097*	-0.01024**	-0.01071**	-0.01114**	-0.01136**	-0.01161**	-0.0121***
J-K	**12-13**	**12-14**	**12-15**	**12-16**	**12-17**	**12-18**	**12-19**	**12-20**	**12-21**	**12-22**	**12-23**	**12-24**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0126***	-0.0128***	-0.0128***	-0.0129***	-0.0130***	-0.013***	-0.0130***	-0.0132***	-0.0131***	-0.0131***	-0.0131***	-0.0130***
J-K	**13-1**	**13-2**	**13-3**	**13-4**	**13-5**	**13-6**	**13-7**	**13-8**	**13-9**	**13-10**	**13-11**	**13-12**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.01165**	-0.01158**	-0.01021*	-0.01057**	-0.01126**	-0.01155**	-0.01183**	-0.01239**	-0.01247**	-0.0126***	-0.0128***	-0.0132***
J-K	**13-13**	**13-14**	**13-15**	**13-16**	**13-17**	**13-18**	**13-19**	**13-20**	**13-21**	**13-22**	**13-23**	**13-24**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0136***	-0.0138***	-0.0139***	-0.0140***	-0.0140***	-0.0140***	-0.0141***	-0.0142***	-0.0141***	-0.0140***	-0.0140***	-0.0138***
J-K	**14-1**	**14-2**	**14-3**	**14-4**	**14-5**	**14-6**	**14-7**	**14-8**	**14-9**	**14-10**	**14-11**	**14-12**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.01348**	-0.01267**	-0.01131**	-0.01147**	-0.01181**	-0.01206**	-0.01258**	-0.013**	-0.0131***	-0.0133***	-0.0136***	-0.0139***
J-K	**14-13**	**14-14**	**14-15**	**14-16**	**14-17**	**14-18**	**14-19**	**14-20**	**14-21**	**14-22**	**14-23**	**14-24**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0142***	-0.0145***	-0.0146***	-0.0147***	-0.0146***	-0.0147***	-0.0147***	-0.0147***	-0.0147***	-0.0146***	-0.0145***	-0.0143***
J-K	**15-1**	**15-2**	**15-3**	**15-4**	**15-5**	**15-6**	**15-7**	**15-8**	**15-9**	**15-10**	**15-11**	**15-12**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.01396**	-0.01333**	-0.01222**	-0.01217**	-0.01226**	-0.01255**	-0.01312**	-0.0135***	-0.0138***	-0.0141***	-0.0143***	-0.0145***
J-K	**15-13**	**15-14**	**15-15**	**15-16**	**15-17**	**15-18**	**15-19**	**15-20**	**15-21**	**15-22**	**15-23**	**15-24**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0149***	-0.0151***	-0.0153***	-0.0152***	-0.0152***	-0.0152***	-0.0152***	-0.0153***	-0.0151***	-0.0150***	-0.0148***	-0.0146***
J-K	**16-1**	**16-2**	**16-3**	**16-4**	**16-5**	**16-6**	**16-7**	**16-8**	**16-9**	**16-10**	**16-11**	**16-12**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.01445**	-0.01389**	-0.01282**	-0.0128**	-0.01306**	-0.01345**	-0.0138***	-0.0145***	-0.0148***	-0.0148***	-0.0149***	-0.0152***
J-K	**16-13**	**16-14**	**16-15**	**16-16**	**16-17**	**16-18**	**16-19**	**16-20**	**16-21**	**16-22**	**16-23**	**16-24**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0155***	-0.0158***	-0.0158***	-0.0158***	-0.0158***	-0.0157***	-0.0158***	-0.0158***	-0.0156***	-0.0154***	-0.0152***	-0.015***

Table B4, Panel A Continued

J-K	**17-1**	**17-2**	**17-3**	**17-4**	**17-5**	**17-6**	**17-7**	**17-8**	**17-9**	**17-10**	**17-11**	**17-12**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0158***	-0.01476**	-0.01316**	-0.01343**	-0.01401**	-0.0141***	-0.0149***	-0.0155***	-0.0154***	-0.0154***	-0.0156***	-0.0159***
J-K	**17-13**	**17-14**	**17-15**	**17-16**	**17-17**	**17-18**	**17-19**	**17-20**	**17-21**	**17-22**	**17-23**	**17-24**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0162***	-0.0163***	-0.0164***	-0.0164***	-0.0163***	-0.0163***	-0.0163***	-0.0162***	-0.0159***	-0.0156***	-0.0154***	-0.0145***
J-K	**18-1**	**18-2**	**18-3**	**18-4**	**18-5**	**18-6**	**18-7**	**18-8**	**18-9**	**18-10**	**18-11**	**18-12**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0161***	-0.0150***	-0.01385*	-0.0145***	-0.0148***	-0.0153***	-0.0157***	-0.0160***	-0.0161***	-0.0163***	-0.0165***	-0.0168***
J-K	**18-13**	**18-14**	**18-15**	**18-16**	**18-17**	**18-18**	**18-19**	**18-20**	**18-21**	**18-22**	**18-23**	**18-24**
N	105	105	105	105	105	105	105	105	105	105	104	103
Mean	-0.0169***	-0.0171***	-0.0171***	-0.017***	-0.0170***	-0.0169***	-0.0168***	-0.0167***	-0.0163***	-0.0161***	-0.0152***	-0.0152***
J-K	**19-1**	**19-2**	**19-3**	**19-4**	**19-5**	**19-6**	**19-7**	**19-8**	**19-9**	**19-10**	**19-11**	**19-12**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0155***	-0.0151***	-0.0145**	-0.0147***	-0.0154***	-0.0158***	-0.0161***	-0.0165***	-0.0167***	-0.0168***	-0.0171***	-0.0171***
J-K	**19-13**	**19-14**	**19-15**	**19-16**	**19-17**	**19-18**	**19-19**	**19-20**	**19-21**	**19-22**	**19-23**	**19-24**
N	105	105	105	105	105	105	105	105	105	104	103	102
Mean	-0.0176***	-0.0177***	-0.0177***	-0.0176***	-0.0176***	-0.0174***	-0.0172***	-0.017***	-0.0167***	-0.0156***	-0.0158***	-0.0154***
J-K	**20-1**	**20-2**	**20-3**	**20-4**	**20-5**	**20-6**	**20-7**	**20-8**	**20-9**	**20-10**	**20-11**	**20-12**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0169***	-0.0164***	-0.0153***	-0.0160***	-0.0165***	-0.0166***	-0.0168***	-0.0174***	-0.0176***	-0.0178***	-0.0179***	-0.0181**
J-K	**20-13**	**20-14**	**20-15**	**20-16**	**20-17**	**20-18**	**20-19**	**20-20**	**20-21**	**20-22**	**20-23**	**20-24**
N	105	105	105	105	105	105	105	105	104	103	102	101
Mean	-0.0183***	-0.0184***	-0.0183***	-0.0183***	-0.0181***	-0.0178***	-0.0176***	-0.0174***	-0.0162***	-0.0163***	-0.0160***	-0.0133**
J-K	**21-1**	**21-2**	**21-3**	**21-4**	**21-5**	**21-6**	**21-7**	**21-8**	**21-9**	**21-10**	**21-11**	**21-12**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.1871***	-0.0172***	-0.0169***	-0.0170**	-0.0170***	-0.0171***	-0.0178***	-0.0182***	-0.0181***	-0.0185***	-0.0184***	-0.0188***
J-K	**21-13**	**21-14**	**21-15**	**21-16**	**21-17**	**21-18**	**21-19**	**21-20**	**21-21**	**21-22**	**21-23**	**21-24**
N	105	105	105	105	105	105	105	104	103	102	101	100
Mean	-0.0188***	-0.0190***	-0.0190***	-0.0187***	-0.0185***	-0.0182***	-0.018***	-0.0168***	-0.0168***	-0.0165***	-0.01377**	-0.0139***
J-K	**22-1**	**22-2**	**22-3**	**22-4**	**22-5**	**22-6**	**22-7**	**22-8**	**22-9**	**22-10**	**22-11**	**22-12**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0184***	-0.0184***	-0.0180***	-0.0178***	-0.0180***	-0.0185***	-0.0187***	-0.0192***	-0.0192***	-0.0192***	-0.0192***	-0.0192***

Table B4, Panel A Continued

J-K	**22-13**	**22-14**	**22-15**	**22-16**	**22-17**	**22-18**	**22-19**	**22-20**	**22-21**	**22-22**	**22-23**	**22-24**
N	105	105	105	105	105	105	104	103	102	101	100	99
Mean	-0.0194***	-0.0195***	-0.0193***	-0.0192***	-0.0188***	-0.0186***	-0.0172***	-0.0173***	-0.0169***	-0.0141**	-0.0142***	-0.01401**
J-K	**23-1**	**23-2**	**23-3**	**23-4**	**23-5**	**23-6**	**23-7**	**23-8**	**23-9**	**23-10**	**23-11**	**23-12**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0219***	-0.0203***	-0.0192***	-0.0192***	-0.0197***	-0.0198***	-0.0201***	-0.0205***	-0.0205***	-0.0202***	-0.0201***	-0.0202***
J-K	**23-13**	**23-14**	**23-15**	**23-16**	**23-17**	**23-18**	**23-19**	**23-20**	**23-21**	**23-22**	**23-23**	**23-24**
N	105	105	105	105	105	104	103	102	101	100	99	98
Mean	-0.0204***	-0.0202***	-0.0200***	-0.0198***	-0.0195***	-0.0181***	-0.0181***	-0.0178***	-0.0145***	-0.0148***	-0.01445**	-0.01164**
J-K	**24-1**	**24-2**	**24-3**	**24-4**	**24-5**	**24-6**	**24-7**	**24-8**	**24-9**	**24-10**	**24-11**	**24-12**
N	105	105	105	105	105	105	105	105	105	105	105	105
Mean	-0.0206***	-0.0195***	-0.0185***	-0.0188***	-0.0192***	-0.0197***	-0.0199***	-0.0204***	-0.0204***	-0.0202***	-0.0202***	-0.0202***
J-K	**24-13**	**24-14**	**24-15**	**24-16**	**24-17**	**24-18**	**24-19**	**24-20**	**24-21**	**24-22**	**24-23**	**24-24**
N	105	105	105	105	104	103	102	101	100	99	98	97
Mean	-0.0203***	-0.0202***	-0.0199***	-0.0196***	-0.0183***	-0.0182**	-0.0179***	-0.0149**	-0.0151***	-0.0148**	-0.0120**	-0.0109**

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with the lowest past returns are denoted as losers. The figures in the table are average returns of the winners minus the losers. The market states are defined by past 24 months' cumulative returns *, **, *** denotes the coefficient is significant at the 10%, 5% and 1% significant levels respectively using T-test respectively.*

Table B4 Continued

Table B4, Panel B Average Monthly Momentum Profits Following 24-month DOWN Markets												
J-K	**1-1**	**1-2**	**1-3**	**1-4**	**1-5**	**1-6**	**1-7**	**1-8**	**1-9**	**1-10**	**1-11**	**1-12**
N	126	126	126	126	126	126	126	126	126	125	124	123
Mean	-0.0132**	-0.0091**	-0.0066**	-0.0047*	-0.0039*	-0.0027	-0.0014	-0.0022	-0.0008	-0.0014	-0.0010	-0.0006
J-K	**1-13**	**1-14**	**1-15**	**1-16**	**1-17**	**1-18**	**1-19**	**1-20**	**1-21**	**1-22**	**1-23**	**1-24**
N	122	121	120	119	118	117	116	115	114	113	112	111
Mean	-0.0010	-0.0005	-0.0008	-0.0005	-0.0011	-0.0009	-0.0005	-0.0004	-0.0003	-0.0004	-0.0005	-0.0005
J-K	**2-1**	**2-2**	**2-3**	**2-4**	**2-5**	**2-6**	**2-7**	**2-8**	**2-9**	**2-10**	**2-11**	**2-12**
N	126	126	126	126	126	126	126	126	125	124	123	122
Mean	-0.0124**	-0.0086*	-0.0063	-0.0040	-0.0027	-0.0009	-0.0006	0.0001	0.0001	-0.0003	0.0003	-0.0001
J-K	**2-13**	**2-14**	**2-15**	**2-16**	**2-17**	**2-18**	**2-19**	**2-20**	**2-21**	**2-22**	**2-23**	**2-24**
N	121	120	119	118	117	116	115	114	113	112	111	110
Mean	0.0002	-0.0002	0.0000	-0.0003	-0.0005	0.0005	0.0002	0.0003	0.0002	-0.0001	0.0001	0.0004
J-K	**3-1**	**3-2**	**3-3**	**3-4**	**3-5**	**3-6**	**3-7**	**3-8**	**3-9**	**3-10**	**3-11**	**3-12**
N	126	126	126	126	126	126	126	125	124	123	122	121
Mean	-0.0125**	-0.0076	-0.0046	-0.0028	-0.0012	-0.0008	0.0006	0.0001	0.0008	0.0005	0.0005	0.0009
J-K	**3-13**	**3-14**	**3-15**	**3-16**	**3-17**	**3-18**	**3-19**	**3-20**	**3-21**	**3-22**	**3-23**	**3-24**
N	120	119	118	117	116	115	114	113	112	111	110	109
Mean	0.0004	0.0009	0.0004	0.0002	0.0007	0.0008	0.0010	0.0009	0.0006	0.0006	0.0010	0.0011
J-K	**4-1**	**4-2**	**4-3**	**4-4**	**4-5**	**4-6**	**4-7**	**4-8**	**4-9**	**4-10**	**4-11**	**4-12**
N	126	126	126	126	126	126	125	124	123	122	121	120
Mean	-0.0110*	-0.0061	-0.0040	-0.0015	-0.0007	0.0009	0.0009	0.0009	0.0016	0.0009	0.0016	0.0010
J-K	**4-13**	**4-14**	**4-15**	**4-16**	**4-17**	**4-18**	**4-19**	**4-20**	**4-21**	**4-22**	**4-23**	**4-24**
N	119	118	117	116	115	114	113	112	111	110	109	108
Mean	0.0012	0.0009	0.0005	0.0015	0.0009	0.0013	0.0012	0.0009	0.0010	0.0013	0.0016	0.0011
J-K	**5-1**	**5-2**	**5-3**	**5-4**	**5-5**	**5-6**	**5-7**	**5-8**	**5-9**	**5-10**	**5-11**	**5-12**
N	126	126	126	126	126	125	124	123	122	121	120	119
Mean	-0.0087*	-0.0046	-0.0017	-0.0006	0.0012	0.0011	0.0012	0.0016	0.0014	0.0018	0.0012	0.0018
J-K	**5-13**	**5-14**	**5-15**	**5-16**	**5-17**	**5-18**	**5-19**	**5-20**	**5-21**	**5-22**	**5-23**	**5-24**
N	118	117	116	115	114	113	112	111	110	109	108	107
Mean	0.0013	0.0010	0.0020	0.0011	0.0015	0.0015	0.0010	0.0011	0.0017	0.0019	0.0013	0.0012
J-K	**6-1**	**6-2**	**6-3**	**6-4**	**6-5**	**6-6**	**6-7**	**6-8**	**6-9**	**6-10**	**6-11**	**6-12**
N	126	126	126	126	125	124	123	122	121	120	119	118
Mean	-0.0076	-0.0023	-0.0011	0.0013	0.0012	0.0015	0.0021	0.0015	0.0022	0.0012	0.0020	0.0015

Table B4, Panel B Continued

J-K	**6-13**	**6-14**	**6-15**	**6-16**	**6-17**	**6-18**	**6-19**	**6-20**	**6-21**	**6-22**	**6-23**	**6-24**
N	117	116	115	114	113	112	111	110	109	108	107	106
Mean	0.0011	0.0023	0.0014	0.0016	0.0015	0.0012	0.0013	0.0018	0.0021	0.0014	0.0014	0.0008
J-K	**7-1**	**7-2**	**7-3**	**7-4**	**7-5**	**7-6**	**7-7**	**7-8**	**7-9**	**7-10**	**7-11**	**7-12**
N	126	126	126	125	124	123	122	121	120	119	118	117
Mean	-0.0038	-0.0019	0.0010	0.0013	0.0014	0.0021	0.0016	0.0021	0.0016	0.0021	0.0019	0.0015
J-K	**7-13**	**7-14**	**7-15**	**7-16**	**7-17**	**7-18**	**7-19**	**7-20**	**7-21**	**7-22**	**7-23**	**7-24**
N	116	115	114	113	112	111	110	109	108	107	106	105
Mean	0.0027	0.0016	0.0020	0.0018	0.0013	0.0016	0.0021	0.0024	0.0017	0.0017	0.0009	0.0013
J-K	**8-1**	**8-2**	**8-3**	**8-4**	**8-5**	**8-6**	**8-7**	**8-8**	**8-9**	**8-10**	**8-11**	**8-12**
N	126	126	125	124	123	122	121	120	119	118	117	116
Mean	-0.0050	-0.0002	0.0008	0.0015	0.0025	0.0021	0.0026	0.0017	0.0026	0.0020	0.0016	0.0028
J-K	**8-13**	**8-14**	**8-15**	**8-16**	**8-17**	**8-18**	**8-19**	**8-20**	**8-21**	**8-22**	**8-23**	**8-24**
N	115	114	113	112	111	110	109	108	107	106	105	104
Mean	0.0017	0.0021	0.0020	0.0013	0.0015	0.0021	0.0025	0.0017	0.0017	0.0009	0.0013	0.0015
J-K	**9-1**	**9-2**	**9-3**	**9-4**	**9-5**	**9-6**	**9-7**	**9-8**	**9-9**	**9-10**	**9-11**	**9-12**
N	126	125	124	123	122	121	120	119	118	117	116	115
Mean	-0.0016	0.0005	0.0018	0.0030	0.0025	0.0030	0.0021	0.0026	0.0022	0.0015	0.0028	0.0015
J-K	**9-13**	**9-14**	**9-15**	**9-16**	**9-17**	**9-18**	**9-19**	**9-20**	**9-21**	**9-22**	**9-23**	**9-24**
N	114	113	112	111	110	109	108	107	106	105	104	103
Mean	0.0020	0.0020	0.0013	0.0015	0.0020	0.0025	0.0017	0.0017	0.0008	0.0013	0.0015	0.0020
J-K	**10-1**	**10-2**	**10-3**	**10-4**	**10-5**	**10-6**	**10-7**	**10-8**	**10-9**	**10-10**	**10-11**	**10-12**
N	125	124	123	122	121	120	119	118	117	116	115	114
Mean	-0.0030	-0.0003	0.0015	0.0014	0.0025	0.0016	0.0024	0.0018	0.0015	0.0029	0.0014	0.0021
J-K	**10-13**	**10-14**	**10-15**	**10-16**	**10-17**	**10-18**	**10-19**	**10-20**	**10-21**	**10-22**	**10-23**	**10-24**
N	113	112	111	110	109	108	107	106	105	104	103	102
Mean	0.0019	0.0013	0.0015	0.0020	0.0025	0.0017	0.0017	0.0008	0.0014	0.0015	0.0022	0.0024
J-K	**11-1**	**11-2**	**11-3**	**11-4**	**11-5**	**11-6**	**11-7**	**11-8**	**11-9**	**11-10**	**11-11**	**11-12**
N	124	123	122	121	120	119	118	117	116	115	114	113
Mean	-0.0026	0.0008	0.0007	0.0021	0.0013	0.0021	0.0017	0.0011	0.0027	0.0012	0.0020	0.0020
J-K	**11-13**	**11-14**	**11-15**	**11-16**	**11-17**	**11-18**	**11-19**	**11-20**	**11-21**	**11-22**	**11-23**	**11-24**
N	112	111	110	109	108	107	106	105	104	103	102	101
Mean	0.0012	0.0015	0.0019	0.0024	0.0015	0.0016	0.0072	0.0013	0.0016	0.0022	0.0026	0.0027

Table B4, Panel B Continued

J-K	**12-1**	**12-2**	**12-3**	**12-4**	**12-5**	**12-6**	**12-7**	**12-8**	**12-9**	**12-10**	**12-11**	**12-12**
N	123	122	121	120	119	118	117	116	115	114	113	112
Mean	-0.0008	-0.0007	0.0010	0.0005	0.0017	0.0015	0.0013	0.0027	0.0013	0.0023	0.0022	0.0015
J-K	**12-13**	**12-14**	**12-15**	**12-16**	**12-17**	**12-18**	**12-19**	**12-20**	**12-21**	**12-22**	**12-23**	**12-24**
N	111	110	109	108	107	106	105	104	103	102	101	100
Mean	0.0017	0.0023	0.0028	0.0018	0.0018	0.0010	0.0015	0.0019	0.0025	0.0028	0.0030	0.0026
J-K	**13-1**	**13-2**	**13-3**	**13-4**	**13-5**	**13-6**	**13-7**	**13-8**	**13-9**	**13-10**	**13-11**	**13-12**
N	122	121	120	119	118	117	116	115	114	113	112	111
Mean	-0.0041	-0.0004	-0.0004	0.0012	0.0009	0.0008	0.0024	0.0010	0.0021	0.0019	0.0013	0.0016
J-K	**13-13**	**13-14**	**13-15**	**13-16**	**13-17**	**13-18**	**13-19**	**13-20**	**13-21**	**13-22**	**13-23**	**13-24**
N	110	109	108	107	106	105	104	103	102	101	100	99
Mean	0.0022	0.0027	0.0016	0.0016	0.0007	0.0013	0.0017	0.0023	0.0027	0.0029	0.0025	0.0026
J-K	**14-1**	**14-2**	**14-3**	**14-4**	**14-5**	**14-6**	**14-7**	**14-8**	**14-9**	**14-10**	**1-114**	**14-12**
N	121	120	119	118	117	116	115	114	113	112	111	110
Mean	-0.0024	-0.0024	0.0001	0.0003	0.0006	0.0021	0.0008	0.0021	0.0020	0.0012	0.0016	0.0023
J-K	**14-13**	**14-14**	**14-15**	**14-16**	**14-17**	**14-18**	**14-19**	**14-20**	**14-21**	**14-22**	**14-23**	**14-24**
N	109	108	107	106	105	104	103	102	101	100	99	98
Mean	0.0028	0.0017	0.0017	0.0006	0.0013	0.0018	0.0024	0.0028	0.0029	0.0025	0.0027	0.0029
J-K	**15-1**	**15-2**	**15-3**	**15-4**	**15-5**	**15-6**	**15-7**	**15-8**	**15-9**	**15-10**	**15-11**	**15-12**
N	120	119	118	117	116	115	114	113	112	111	110	109
Mean	-0.0041	-0.0016	-0.0007	-0.0004	0.0018	0.0007	0.0019	0.0020	0.0014	0.0017	0.0024	0.0029
J-K	**15-13**	**15-14**	**15-15**	**15-16**	**15-17**	**15-18**	**15-19**	**15-20**	**15-21**	**15-22**	**15-23**	**15-24**
N	108	107	106	105	104	103	102	101	100	99	98	97
Mean	0.0018	0.0017	0.0006	0.0012	0.0017	0.0023	0.0027	0.0029	0.0026	0.0026	0.0029	0.0024
J-K	**16-1**	**16-2**	**16-3**	**16-4**	**16-5**	**16-6**	**16-7**	**16-8**	**16-9**	**16-10**	**16-11**	**16-12**
N	119	118	117	116	115	114	113	112	111	110	109	108
Mean	-0.0033	-0.0025	-0.0017	0.0010	0.0001	0.0018	0.0018	0.0012	0.0026	0.0023	0.0030	0.0019
J-K	**16-13**	**16-14**	**16-15**	**16-16**	**16-17**	**16-18**	**16-19**	**16-20**	**16-21**	**16-22**	**16-23**	**16-24**
N	107	106	105	104	103	102	101	100	99	98	97	96
Mean	0.0018	0.0006	0.0013	0.0016	0.0023	0.0028	0.0030	0.0026	0.0027	0.0030	0.0025	0.0022
J-K	**17-1**	**17-2**	**17-3**	**17-4**	**17-5**	**17-6**	**17-7**	**17-8**	**17-9**	**17-10**	**17-11**	**17-12**
N	118	117	116	115	114	113	112	111	110	109	108	107
Mean	-0.0047	-0.0038	-0.0005	-0.0003	0.0015	0.0018	0.0012	0.0017	0.0025	0.0031	0.0021	0.0019

Table B4, Panel B Continued

J-K	**17-13**	**17-14**	**17-15**	**17-16**	**17-17**	**17-18**	**17-19**	**17-20**	**17-21**	**17-22**	**17-23**	**17-24**
N	106	105	104	103	102	101	100	99	98	97	96	96
Mean	0.0006	0.0013	0.0017	0.0023	0.0028	0.0030	0.0027	0.0028	0.0031	0.0026	0.0023	0.0021
J-K	**18-1**	**18-2**	**18-3**	**18-4**	**18-5**	**18-6**	**18-7**	**18-8**	**18-9**	**18-10**	**18-11**	**18-12**
N	117	116	115	114	113	112	111	110	109	108	107	106
Mean	-0.0060	-0.0019	-0.0007	0.0014	0.0018	0.0015	0.0022	0.0030	0.0037	0.0025	0.0024	0.0011
J-K	**18-13**	**18-14**	**18-15**	**18-16**	**18-17**	**18-18**	**18-19**	**18-20**	**18-21**	**18-22**	**18-23**	**18-24**
N	105	104	103	102	101	100	99	98	97	96	96	96
Mean	0.0016	0.0019	0.0025	0.0029	0.0032	0.0028	0.0030	0.0032	0.0027	0.0024	0.0022	0.0019
J-K	**19-1**	**19-2**	**19-3**	**19-4**	**19-5**	**19-6**	**19-7**	**19-8**	**19-9**	**19-10**	**19-11**	**19-12**
N	116	115	114	113	112	111	110	109	108	107	106	105
Mean	-0.0029	-0.0014	0.0013	0.0019	0.0015	0.0022	0.0032	0.0040	0.0029	0.0026	0.0012	0.0018
J-K	**19-13**	**19-14**	**19-15**	**19-16**	**19-17**	**19-18**	**19-19**	**19-20**	**19-21**	**19-22**	**19-23**	**19-24**
N	104	103	102	101	100	99	98	97	96	96	96	96
Mean	0.0020	0.0026	0.0031	0.0032	0.0029	0.0031	0.0033	0.0028	0.0025	0.0022	0.0020	0.0018
J-K	**20-1**	**20-2**	**20-3**	**20-4**	**20-5**	**20-6**	**20-7**	**20-8**	**20-9**	**20-10**	**20-11**	**20-12**
N	115	114	113	112	111	110	109	108	107	106	105	104
Mean	-0.0025	0.0002	0.0014	0.0013	0.0022	0.0036	0.0043	0.0032	0.0029	0.0013	0.0020	0.0023
J-K	**20-13**	**20-14**	**20-15**	**20-16**	**20-17**	**20-18**	**20-19**	**20-20**	**20-21**	**20-22**	**20-23**	**20-24**
N	103	102	101	100	99	98	97	96	96	96	96	96
Mean	0.0027	0.0031	0.0033	0.0030	0.0031	0.0033	0.0028	0.0025	0.0022	0.0020	0.0018	0.0017
J-K	**21-1**	**21-2**	**21-3**	**21-4**	**21-5**	**21-6**	**21-7**	**21-8**	**21-9**	**21-10**	**21-11**	**21-12**
N	114	112	112	111	110	109	108	107	106	105	104	103
Mean	-0.0007	0.0009	0.0010	0.0023	0.0040	0.0048	0.0037	0.0035	0.0019	0.0024	0.0026	0.0031
J-K	**21-13**	**21-14**	**21-15**	**21-16**	**21-17**	**21-18**	**21-19**	**21-20**	**21-21**	**21-22**	**21-23**	**21-24**
N	102	101	100	99	98	97	96	96	96	96	96	96
Mean	0.0033	0.0034	0.0031	0.0033	0.0035	0.0029	0.0026	0.0024	0.0021	0.0020	0.0018	0.0016
J-K	**22-1**	**22-2**	**22-3**	**22-4**	**22-5**	**22-6**	**22-7**	**22-8**	**22-9**	**22-10**	**22-11**	**22-12**
N	113	112	111	110	109	108	107	106	105	104	103	102
Mean	-0.0011	-0.0002	0.0018	0.0040	0.0050	0.0040	0.0037	0.0021	0.0026	0.0027	0.0031	0.0035
J-K	**22-13**	**22-14**	**22-15**	**22-16**	**22-17**	**22-18**	**22-19**	**22-20**	**22-21**	**22-22**	**22-23**	**22-24**
N	101	100	99	98	97	96	96	96	96	96	96	96
Mean	0.0035	0.0031	0.0032	0.0033	0.0028	0.0025	0.0022	0.0020	0.0019	0.0017	0.0015	0.0014

Table B4, Panel B Continued

J-K	**23-1**	**23-2**	**23-3**	**23-4**	**23-5**	**23-6**	**23-7**	**23-8**	**23-9**	**23-10**	**23-11**	**23-12**
N	112	111	110	109	108	107	106	105	104	103	102	101
Mean	-0.0013	0.0012	0.0040	0.0051	0.0040	0.0037	0.0020	0.0026	0.0027	0.0030	0.0034	0.0034
J-K	**23-13**	**23-14**	**23-15**	**23-16**	**23-17**	**23-18**	**23-19**	**23-20**	**23-21**	**23-22**	**23-23**	**23-24**
N	100	99	98	97	96	96	96	96	96	96	96	96
Mean	0.0029	0.0031	0.0032	0.0027	0.0024	0.0022	0.0020	0.0018	0.0016	0.0015	0.0013	0.0011
J-K	**24-1**	**24-2**	**24-3**	**24-4**	**24-5**	**24-6**	**24-7**	**24-8**	**24-9**	**24-10**	**24-11**	**24-12**
N	111	110	109	108	107	106	105	104	103	102	101	100
Mean	-0.0001	-0.0030	-0.0045	-0.0038	-0.0037	-0.0023	-0.0028	0.0030	0.0034	0.00370-7	0.0036	0.0032
J-K	**24-13**	**24-14**	**24-15**	**24-16**	**24-17**	**24-18**	**24-19**	**24-20**	**24-21**	**24-22**	**24-23**	**24-24**
N	99	98	97	96	96	96	96	96	96	96	96	96
Mean	0.0032	0.0033	0.0027	0.0024	0.0021	0.0020	0.0019	0.0017	0.0015	0.0013	0.0011	0.0009

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with the lowest past returns are denoted as losers. The figures in the table are average returns of the winners minus the losers. The market states are defined by past 24 months' cumulative returns *, **, *** denotes the coefficient is significant at the 10%, 5% and 1% significant levels respectively using T-test respectively.*

Appendix B5

Table B5 Average Monthly Momentum Returns Based on Past 3 Months Market States: Sub-Sample of 1993-1996

Panel A: Average Monthly Momentum Returns Following 3 Months UP Markets JAN1993-DEC1996, Sub-Sample 1												
J-K	**1-1**	**1-2**	**1-3**	**1-4**	**1-5**	**1-6**	**1-7**	**1-8**	**1-9**	**1-10**	**1-11**	**1-12**
N	17	16	16	16	16	16	16	16	16	16	16	16
Mean	-0.0075	-0.0150	-0.0049	-0.0054	-0.0033	-0.0028	0.0023	-0.0016	0.0017	0.0017	0.0041	0.0005
J-K	**2-1**	**2-2**	**2-3**	**2-4**	**2-5**	**2-6**	**2-7**	**2-8**	**2-9**	**2-10**	**2-11**	**2-12**
N	16	16	16	16	16	16	16	16	16	16	16	16
Mean	-0.0219	-0.0071	-0.0004	-0.0020	-0.0026	0.0031	0.0029	0.0030	0.0054	0.0070	0.0063	0.0039
J-K	**3-1**	**3-2**	**3-3**	**3-4**	**3-5**	**3-6**	**3-7**	**3-8**	**3-9**	**3-10**	**3-11**	**3-12**
N	16	16	16	16	16	16	16	16	16	16	16	16
Mean	-0.0072	-0.0017	0.0051	0.0020	0.0068	0.0070	0.0087	0.0076	0.0107	0.0087	0.0075	0.0059
J-K	**4-1**	**4-2**	**4-3**	**4-4**	**4-5**	**4-6**	**4-7**	**4-8**	**4-9**	**4-10**	**4-11**	**4-12**
N	16	16	16	16	16	16	16	16	16	16	16	16
Mean	-0.0107	0.0017	0.0033	0.0066	0.0072	0.0106	0.0116	0.0126	0.0139	0.0121	0.0113	0.0066
J-K	**5-1**	**5-2**	**5-3**	**0-04**	**5-5**	**5-6**	**5-7**	**5-8**	**5-9**	**5-10**	**5-11**	**5-12**
N	16	16	16	16	16	16	16	16	16	16	16	16
Mean	-0.0033	-0.0030	0.0068	0.0077	0.0105	0.0117	0.0145	0.0127	0.0145	0.0135	0.0100	0.0096
J-K	**6-1**	**6-2**	**6-3**	**6-4**	**6-5**	**6-6**	**6-7**	**6-8**	**6-9**	**6-10**	**6-11**	**6-12**
N	16	16	16	16	16	16	16	16	16	16	16	16
Mean	-0.0089	0.0051	0.0093	0.0122	0.0123	0.0152	0.0149	0.0131	0.0133	0.0091	0.0091	0.0056
Panel B: Average Monthly Momentum Returns Following 3 Months DOWN Markets JAN1993-DEC1996, Sub-Sample 1												
J-K	**1-1**	**1-2**	**1-3**	**1-4**	**1-5**	**1-6**	**1-7**	**1-8**	**1-9**	**1-10**	**1-11**	**1-12**
N	30	30	29	28	27	26	25	24	23	22	21	20
Mean	-0.0209	-0.0097	-0.0050	-0.0030	0.0015	0.0004	0.0035	0.0000	0.0019	-0.0008	-0.0014	-0.0012
J-K	**2-1**	**2-2**	**2-3**	**2-4**	**2-5**	**2-6**	**2-7**	**2-8**	**2-9**	**2-10**	**2-11**	**2-12**
N	30	29	28	27	26	25	24	23	22	21	20	19
Mean	-0.0089	0.0044	-0.0009	0.0033	0.0015	0.0059	0.0072	0.0052	0.0022	-0.0009	-0.0001	-0.0026
J-K	**3-1**	**3-2**	**3-3**	**3-4**	**3-5**	**3-6**	**3-7**	**3-8**	**3-9**	**3-10**	**3-11**	**3-12**
N	29	28	27	26	25	24	23	22	21	20	19	18
Mean	-0.0149	-0.0024	-0.0007	-0.0009	0.0032	0.0035	0.0055	-0.0002	0.0000	-0.0033	-0.0042	-0.0020
J-K	**4-1**	**4-2**	**4-3**	**4-4**	**4-5**	**4-6**	**4-7**	**4-8**	**4-9**	**4-10**	**4-11**	**4-12**
N	28	27	26	25	24	23	22	21	20	19	18	17
Mean	-0.0129	0.0034	-0.0020	0.0024	0.0052	0.0047	0.0018	-0.0028	-0.0028	-0.0064	-0.0029	-0.0069

Table B5 Continued

J-K	**5-1**	**5-2**	**5-3**	**5-4**	**5-5**	**5-6**	**5-7**	**5-8**	**5-9**	**5-10**	**5-11**	**5-12**
N	27	26	25	24	23	22	21	20	19	18	17	16
Mean	0.0099	0.0034	0.0058	0.0072	0.0060	0.0014	-0.0015	-0.0029	-0.0072	-0.0043	-0.0087	-0.0063
J-K	**6-1**	**6-2**	**6-3**	**6-4**	**6-5**	**6-6**	**6-7**	**6-8**	**6-9**	**6-10**	**6-11**	**6-12**
N	26	25	24	23	22	21	20	19	18	17	16	15
Mean	-0.0027	0.0080	0.0063	0.0061	0.0013	-0.0019	-0.0024	-0.0076	-0.0055	-0.0106	-0.0073	-0.0087

*Note: Returns are computed using monthly data January 1993 – December 1996. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with the lowest past returns are denoted as losers. The figures in the table are average returns of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at the 10%, 5% and 1% significant levels respectively using T-test respectively. Market dynamics are defined by the past 3 months' value weighted cumulative market returns.*

Appendix B6

Table B6 Average Monthly Momentum Returns Based on Past 6 Months Market States: Sub-Sample of 1997-2000

Panel A: Average Monthly Momentum Returns Following 3 Months UP Markets JAN1997-DEC2000, Sub-Sample 2												
J-K	**1-1**	**1-2**	**1-3**	**1-4**	**1-5**	**1-6**	**1-7**	**1-8**	**1-9**	**1-10**	**1-11**	**1-12**
N	20	20	19	18	17	16	16	16	16	16	16	15
Mean	0.0068	-0.0054	-0.0046	-0.0075	-0.0040	-0.0053	-0.0050	-0.0058	-0.0060	-0.0062	-0.0054	-0.0051
J-K	**2-1**	**2-2**	**2-3**	**2-4**	**2-5**	**2-6**	**2-7**	**2-8**	**2-9**	**2-10**	**2-11**	**2-12**
N	20	19	18	17	16	16	16	16	16	16	15	15
Mean	-0.0064	-0.0122	-0.0148	-0.0104	-0.0080	-0.0062	-0.0070	-0.0078	-0.0085	-0.0081	-0.0076	-0.0070
J-K	**3-1**	**3-2**	**3-3**	**3-4**	**3-5**	**3-6**	**3-7**	**3-8**	**3-9**	**3-10**	**3-11**	**3-12**
N	19	18	17	16	16	16	16	16	16	15	15	14
Mean	-0.0117	-0.0215*	-0.0150	-0.0122*	-0.0075	-0.0072	-0.0079	-0.0088	-0.0088	-0.0093	-0.0081	-0.0064
J-K	**4-1**	**4-2**	**4-3**	**4-4**	**4-5**	**4-6**	**4-7**	**4-8**	**4-9**	**4-10**	**4-11**	**4-12**
N	18	17	16	16	16	16	16	16	15	15	14	14
Mean	-0.0201	-0.0182	-0.0149*	-0.0088	-0.0063	-0.0713	-0.0083	-0.0087	-0.0096	-0.0094	-0.0070	-0.0069
J-K	**5-1**	**5-2**	**5-3**	**5-4**	**5-5**	**5-6**	**5-7**	**5-8**	**5-9**	**5-10**	**5-11**	**5-12**
N	17	16	16	16	16	16	16	15	15	14	14	14
Mean	-0.0167	-0.0165	-0.0102	-0.0076	-0.0071	-0.0085	-0.0091	-0.0106	-0.0106	-0.0084	-0.0077	-0.0078
J-K	**6-1**	**6-2**	**6-3**	**6-4**	**6-5**	**6-6**	**6-7**	**6-8**	**6-9**	**6-10**	**6-11**	**6-12**
N	16	16	16	16	16	16	15	15	14	14	14	13
Mean	-0.0170	-0.0153	-0.0119	-0.0099	-0.0097	-0.0102	-0.0116	-0.0119	-0.0102	-0.0101	-0.0096	-0.0058
Panel B: Average Monthly Momentum Returns Following 3 Months DOWN Markets JAN1997-DEC2000, Sub-Sample 2												
J-K	**1-1**	**1-2**	**1-3**	**1-4**	**1-5**	**1-6**	**1-7**	**1-8**	**1-9**	**1-10**	**1-11**	**1-12**
N	27	26	26	26	26	26	25	24	23	22	21	21
Mean	-0.0021	-0.0049	-0.0050	-0.0014	-0.0016	0.0005	0.0020	0.0022	0.0024	0.0010	0.0009	0.0009
J-K	**2-1**	**2-2**	**2-3**	**2-4**	**2-5**	**2-6**	**2-7**	**2-8**	**2-9**	**2-10**	**2-11**	**2-12**
N	26	26	26	26	26	25	24	23	22	21	21	20
Mean	-0.0065	-0.0081	-0.0044	-0.0013	0.0004	0.0029	0.0046	0.0044	0.0030	0.0019	0.0020	0.0026
J-K	**3-1**	**3-2**	**3-3**	**3-4**	**3-5**	**3-6**	**3-7**	**3-8**	**3-9**	**3-10**	**3-11**	**3-12**
N	26	26	26	26	25	24	23	22	21	21	20	20
Mean	-0.0076	-0.0049	-0.0023	0.0006	0.0033	0.0064	0.0069	0.0046	0.0030	0.0024	0.0030	0.0032
J-K	**4-1**	**4-2**	**4-3**	**4-4**	**4-5**	**4-6**	**4-7**	**4-8**	**4-9**	**4-10**	**4-11**	**4-12**
N	26	26	26	25	24	23	22	21	21	20	20	19
Mean	-0.0021	-0.0023	0.0012	0.0052	0.0087	0.0096	0.0070	0.0049	0.0038	0.0039	0.0037	0.0029

Table B6 Continued

J-K	**5-1**	**5-2**	**5-3**	**5-4**	**5-5**	**5-6**	**5-7**	**5-8**	**5-9**	**5-10**	**5-11**	**5-12**
N	26	26	25	24	23	22	21	21	20	20	19	18
Mean	-0.0033	-0.0002	0.0038	0.0088	0.0096	0.0065	0.0046	0.0029	0.0029	0.0023	0.0016	0.0006
J-K	**6-1**	**6-2**	**6-3**	**6-4**	**6-5**	**6-6**	**6-7**	**6-8**	**6-9**	**6-10**	**6-11**	**6-12**
N	26	25	24	23	22	21	21	20	20	19	18	18
Mean	0.0025	0.0045	0.0087	0.0108	0.0071	0.0054	0.0040	0.0035	0.0027	0.0016	0.0004	-0.0002

*Note: Returns are computed using monthly data January 1997 – December 2000. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with the lowest past returns are denoted as losers. The figures in the table are average returns of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at the 10%, 5% and 1% significant levels respectively using T-test respectively. Market dynamics are defined by the past 3 months' value weighted cumulative market returns.*

Appendix B7

Table B7 Average Monthly Momentum Returns Based on Past 3 Months Market States: Sub-Sample of 2001-2004

Panel A: Average Monthly Momentum Returns Following 3 Months UP Markets JAN2001-DEC2004, Sub-Sample 3												
J-K	**1-1**	**1-2**	**1-3**	**1-4**	**1-5**	**1-6**	**1-7**	**1-8**	**1-9**	**1-10**	**1-11**	**1-12**
N	18	18	18	17	16	15	15	15	15	15	15	15
Mean	-0.0134	-0.0124	-0.0122**	-0.0114*	-0.0095	-0.0072	-0.0067	-0.0056	-0.0048	-0.0049	-0.0042	-0.0036
J-K	**2-1**	**2-2**	**2-3**	**2-4**	**2-5**	**2-6**	**2-7**	**2-8**	**2-9**	**2-10**	**2-11**	**2-12**
N	18	18	17	16	15	15	15	15	15	15	15	15
Mean	-0.0196*	-0.0193**	-0.0172**	-0.0152*	-0.0108	-0.0088	-0.0077	-0.0064	-0.0059	-0.0054	-0.0046	-0.0050
J-K	**3-1**	**3-2**	**3-3**	**3-4**	**3-5**	**3-6**	**3-7**	**3-8**	**3-9**	**3-10**	**3-11**	**3-12**
N	18	17	16	15	15	15	15	15	15	15	15	15
Mean	-0.0233**	-0.0201**	-0.0179*	-0.0131	-0.0099	-0.0079	-0.0067	-0.0058	-0.0053	-0.0050	-0.0053	-0.0055
J-K	**4-1**	**4-2**	**4-3**	**4-4**	**4-5**	**4-6**	**4-7**	**4-8**	**4-9**	**4-10**	**4-11**	**4-12**
N	17	16	15	15	15	15	15	15	15	15	15	15
Mean	-0.0227*	-0.0203*	-0.0158	-0.0121	-0.0090	-0.0069	-0.0061	-0.0053	-0.0051	-0.0059	-0.0062	-0.0062
J-K	**5-1**	**5-2**	**5-3**	**5-4**	**5-5**	**5-6**	**5-7**	**5-8**	**5-9**	**5-10**	**5-11**	**5-12**
N	16	15	15	15	15	15	15	15	15	15	15	14
Mean	-0.0222	-0.0165	-0.0127	-0.0094	-0.0070	-0.0058	-0.0054	-0.0048	-0.0057	-0.0060	-0.0060	-0.0058
J-K	**6-1**	**6-2**	**6-3**	**6-4**	**6-5**	**6-6**	**6-7**	**6-8**	**6-9**	**6-10**	**6-11**	**6-12**
N	15	15	15	15	15	15	15	15	15	15	14	13
Mean	-0.0182	-0.0137	-0.0106	-0.0084	-0.0065	-0.0056	-0.0051	-0.0060	-0.0064	-0.0068	-0.0064	-0.0069
Panel B: Average Monthly Momentum Returns Following 3 Months DOWN Markets JAN2001-DEC2004, Sub-Sample 3												
J-K	**1-1**	**1-2**	**1-3**	**1-4**	**1-5**	**1-6**	**1-7**	**1-8**	**1-9**	**1-10**	**1-11**	**1-12**
N	29	28	27	27	27	27	26	25	24	23	22	21
Mean	-0.0048	-0.0047	0.0021	0.0040	0.0033	0.0050	0.0050	0.0050	0.0059*	0.0066**	0.0071**	0.0076**
J-K	**2-1**	**2-2**	**2-3**	**2-4**	**2-5**	**2-6**	**2-7**	**2-8**	**2-9**	**2-10**	**2-11**	**2-12**
N	28	27	27	27	27	26	25	24	23	22	21	20
Mean	-0.0082	0.0000	0.0054	0.0063	0.0073	0.0082	0.0086	0.0094*	0.0108**	0.0118**	0.0118**	0.0109**
J-K	**3-1**	**3-2**	**3-3**	**3-4**	**3-5**	**3-6**	**3-7**	**3-8**	**3-9**	**3-10**	**3-11**	**3-12**
N	27	27	27	27	26	25	24	23	22	21	20	19
Mean	0.0029	0.0072	0.0095	0.0109	0.0111	0.01218*	0.01348*	0.0145**	0.0162**	0.0159**	0.0147**	0.0166***
J-K	**4-1**	**4-2**	**4-3**	**4-4**	**4-5**	**4-6**	**4-7**	**4-8**	**4-9**	**4-10**	**4-11**	**4-12**
N	27	27	27	26	25	24	23	22	21	20	19	18
Mean	0.0070	0.0080	0.0118	0.0127	0.0133	0.0163**	0.0173**	0.0190**	0.0195**	0.0182**	0.0201***	0.0222***

Table B7 Continued

J-K	**5-1**	**5-2**	**5-3**	**5-4**	**5-5**	**5-6**	**5-7**	**5-8**	**5-9**	**5-10**	**5-11**	**5-12**
N	27	27	26	25	24	23	22	21	20	19	18	18
Mean	0.0068	0.0114	0.0141	0.0148	0.01761*	0.0199**	0.0214**	0.0217**	0.0208**	0.0228***	0.0247***	0.0244***
J-K	**6-1**	**6-2**	**6-3**	**6-4**	**6-5**	**6-6**	**6-7**	**6-8**	**6-9**	**6-10**	**6-11**	**6-12**
N	27	26	25	24	23	22	21	20	19	18	18	18
Mean	0.0130	0.0147	0.0173	0.0208**	0.0225**	0.0249**	0.0249**	0.0240**	0.0264***	0.0285***	0.0278***	0.02710**

*Note: Returns are computed using monthly data January 2001 – December 2004. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with the lowest past returns are denoted as losers. The figures in the table are average returns of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at the 10%, 5% and 1% significant levels respectively using T-test respectively. Market states are defined by the past 3 months' value weighted cumulative market returns.*

Appendix B8

Table B8 Average Monthly Momentum Returns Based on Past 3 Months Market States: Sub-Sample of 2005-2008

Panel A: Average Monthly Momentum Returns Following 3 Months UP Markets JAN2001-DEC2004, Sub-Sample 4												
J-K	**1-1**	**1-2**	**1-3**	**1-4**	**1-5**	**1-6**	**1-7**	**1-8**	**1-9**	**1-10**	**1-11**	**1-12**
N	21	21	21	21	21	21	21	20	19	19	19	18
Mean	-0.0187	-0.0191	-0.0112	-0.0135	-0.0124	-0.0073	-0.0056	-0.0020	0.0000	-0.0001	0.0004	0.0012
J-K	**2-1**	**2-2**	**2-3**	**2-4**	**2-5**	**2-6**	**2-7**	**2-8**	**2-9**	**2-10**	**2-11**	**2-12**
N	21	21	21	21	21	21	20	19	19	19	18	17
Mean	-0.0258	-0.0166	-0.0146	-0.0163	-0.0118	-0.0080	-0.0028	-0.0005	0.0008	0.0015	0.0020	0.0017
J-K	**3-1**	**3-2**	**3-3**	**3-4**	**3-5**	**3-6**	**3-7**	**3-8**	**3-9**	**3-10**	**3-11**	**3-12**
N	21	21	21	21	21	20	19	19	19	18	17	16
Mean	-0.0197	-0.0197	-0.0178	-0.0153	-0.0114	-0.0026	0.0000	0.0016	0.0030	0.0028	0.0024	0.0048
J-K	**4-1**	**4-2**	**4-3**	**4-4**	**4-5**	**4-6**	**4-7**	**4-8**	**4-9**	**4-10**	**4-11**	**4-12**
N	21	21	21	21	20	19	19	19	18	17	16	15
Mean	-0.0267	-0.0235	-0.0174	-0.0150	-0.0050	-0.0005	0.0020	0.0039	0.0049	0.0039	0.0065	0.0045
J-K	**5-1**	**5-2**	**5-3**	**5-4**	**5-5**	**5-6**	**5-7**	**5-8**	**5-9**	**5-10**	**5-11**	**5-12**
N	21	21	21	20	19	19	19	18	17	16	15	14
Mean	-0.0277	-0.0196	-0.0146	-0.0050	-0.0006	0.0026	0.0045	0.0060	0.0055	0.0087	0.0061	-0.0002
J-K	**6-1**	**6-2**	**6-3**	**6-4**	**6-5**	**6-6**	**6-7**	**6-8**	**6-9**	**6-10**	**6-11**	**6-12**
N	21	21	20	19	19	19	18	17	16	15	14	13
Mean	-0.0222	-0.0186	-0.0059	-0.0012	0.0026	0.0053	0.0066	0.0063	0.0103	0.0078	-0.0063	-0.0069
Panel B: Average Monthly Momentum Returns Following 3 Months DOWN Markets JAN2001-DEC2004, Sub-Sample 4												
J-K	**1-1**	**1-2**	**1-3**	**1-4**	**1-5**	**1-6**	**1-7**	**1-8**	**1-9**	**1-10**	**1-11**	**1-12**
N	26	25	24	23	22	21	20	20	20	19	18	18
Mean	-0.0246**	-0.0163*	-0.0127*	-0.0110*	-0.0097*	-0.0086*	-0.0096*	-0.0096**	-0.0094***	-0.0091***	-0.0081***	-0.0071**
J-K	**2-1**	**2-2**	**2-3**	**2-4**	**2-5**	**2-6**	**2-7**	**2-8**	**2-9**	**2-10**	**2-11**	**2-12**
N	25	24	23	22	21	20	20	20	19	18	18	18
Mean	-0.0202	-0.0150	-0.0130	-0.0098	-0.0100	-0.0122*	-0.0123**	-0.0124**	-0.0123***	-0.0103***	-0.0094**	-0.0092**
J-K	**3-1**	**3-2**	**3-3**	**3-4**	**3-5**	**3-6**	**3-7**	**3-8**	**3-9**	**3-10**	**3-11**	**3-12**
N	24	23	22	21	20	20	20	19	18	18	18	18
Mean	-0.0206	-0.0150	-0.0107	-0.0104	-0.0141*	-0.0139*	-0.0140**	-0.0150**	-0.0127**	-0.0113*	-0.0109*	-0.0109*
J-K	**4-1**	**4-2**	**4-3**	**4-4**	**4-5**	**4-6**	**4-7**	**4-8**	**4-9**	**4-10**	**4-11**	**4-12**
N	23	22	21	20	20	20	19	18	18	18	18	18
Mean	-0.0190	-0.0122	-0.0124	-0.0159*	-0.0153*	-0.0154*	-0.0165**	-0.0143**	-0.0131*	-0.0124*	-0.0127*	-0.0131**

Table B8 Continued

J-K	**5-1**	**5-2**	**5-3**	**5-4**	**5-5**	**5-6**	**5-7**	**5-8**	**5-9**	**5-10**	**5-11**	**5-12**
N	22	21	20	20	20	19	18	18	18	18	18	18
Mean	-0.0189	-0.0144	-0.0189*	-0.0175*	-0.0175*	-0.0185**	-0.0160*	-0.0150*	-0.0144*	-0.0142*	-0.0147*	-0.0147**
J-K	**6-1**	**6-2**	**6-3**	**6-4**	**6-5**	**6-6**	**6-7**	**6-8**	**6-9**	**6-10**	**6-11**	**6-12**
N	21	20	20	20	19	18	18	18	18	18	18	18
Mean	-0.0210*	-0.0225*	-0.0214*	-0.0200**	-0.0210**	-0.0184*	-0.0172*	-0.0167*	-0.0165**	-0.0165**	-0.0278***	0.0271***

*Note: Returns are computed using monthly data January 2005 – December 2008. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with the lowest past returns are denoted as losers. The figures in the table are average returns of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at the 10%, 5% and 1% significant levels respectively using T-test respectively. Market states are defined by the past 3 months' value weighted cumulative market returns.*

Appendix B9

Table B9 Average Monthly Momentum Returns Based on Past 3 Months Market States: Sub-Sample of 2009-2012

Panel A: Average Monthly Momentum Returns Following 3 Months UP Markets JAN2009-DEC2012, Sub-Sample 5												
J-K	**1-1**	**1-2**	**1-3**	**1-4**	**1-5**	**1-6**	**1-7**	**1-8**	**1-9**	**1-10**	**1-11**	**1-12**
N	26	25	24	23	22	21	20	19	19	19	18	17
Mean	-0.0153**	-0.0096**	-0.0052	-0.0039	-0.0064*	-0.0058**	-0.0050	-0.0020	-0.0022	-0.0011	-0.0002	0.0007
J-K	**2-1**	**2-2**	**2-3**	**2-4**	**2-5**	**2-6**	**2-7**	**2-8**	**2-9**	**2-10**	**2-11**	**2-12**
N	25	24	23	22	21	20	19	19	19	18	17	17
Mean	-0.0134**	-0.0081	-0.0035	-0.0071*	-0.0076*	-0.0072*	-0.0031	-0.0026	-0.0021	-0.0002	0.0009	0.0007
J-K	**3-1**	**3-2**	**3-3**	**3-4**	**3-5**	**3-6**	**3-7**	**3-8**	**3-9**	**3-10**	**3-11**	**3-12**
N	24	23	22	21	20	19	19	19	18	17	17	17
Mean	-0.0096	-0.0055	-0.0073	-0.0083	-0.0087	-0.0044	-0.0031	-0.0021	-0.0003	0.0016	0.0016	0.0010
J-K	**4-1**	**4-2**	**4-3**	**4-4**	**4-5**	**4-6**	**4-7**	**4-8**	**4-9**	**4-10**	**4-11**	**4-12**
N	23	22	21	20	19	19	19	18	17	17	17	17
Mean	-0.0093	-0.0108*	-0.0097	-0.0106	-0.0064	-0.0049	-0.0032	-0.0007	0.0014	0.0020	0.0015	0.0015
J-K	**5-1**	**5-2**	**5-3**	**0-04**	**5-5**	**5-6**	**5-7**	**5-8**	**5-9**	**5-10**	**5-11**	**5-12**
N	22	21	20	19	19	19	18	17	17	17	17	17
Mean	-0.0176**	-0.0135*	-0.0114	-0.0072	-0.0059	-0.0045	-0.0014	0.0013	0.0017	0.0017	0.0018	0.0016
J-K	**6-1**	**6-2**	**6-3**	**6-4**	**6-5**	**6-6**	**6-7**	**6-8**	**6-9**	**6-10**	**6-11**	**6-12**
N	21	20	19	19	19	18	17	17	17	17	14	13
Mean	-0.0179**	-0.0136*	-0.0060	-0.0057	-0.0044	-0.0013	0.0021	0.0027	0.0024	0.0029	-0.0064	-0.0068
Panel B: Average Monthly Momentum Returns Following 3 Months DOWN Markets JAN2009-DEC2012, Sub-Sample 5												
J-K	**1-1**	**1-2**	**1-3**	**1-4**	**1-5**	**1-6**	**1-7**	**1-8**	**1-9**	**1-10**	**1-11**	**1-12**
N	21	21	21	21	21	21	21	21	20	19	19	19
Mean	-0.0174**	-0.0168***	-0.0111**	-0.0058	-0.0048	-0.0040	-0.0042	-0.0040	-0.0028	-0.0039	-0.0040*	-0.0030
J-K	**2-1**	**2-2**	**2-3**	**2-4**	**2-5**	**2-6**	**2-7**	**2-8**	**2-9**	**2-10**	**2-11**	**2-12**
N	21	21	21	21	21	21	21	21	20	19	19	19
Mean	-0.0228**	-0.0159**	-0.0228**	-0.0083	-0.0045	-0.0035	-0.0037	-0.0040	-0.0028	-0.0026	-0.0041	-0.0035
J-K	**3-1**	**3-2**	**3-3**	**3-4**	**3-5**	**3-6**	**3-7**	**3-8**	**3-9**	**3-10**	**3-11**	**3-12**
N	21	21	21	21	21	21	20	19	19	19	18	17
Mean	-0.0189**	-0.0114	-0.0058	-0.0031	-0.0031	-0.0034	-0.0028	-0.0037	-0.0040	-0.0040	-0.0029	-0.0035
J-K	**4-1**	**4-2**	**4-3**	**4-4**	**4-5**	**4-6**	**4-7**	**4-8**	**4-9**	**4-10**	**4-11**	**4-12**
N	21	21	21	21	21	20	19	19	19	18	17	16
Mean	-0.0121	-0.0069	-0.0032	-0.0024	-0.0026	-0.0020	-0.0035	-0.0037	-0.0035	-0.0030	-0.0037	-0.0043

Table B9 Continued

J-K	**5-1**	**5-2**	**5-3**	**0-04**	**5-5**	**5-6**	**5-7**	**5-8**	**5-9**	**5-10**	**5-11**	**5-12**
N	21	21	21	21	20	19	19	19	18	17	16	15
Mean	-0.0095	-0.0061	-0.0041	-0.0034	-0.0023	-0.0042	-0.0049	-0.0045	-0.0035	-0.0044	-0.0052	-0.0060
J-K	**6-1**	**6-2**	**6-3**	**6-4**	**6-5**	**6-6**	**6-7**	**6-8**	**6-9**	**6-10**	**6-11**	**6-12**
N	21	21	21	20	19	19	19	18	17	16	18	18
Mean	-0.0093	-0.0072	-0.0054	-0.0034	-0.0053	-0.0058	-0.0057	-0.0040	-0.0047	-0.0058	0.0278***	0.0271***

*Note: Returns are computed using monthly data January 2009 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with the lowest past returns are denoted as losers. The figures in the table are average returns of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at the 10%, 5% and 1% significant levels respectively using T-test respectively. Market states are defined by the past 3 months' value weighted cumulative market returns.*

Appendix B10

Table B10 Average Mean Returns of UP and DOWN Markets in the US and the Chinese Stock Market: Market States Defined by Different lengths of Prior Value Weighted Market Index

Average Mean Returns of UP and DOWN for U.S. and China Stock Market Market-states Defined by Prior 3 Months Value Weighted Market Index							
	U.S. 1927 -1995	**China 1993-2012**	**China 1993-1996**	**China 1997-2000**	**China 2001-2004**	**China 2005-2008**	**China 2009-2012**
UP	0.0254***	0.0609***+++^^^	0.0937*^^^	0.0685**	0.0250**	0.0937***+++^^^	0.0320*
	(13.27)	(4.85)	(1.81)	(2.22)	(2.56)	(4.51)	(1.83)
DOWN	-0.0244***	-0.0428***++^^	-0.0629***+^^	-0.0230*	-0.0406***^^	-0.0620***+^	-0.0192
	(-6.47)	(-5.82)	(-3.22)	(-1.97)	(-4.34)	(-2.90)	(-1.14)

*Note: The returns of UP and DOWN market states are the average monthly returns. *, ** and *** indicate the results are significant at the 10%, 5% and 1% significant levels respectively using T-Test. +, ++ and +++ indicate the results are significant at the 10%, 5% and 1% significant levels respectively using non-parametric test. ^, ^^ and ^^^ indicate the average monthly returns of UP and DOWN market states are significantly different from the average returns of UP and DOWN in the US market at the 10%, 5% and 1% significant levels respectively.*

Appendix B11

Table B11 Percentage of UP/DOWN Market States to Overall Market State in the Chinese Stock Market and the U.S. Stock Market

Panel A: Percentage of UP/DOWN Market States to Overall Market State in the Chinese Stock Market 1993-2012				
Percentage UP/DOWN	Conditional on Past 3 Months' Market Returns	Conditional on Past 6 Months' Market Returns	Conditional on Past 12 Months' Market Returns	Conditional on Past 24 Months' Market Returns
% of DOWN	56.67%	53.75%	57.92%	52.5%
% of UP	54.33%	46.25%	42.08%	47.5%
Panel B: Percentage of UP/DOWN Market States to Overall Market State in the U.S. Stock Market 1965-1989				
Percentage UP/DOWN	Conditional on Past 3 Months' Market Returns	Conditional on Past 6 Months' Market Returns	Conditional on Past 12 Months' Market Returns	Conditional on Past 24 Months' Market Returns
% of DOWN	33%	31.33%	25.33%	11%
% of UP	67%	69.67%	74.67%	89%

Note: The percentage of UP/DOWN market states to overall market state is computed by the number of UP/DOWN market states in the given period divided by the total number of the months in that given period. For example, the number of DOWN and UP market states conditional on the past 3 months' value weighted cumulative market returns is 136 and 104 respectively. The total number of months in the period of 1993 to 2012 is 240. So, the percentages of DOWN and UP market states to overall market state are 56.67% (136/240) and 54.33% (104/240) respectively. The market states are defined by the past 3, 6, 12, 24 months' value weighted cumulative market returns. The period of 1965 to 1989 is the same period as used in Jegadeesh and Titman (1993). The data used to compute the cumulative market returns is described in Section 2.3, Chapter 2.

Appendix C1

Table C1 Momentum Returns under Different Market Dynamics Following Past 3-month Cumulative Value-weighted Market Returns

Panel A: Results of Momentum Strategies under (UP, UP) conditional on Past 3-month Market Returns												
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0111	-0.0112*	-0.0054	-0.0055	-0.0046	-0.0037	-0.0028	-0.0033	-0.0023	-0.0022	-0.0013	-0.0016
1	13	14	15	16	17	18	19	20	21	22	23	24
	-0.0017	-0.0018	-0.0024	-0.0019	-0.0027	-0.0026	-0.0023	-0.0019	-0.0019	-0.0018	-0.0022	-0.0023
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
2	-0.0176*	-0.0090	-0.0055	-0.0054	-0.0047	-0.0034	-0.0035	-0.0028	-0.0022	-0.0014	-0.0009	-0.0013
	13	14	15	16	17	18	19	20	21	22	23	24
	-0.0014	-0.0020	-0.0018	-0.0021	-0.0024	-0.0019	-0.0023	-0.0024	-0.0022	-0.0024	-0.0028	-0.0024
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
3	-0.0102	-0.0068	-0.0038	-0.0041	-0.0029	-0.0028	-0.0024	-0.0021	-0.0010	-0.0011	-0.0010	-0.0014
	13	14	15	16	17	18	19	20	21	22	23	24
	-0.0021	-0.0019	-0.0026	-0.0028	-0.0028	-0.0028	-0.0028	-0.0028	-0.0031	-0.0034	-0.0034	-0.0034
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
4	-0.0107	-0.0064	-0.0044	-0.0037	-0.0032	-0.0022	-0.0016	-0.0006	0.0001	-0.0001	-0.0003	-0.0012
	13	14	15	16	17	18	19	20	21	22	23	24
	-0.0014	-0.0020	-0.0024	-0.0021	-0.0032	-0.0029	-0.0028	-0.0030	-0.0034	-0.0032	-0.0035	-0.0036
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
5	-0.0109	-0.0079	-0.0042	-0.0038	-0.0027	-0.0021	-0.0010	-0.0006	-0.0002	-0.0003	-0.0008	-0.0008
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0016	-0.0022	-0.0023	-0.0038	-0.0035	-0.0033	-0.0036	-0.0039	-0.0038	-0.0039	-0.0041	-0.0042
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
6	-0.0127	-0.0082	-0.0047	-0.0032	-0.0026	-0.0014	-0.0009	-0.0010	-0.0009	-0.0017	-0.0016	-0.0025
	13	14	15	16	17	18	19	20	21	22	23	24
	-0.0030	-0.0031	-0.0045	-0.0043	-0.0043	-0.0046	-0.0048	-0.0047	-0.0048	-0.0049	-0.0051	-0.0061
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
7	-0.0106	-0.0076	-0.0031	-0.0027	-0.0018	-0.0012	-0.0012	-0.0014	-0.0017	-0.0019	-0.0024	-0.0031
	13	14	15	16	17	18	19	20	21	22	23	24
	-0.0032	-0.0052	-0.0047	-0.0046	-0.0049	-0.0050	-0.0049	-0.0051	-0.0053	-0.0055	-0.0069	-0.0069
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
8	-0.0109	-0.0055	-0.0024	-0.0014	-0.0010	-0.0011	-0.0016	-0.0022	-0.0019	-0.0028	-0.0033	-0.0035
	13	14	15	16	17	18	19	20	21	22	23	24
	-0.0055	-0.0053	-0.0052	-0.0054	-0.0057	-0.0055	-0.0055	-0.0058	-0.0059	-0.0073	-0.0076	-0.0074
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
9	-0.0076	-0.0041	-0.0011	-0.0006	-0.0007	-0.0015	-0.0020	-0.0024	-0.0031	-0.0038	-0.0037	-0.0060
	13	14	15	16	17	18	19	20	21	22	23	24
	-0.0547	-0.0056	-0.0058	-0.0060	-0.0059	-0.0058	-0.0060	-0.0062	-0.0078	-0.0080	-0.0080	-0.0081

Table C1, Panel A Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
10	-0.0075	-0.0030	-0.0010	-0.0013	-0.0018	-0.0023	-0.0024	-0.0036	-0.0038	-0.0038	-0.0064	-0.0057
	13	14	15	16	17	18	19	20	21	22	23	24
	-0.0058	-0.0061	-0.0062	-0.0061	-0.0062	-0.0062	-0.0065	-0.0081	-0.0082	-0.0081	-0.0084	-0.0085
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
11	-0.0040	-0.0029	-0.0018	-0.0024	-0.0033	-0.0035	-0.0044	-0.0052	-0.0048	-0.0073	-0.0064	-0.0065
	13	14	15	16	17	18	19	20	21	22	23	24
	-0.0065	-0.0069	-0.0071	-0.0070	-0.0069	-0.0071	-0.0071	-0.0088	-0.0090	-0.0088	-0.0090	-0.0093
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
12	-0.0065	-0.0047	-0.0034	-0.0042	-0.0040	-0.0045	-0.0050	-0.0052	-0.0077	-0.0066	-0.0065	-0.0069
	13	14	15	16	17	18	19	20	21	22	23	24
	-0.0073	-0.0074	-0.0073	-0.0074	-0.0077	-0.0092	-0.0094	-0.0091	-0.0093	-0.0094	-0.0097	-0.0098*
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
13	-0.0072	-0.0051	-0.0038	-0.0041	-0.0053	-0.0057	-0.0057	-0.0084	-0.0072	-0.0072	-0.0072	-0.0076
	13	14	15	16	17	18	19	20	21	22	23	24
	-0.0078	-0.0078	-0.0080	-0.0081	-0.0099	-0.0101	-0.0098	-0.0100	-0.0101*	-0.0102*	-0.0104*	-0.0105*
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
14	-0.0073	-0.0066	-0.0043	-0.0053	-0.0057	-0.0058	-0.0087	-0.0074	-0.0072	-0.0074	-0.0076	-0.0077
	13	14	15	16	17	18	19	20	21	22	23	24
	-0.0079	-0.0081	-0.0084	-0.0102	-0.0103	-0.0100	-0.0102	-0.0104	-0.0106*	-0.0107*	-0.0110*	-0.0110*
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
15	-0.0083	-0.0055	-0.0049	-0.0058	-0.0055	-0.0082	-0.0074	-0.0073	-0.0074	-0.0078	-0.0078	-0.0080
	13	14	15	16	17	18	19	20	21	22	23	24
	-0.0083	-0.0085	-0.0105	-0.0106	-0.0103	-0.0105	-0.0106	-0.0108	-0.0109*	-0.0110*	-0.0112*	-0.0112*
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
16	-0.0077	-0.0073	-0.0067	-0.0063	-0.0088	-0.0075	-0.0076	-0.0080	-0.0081	-0.0080	-0.0080	-0.0082
	13	14	15	16	17	18	19	20	21	22	23	24
	-0.0085	-0.0106	-0.0108	-0.0105	-0.0106	-0.0107	-0.0110	-0.0112*	-0.0113*	-0.0115*	-0.0116*	-0.0116*
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
17	-0.0111	-0.0096	-0.0068	-0.0087	-0.0076	-0.0074	-0.0079	-0.0083	-0.0082	-0.0081	-0.0082	-0.0085
	13	14	15	16	17	18	19	20	21	22	23	24
	-0.0108	-0.0111	-0.0107	-0.0109	-0.0111	-0.0113	-0.0115*	-0.0117*	-0.0117*	-0.0117*	-0.0118*	-0.0107
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
18	-0.0125	-0.0088	-0.0077	-0.0069	-0.0070	-0.0075	-0.0081	-0.0081	-0.0082	-0.0084	-0.0087	-0.0111
	13	14	15	16	17	18	19	20	21	22	23	24
	-0.0114	-0.0112	-0.0114	-0.0114	-0.0117	-0.0118	-0.0120*	-0.0121*	-0.0120*	-0.0121*	-0.0111	-0.0115
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
19	-0.0086	-0.0080	-0.0059	-0.0064	-0.0073	-0.0078	-0.0078	-0.0081	-0.0082	-0.0084	-0.0109	-0.0113
	13	14	15	16	17	18	19	20	21	22	23	24
	-0.0113	-0.0116	-0.0117	-0.0119	-0.0121	-0.0122	-0.0124*	-0.0124*	-0.0124*	-0.0112	-0.0118	-0.0116

Table C1, Panel A Continued

20	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0078	-0.0068	-0.0054	-0.0067	-0.0077	-0.0076	-0.0079	-0.0084	-0.0088	-0.0114	-0.0117	-0.0117
	13	14	15	16	17	18	19	20	21	22	23	24
	-0.0121	-0.0123	-0.0124	-0.0126	-0.0127*	-0.0129*	-0.0129*	-0.0130*	-0.0116	-0.0120	-0.0120	-0.0082
21	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0093	-0.0066	-0.0067	-0.0077	-0.0077	-0.0081	-0.0088	-0.0092	-0.0119	-0.0121	-0.0120	-0.0124
	13	14	15	16	17	18	19	20	21	22	23	24
	-0.0127	-0.0140	-0.0131	-0.0133*	-0.0134*	-0.0134*	-0.0135*	-0.0120	-0.0124	-0.0124	-0.0085	-0.0092
22	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0071	-0.0076	-0.0073	-0.0075	-0.0082	-0.0088	-0.0092	-0.0122	-0.0125	-0.0125	-0.0126	-0.0128
	13	14	15	16	17	18	19	20	21	22	23	24
	-0.0133	-0.0135	-0.0137*	-0.0139*	-0.0138*	-0.0139*	-0.0123	-0.0128	-0.0126	-0.0086	-0.0093	-0.0093
23	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0113	-0.0095	-0.0079	-0.0090	-0.0098	-0.0101	-0.0131	-0.0136*	-0.0137*	-0.0137*	-0.0137	-0.0141
	13	14	15	16	17	18	19	20	21	22	23	24
	-0.0145*	-0.0147*	-0.0148*	-0.0148*	-0.0149*	-0.0131	-0.0135	-0.0135	-0.0092	-0.0099	-0.0098	-0.0059
24	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0105	-0.0080	-0.0078	-0.0087	-0.0096	-0.0124	-0.0131	-0.0134	-0.0137	-0.0138	-0.0141	-0.0144*
	13	14	15	16	17	18	19	20	21	22	23	24
	-0.0147*	-0.0149*	-0.015*	-0.0150*	-0.0132	-0.0137	-0.0135	-0.0093	-0.0100	-0.0100	-0.0060	-0.0050

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with lowest past returns are denoted as losers. The figures in the table are average returns of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at 10%, 5% and 1% using T-test respectively. Market Dynamics are defined by the past 3 months' value weighted cumulative market returns.*

Table C1 Continued

Panel B: Results of Momentum Strategies under (UP, DOWN) conditional on Past 3-month Market Return												
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0089	-0.0156*	-0.0133*	-0.0117**	-0.0108**	-0.0083**	-0.0053**	-0.0045*	-0.0038*	-0.0031	-0.0024	-0.0016
1	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0022	-0.0020	-0.0018	-0.0021	-0.0018	-0.0017	-0.0014	-0.0014	-0.0008	-0.0012	-0.0012	-0.0012
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
2	-0.0203	-0.0210*	-0.0174**	-0.1657**	-0.0135**	-0.0093**	-0.0066*	-0.0060*	-0.0052*	-0.0041	-0.0031	-0.0029
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0029	-0.0031	-0.0027	-0.0030	-0.0026	-0.0021	-0.0019	-0.0013	-0.0013	-0.0014	-0.0013	-0.0014
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
3	-0.0248*	-0.0248**	-0.0217**	-0.0180**	-0.0132**	-0.0091**	-0.0067*	-0.0061	-0.0049	-0.0039	-0.0032	-0.0033
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0032	-0.0031	-0.0032	-0.0034	-0.0028	-0.0022	-0.0018	-0.0016	-0.0013	-0.0014	-0.0014	-0.0013
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
4	-0.0268**	-0.0260**	-0.0216**	-0.0161**	-0.0115**	-0.0084**	-0.0065	-0.0054	-0.0041	-0.0037	-0.0034	-0.0030
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0031	-0.0029	-0.0030	-0.0029	-0.0025	-0.0019	-0.0017	-0.0014	-0.0012	-0.0013	-0.0012	-0.0014
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
5	-0.0292**	-0.0252**	-0.0189**	-0.0135**	-0.0103*	-0.0078	-0.0060	-0.0045	-0.0039	-0.0033	-0.0028	-0.0028
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0030	-0.0028	-0.0027	-0.0027	-0.0020	-0.0017	-0.0013	-0.0013	-0.0012	-0.0012	-0.0014	-0.0018
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
6	-0.0272***	-0.02126**	-0.0158**	-0.0122**	-0.0094	-0.0067	-0.0046	-0.0041	-0.0035	-0.0026	-0.0025	-0.0025
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0025	-0.0024	-0.0023	-0.0019	-0.0017	-0.0011	-0.0008	-0.0008	-0.0005	-0.0008	-0.0011	-0.0016
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
7	-0.0196**	-0.0161*	-0.0126*	-0.0092	-0.0067	-0.0042	-0.0031	-0.0026	-0.0017	-0.0014	-0.0014	-0.0015
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0014	-0.0013	-0.0009	-0.0011	-0.0007	-0.0002	-0.0001	0.0010	-0.0002	-0.0005	-0.0009	-0.0013
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
8	-0.0165*	-0.0151*	-0.0121	-0.0090	-0.0058	-0.0043	-0.0029	-0.0021	-0.0020	-0.0019	-0.0019	-0.0018
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0019	-0.0015	-0.0015	-0.0014	-0.0010	-0.0007	-0.0004	-0.0006	-0.0008	-0.0011	-0.0015	-0.0020
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
9	-0.0167*	-0.0144	-0.0110	-0.0073	-0.0053	-0.0035	-0.0022	-0.0021	-0.0020	-0.0019	-0.0018	-0.0018
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0016	-0.0016	-0.0013	-0.0013	-0.0011	-0.0007	-0.0007	-0.0011	-0.0014	-0.0016	-0.0020	-0.0024

Table C1, Panel B Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
10	-0.0154	-0.0137	-0.0103	-0.0075	-0.0055	-0.0038	-0.0033	-0.0032	-0.0029	-0.0025	-0.0022	-0.0018
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0017	-0.0014	-0.0014	-0.0014	-0.0009	-0.0089	-0.0015	-0.0018	-0.0020	-0.0024	-0.0027	-0.0121
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
11	-0.0151	-0.0133	-0.0107	-0.0081	-0.0059	-0.0050	-0.0042	-0.0040	-0.0034	-0.0029	-0.0023	-0.0022
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0020	-0.0020	-0.0019	-0.0017	-0.0016	-0.0020	-0.0021	-0.0023	-0.0026	-0.0028	-0.0012	-0.0017
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
12	-0.0141	-0.0134	-0.0104	-0.0074	-0.0063	-0.0052	-0.0047	-0.0040	-0.0035	-0.0026	-0.0025	-0.0023
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0024	-0.0022	-0.0019	-0.0020	-0.0023	-0.0024	-0.0024	-0.0027	-0.0030	-0.0012	-0.0016	-0.0020
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
13	-0.0172*	-0.0152*	-0.0115	-0.0089	-0.0074	-0.0064	-0.0053	-0.0044	-0.0033	-0.0030	-0.0025	-0.0024
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0024	-0.0020	-0.0021	-0.0027	-0.0028	-0.0028	-0.0031	-0.0034	-0.0016	-0.0020	-0.0024	-0.0026
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
14	-0.0171*	-0.0135	-0.0106	-0.0086	-0.0069	-0.0052	-0.0040	-0.0030	-0.0030	-0.0022	-0.0021	-0.0019
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0018	-0.0019	-0.0026	-0.0029	-0.0029	-0.0031	-0.0033	-0.0015	-0.0018	-0.0022	-0.0024	0.0027
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
15	-0.0142	-0.0133	-0.0110	-0.0084	-0.0065	-0.0049	-0.0034	-0.0035	-0.0027	-0.0022	-0.0019	-0.0017
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0018	-0.0025	-0.0027	-0.0027	-0.0029	-0.0031	-0.0013	-0.0016	-0.0018	-0.0021	-0.0024	-0.0027
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
16	-0.0157*	-0.0142	-0.0114	-0.0084	-0.0062	-0.0043	-0.0043	-0.0037	-0.0031	-0.0027	-0.0024	-0.0024
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0031	-0.0033	-0.0034	-0.0037	-0.0039	-0.0018	-0.0021	-0.0024	-0.0025	-0.0029	-0.0031	-0.0035
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
17	-0.0165*	-0.0138	-0.0101	-0.0072	-0.0051	-0.0046	-0.0038	-0.0033	-0.0028	-0.0021	-0.0022	-0.0029
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0032	-0.0032	-0.0035	-0.0037	-0.0016	-0.0018	-0.0021	-0.0023	-0.0025	-0.0028	-0.0031	-0.0033
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
18	-0.0155	-0.0130	-0.0102	-0.0073	-0.0060	-0.0043	-0.0033	-0.0029	-0.0020	-0.0018	-0.0025	-0.0026
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0029	-0.0032	-0.0035	-0.0015	-0.0016	-0.0019	-0.0020	-0.0023	-0.0024	-0.0028	-0.0032	-0.0035
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
19	-0.0146	-0.0120	-0.0093	-0.0072	-0.0053	-0.0040	-0.0032	-0.0023	-0.0020	-0.0028	-0.0030	-0.0030
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0034	-0.0037	-0.0018	-0.0018	-0.0021	-0.0021	-0.0023	-0.0026	-0.0028	-0.0032	-0.0035	-0.0036

Table C1 Panel B Continued

20	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0137	-0.0114	-0.0094	-0.0067	-0.0047	-0.0033	-0.0022	-0.0020	-0.0027	-0.0026	-0.0026	-0.0029
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0034	-0.0015	-0.0015	-0.0016	-0.0017	-0.0019	-0.0021	-0.0024	-0.0027	-0.0030	-0.0032	-0.0033
21	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0141	-0.0127	-0.0093	-0.0064	-0.0043	-0.0028	-0.0023	-0.0033	-0.0033	-0.0029	-0.0032	-0.0034
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0015	-0.0017	-0.0019	-0.0020	-0.0021	-0.0022	-0.0025	-0.0028	-0.0030	-0.0031	-0.0034	-0.0034
22	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0158*	-0.0130	-0.0101	-0.0071	-0.0049	-0.0038	-0.0043	-0.0043	-0.0040	-0.0039	-0.0039	-0.0018
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0021	-0.0024	-0.0024	-0.0027	-0.0028	-0.0029	-0.0031	-0.0033	-0.0033	-0.0036	-0.0036	-0.0038
23	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.01599*	-0.0131	-0.0103	-0.0071	-0.0058	-0.0060	-0.0056	-0.0054	-0.0051	-0.0048	-0.0026	-0.0026
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0030	-0.0029	-0.0032	-0.0035	-0.0036	-0.0038	-0.0039	-0.0039	-0.0040	-0.0041	-0.0042	-0.0042
24	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0141	-0.0131	-0.0098	-0.0074	-0.0071	-0.0067	-0.0061	-0.0058	-0.0053	-0.0026	-0.0025	-0.0026
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0028	-0.0029	-0.0030	-0.0032	-0.0035	-0.0036	-0.0036	-0.0038	-0.0037	-0.0039	-0.0040	-0.0040

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with lowest past returns are denoted as losers. The figures in the table are average returns of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at 10%, 5% and 1% using T-test respectively. Market Dynamics are defined by the past 3 months' value weighted cumulative market returns.*

Table C1 Continued

Panel C: Results of Momentum Strategies under (DOWN, DOWN) conditional on Past 3-month Market Return												
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	-0.0103	-0.0055*	-0.0023	-0.0009	-0.0004	0.0007	0.0009	-0.0003	0.0004	-0.0004	-0.0005	-0.0003
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0011	-0.0010	-0.0014	-0.0014	-0.0017	-0.0016	-0.0015	-0.0016	-0.0014	-0.0013	-0.0014	-0.0012
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
2	-0.0061	0.0001	0.0014	0.0031	0.0032	0.0038	0.0026	0.0019	0.0011	0.0006	0.0009	0.0000
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0003	-0.0013	-0.0016	-0.0021	-0.0023	-0.0014	-0.0015	-0.0016	-0.0015	-0.0016	-0.0058	-0.0010
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
3	-0.0033	0.0012	0.0029	0.0041	0.0041	0.0032	0.0027	0.0012	0.0012	0.0006	0.0001	0.0000
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0012	-0.0012	-0.0020	-0.0023	-0.0017	-0.0016	-0.0017	-0.0017	-0.0017	-0.0016	-0.0012	-0.0009
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
4	-0.0016	0.0037	0.0045	0.0052	0.0042	0.0035	0.0019	0.0009	0.0008	-0.0003	-0.0001	-0.0015
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0020	-0.0028	-0.0034	-0.0025	-0.0026	-0.0025	-0.0026	-0.0026	-0.0024	-0.0019	-0.0016	-0.0015
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
5	0.0032	0.0048	0.0056	0.0045	0.0035	0.0018	0.0011	0.0006	-0.0008	-0.0008	-0.0023	-0.0023
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0033	-0.0039	-0.0030	-0.0034	-0.0033	-0.0032	-0.0032	-0.0031	-0.0024	-0.0021	-0.0020	-0.0019
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
6	0.0023	0.0049	0.0043	0.0039	0.0019	0.0011	0.0004	-0.0013	-0.0015	-0.0031	-0.0031	-0.0038
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0047	-0.0037	-0.0041	-0.0042	-0.0042	-0.0041	-0.0039	-0.0032	-0.0028	-0.0028	-0.0027	-0.0025
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
7	0.0023	0.0028	0.0028	0.0015	0.0003	-0.0002	-0.0021	-0.0025	-0.0042	-0.0041	-0.0049	-0.0055
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0046	-0.0049	-0.0052	-0.0053	-0.0052	-0.0050	-0.0043	-0.0039	-0.0037	-0.0035	-0.0034	-0.0026
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
8	0.0008	0.0016	0.0010	0.0003	-0.0001	-0.0018	-0.0023	-0.0045	-0.0044	-0.0053	-0.0062	-0.0050
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0006	-0.0057	-0.0059	-0.0061	-0.0058	-0.0050	-0.0045	-0.0044	-0.0041	-0.0040	-0.0032	-0.0030
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
9	-0.0001	0.0003	0.0004	0.0000	-0.0022	-0.0025	-0.0049	-0.0051	-0.0061	-0.0070	-0.0059	-0.0063
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0066	-0.0066*	-0.0069*	-0.0068*	-0.0061	-0.0055	-0.0053	-0.0051	-0.0048	-0.0039	-0.0038	-0.0037

Table C1, Panel C Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
10	-0.0008	-0.0009	-0.0005	-0.0029	-0.0030	-0.0057	-0.0059	-0.0070	-0.0078	-0.0065	-0.0069	-0.0071
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0074*	-0.0075*	-0.0075*	-0.0069*	-0.0062	-0.0060	-0.0057	-0.0055	-0.0045	-0.0044	-0.0043	-0.0041
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
11	-0.0035	-0.0009	-0.0032	-0.0033	-0.0060	-0.0063	-0.0074	-0.0086	-0.0072	-0.0076	-0.0077*	-0.0080*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0082*	-0.0081*	-0.0076*	-0.0071*	-0.0067	-0.0064	-0.0061	-0.0052	-0.0049	-0.0048	-0.0046	-0.0041
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
12	-0.0016	-0.0042	-0.0041	-0.0066	-0.0070	-0.0081	-0.0090*	-0.0078	-0.0082*	-0.0083*	-0.0085*	-0.0087*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0088*	-0.0082*	-0.0077*	-0.0076*	-0.0072*	-0.0068*	-0.0058	-0.0056	-0.0053	-0.0052	-0.0047	-0.0050
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
13	-0.0077	-0.0059	-0.0080	-0.0079	-0.0090	-0.0100*	-0.0089*	-0.0093*	-0.0094*	-0.0095**	-0.0096**	-0.0095***
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0090*	-0.0085*	-0.0084*	-0.0081*	-0.0078*	-0.0066	-0.0064	-0.0061	-0.0058	-0.0053	-0.0056	-0.0052
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
14	-0.0075	-0.0095	-0.0089	-0.0098*	-0.0106*	-0.0096*	-0.0101*	-0.0103**	-0.0103**	-0.0104**	-0.0103**	-0.0096**
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0092*	-0.0091*	-0.0089*	-0.0086*	-0.0074*	-0.0070*	-0.0068*	-0.0066*	-0.0060	-0.0062*	-0.0058	-0.0051
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
15	-0.0111*	-0.0109*	-0.0106*	-0.0114*	-0.0099*	-0.0102*	-0.0104*	-0.0105**	-0.0107**	-0.0105**	-0.0010**	-0.0095*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0094*	-0.0093**	-0.0091**	-0.008*	-0.0076*	-0.0073*	-0.0071*	-0.0066	-0.0067*	-0.0063	-0.0055	-0.0054
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
16	-0.0114*	-0.0113*	-0.0117*	-0.0102*	-0.0104*	-0.0105*	-0.0109**	-0.0112**	-0.0100*	-0.0103**	-0.0100*	-0.0096*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0096**	-0.0094**	-0.0084*	-0.0081*	-0.0077*	-0.0074*	-0.0069*	-0.0071*	-0.0065	-0.0058	-0.0056	-0.0054
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
17	-0.0116*	-0.0124**	-0.0106*	-0.0109*	-0.0110*	-0.0109*	-0.0113**	-0.0112**	-0.0104**	-0.0098*	-0.0097*	-0.0097*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0097**	-0.0087*	-0.0055*	-0.008*	-0.0078*	-0.0072*	-0.007*	-0.0068	-0.0060	-0.0059	-0.0057	-0.0055
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
18	-0.0137**	-0.0115*	-0.0113*	-0.0113*	-0.0114*	-0.0115**	-0.0112**	-0.0106*	-0.0101*	-0.0099*	-0.0099*	-0.0099**
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0090*	-0.0089*	-0.0087*	-0.0084*	-0.0078*	-0.0079*	-0.0073*	-0.0066	-0.0063	-0.0061	-0.0058	-0.0056
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
19	-0.0126*	-0.0120*	-0.01099*	-0.0111*	-0.0112*	-0.0111*	-0.0104*	-0.0101*	-0.0100*	-0.0100*	-0.0100*	-0.0091*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.00912*	-0.00894*	-0.0088*	-0.00829*	-0.00839*	-0.00778*	-0.0070	-0.0068	-0.0064	-0.0062	-0.0060	-0.0057

Table C1, Panel C Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
20	-0.0137**	-0.0119*	-0.0113*	-0.0115*	-0.0113*	-0.0103*	-0.0100*	-0.0101*	-0.0102*	-0.0102*	-0.0093*	-0.0092*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0092*	-0.0091*	-0.0087*	-0.0088*	-0.0082*	-0.0074	-0.0072	-0.0068	-0.0065	-0.0063	-0.0061	-0.0058
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
21	-0.0121*	-0.0116*	-0.0114*	-0.0110*	-0.0099*	-0.0096*	-0.0098*	-0.0099*	-0.0100*	-0.0092*	-0.0091*	-0.0091*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0091*	-0.0088*	-0.0090*	-0.0084*	-0.0077*	-0.0073	-0.0070	-0.0067	-0.0064	-0.0062	-0.0059	-0.0056
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
22	-0.0124*	-0.0119*	-0.0114*	-0.0097	-0.0094	-0.0097*	-0.0098*	-0.0100*	-0.0092*	-0.0091*	-0.0092*	-0.0092*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0090*	-0.0093*	-0.0089*	-0.0083*	-0.0079*	-0.0074	-0.0071	-0.0068	-0.0065	-0.0062	-0.0059	-0.0056
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
23	-0.0134**	-0.0120*	-0.0101	-0.0095	-0.0098	-0.0100*	-0.0102*	-0.0094*	-0.0094*	-0.0094*	-0.0094*	-0.0092*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0096*	-0.0092*	-0.0087*	-0.0084*	-0.0080*	-0.0075*	-0.0071	-0.0068	-0.0064	-0.0061	-0.0068	-0.0055
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
24	-0.0119*	-0.0096	-0.0088	-0.0090	-0.0092	-0.0095	-0.0088	-0.0098	-0.0090*	-0.0090*	-0.0090*	-0.0095*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0093*	-0.0088*	-0.0086*	-0.0083*	-0.0079*	-0.0074	-0.0070	-0.0066	-0.0063	-0.0060	-0.0058	-0.0055

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with lowest past returns are denoted as losers. The figures in the table are average returns of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at 10%, 5% and 1% using T-test respectively. Market Dynamics are defined by the past 3 months' value weighted cumulative market returns.*

Table C1 Continued

Panel D: Results of Momentum Strategies under (DONW, UP) conditional on Past 3-month Market Return

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	-0.0231*	-0.0212**	-0.0144***	-0.0077**	-0.0058*	-0.0044	-0.0018	-0.0024	-0.0021	-0.0019	-0.0020	-0.0010
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0003	-0.0003	-0.0003	0.0001	0.0001	0.0003	0.0003	-0.0002	-0.0003	-0.0008	-0.0010	-0.0012
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
2	-0.0299**	-0.0219***	-0.0154**	-0.0107**	-0.0082**	-0.0043	-0.0015	-0.0015	-0.0009	-0.0019	-0.0010	0.0001
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0007	0.0007	0.0001	0.0001	0.0001	0.0002	0.0011	0.0007	0.0003	-0.0007	-0.0004	-0.0007
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
3	-0.0301***	-0.0177**	-0.0122*	-0.0086	-0.0045	-0.0017	-0.0002	-0.0004	-0.0005	0.0000	0.0010	0.0018
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0021	0.0022	0.0023	0.0025	0.0025	0.0021	0.0017	0.0010	-0.0001	-0.0002	-0.0002	-0.0004
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
4	-0.0193**	-0.0145**	-0.0102	-0.0051	-0.0007	0.0010	0.0023	0.0011	0.0020	0.0025	0.0030	0.0035
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0039	0.0039	0.0039	0.0040	0.0036	0.0031	0.0025	0.0010	0.0009	0.0006	0.0007	-0.0010
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
5	-0.0155*	-0.0121*	-0.0057	-0.0002	0.0014	0.0028	0.0017	0.0022	0.0030	0.0033	0.0036	0.0042
	13	14	15	16	17	18	19	20	21	22	23	24
	0.0045	0.0043	0.0045	0.0043	0.0038	0.0031	0.0013	0.0011	0.0008	0.0007	-0.0013	-0.0014
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
6	-0.0122	-0.0055	-0.0013	0.0015	0.0029	0.0026	0.0038	0.0043	0.0050	0.0051	0.0055	0.0057
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0058	0.0059	0.0056	0.0052	0.0044	0.0027	0.0022	0.0017	0.0015	-0.0008	-0.0009	-0.0012
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
7	-0.0044	-0.0005	0.0019	0.0040	0.0032	0.0048	0.0057	0.0060	0.0061	0.0063	0.0067	0.0068
	13	14	15	16	17	18	19	20	21	22	23	24
	0.0071	0.0067	0.0063	0.0055	0.0035	0.0032	0.0026	0.0022	-0.0004	-0.0006	-0.0009	-0.0011
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
8	-0.0021	-0.0016	0.0013	0.0022	0.0038	0.0054	0.0061	0.0059	0.0066	0.0066	0.0066	0.0068
	13	14	15	16	17	18	19	20	21	22	23	24
	0.0068	0.0063	0.0057	0.0035	0.0032	0.0027	0.0023	-0.0006	-0.0009	-0.0013	-0.0014	-0.0017
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
9	-0.0049	-0.0020	-0.0001	0.0031	0.0049	0.0060	0.0065	0.0067	0.0069	0.0068	0.0070	0.0069
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0065	0.0058	0.0036	0.0033	0.0029	0.0027	-0.0005	-0.0008	-0.0013	-0.0015	-0.0017	0.0002

Table C1, Panel D Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
10	-0.0051	-0.0036	0.0008	0.0044	0.0055	0.0066	0.0072	0.0072	0.0074	0.0075	0.0073	0.0070
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0064	0.0040	0.0038	0.0033	0.0030	-0.0003	-0.0006	-0.0012	-0.0014	-0.0018	0.0002	-0.0001
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
11	-0.0067	-0.0015	0.0026	0.0053	0.0062	0.0073	0.0078	0.0078	0.0079	0.0075	0.0071	0.0066
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0041	0.0038	0.0034	0.0032	-0.0003	-0.0006	-0.0011	-0.0015	-0.0019	0.0003	0.0000	-0.0001
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
12	-0.0012	0.0020	0.0046	0.0066	0.0076	0.0085	0.0088	0.0088	0.0085	0.0081	0.0073	0.0049
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0047	0.0043	0.0040	0.0003	0.0001	-0.0005	-0.0009	-0.0014	0.0004	0.0001	0.0000	-0.0001
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
13	-0.0004	0.0017	0.0047	0.0069	0.0077	0.0083	0.0088	0.0085	0.0081	0.0073	0.0048	0.0046
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0042	0.0038	0.0001	-0.0001	-0.0006	-0.0009	-0.0014	0.0002	-0.0002	-0.0003	-0.0004	-0.0004
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
14	-0.0005	0.0021	0.0056	0.0078	0.0086	0.0091	0.0091	0.0088	0.0079	0.0051	0.0050	0.0046
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0041	0.0002	0.0000	-0.0004	-0.0008	-0.0012	0.0005	-0.0001	-0.0003	-0.0004	-0.0004	-0.0005
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
15	0.0004	0.0033	0.0056	0.0078	0.0087	0.0088	0.0086	0.0078	0.0052	0.0049	0.0045	0.0042
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0002	-0.0001	-0.0005	-0.0008	-0.0012	0.0005	-0.0001	-0.0006	-0.0007	-0.0008	-0.0007	-0.0017
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
16	0.0018	0.0040	0.0065	0.0083	0.0086	0.0086	0.0082	0.0054	0.0052	0.0046	0.0045	0.0005
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0002	-0.0004	-0.0007	-0.0012	0.0006	0.0000	-0.0005	-0.0009	-0.0010	-0.0010	-0.0019	-0.0023
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
17	0.0014	0.0036	0.0061	0.0075	0.0077	0.0074	0.0047	0.0045	0.0042	0.0039	-0.0001	-0.0004
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0007	-0.0010	-0.0014	0.0004	-0.0001	-0.0006	-0.0010	-0.0014	-0.0015	-0.0025	-0.0028	-0.0029
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
18	0.0029	0.0047	0.0065	0.0071	0.0068	0.0045	0.0047	0.0041	0.0039	-0.0001	-0.0003	-0.0007
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0009	-0.0013	0.0006	0.0001	-0.0004	-0.0009	-0.0013	-0.0016	-0.0027	-0.0031	-0.0032	-0.0033
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
19	0.0033	0.0043	0.0057	0.0061	0.0037	0.0041	0.0040	0.0037	-0.0004	-0.0006	-0.0011	-0.0011
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0016	0.0003	-0.0001	-0.0005	-0.0009	-0.0012	-0.0015	-0.0028	-0.0034	-0.0036	-0.0036	-0.0037

Table C1, Panel D Continued

20	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	0.0005	0.0025	0.0035	0.0019	0.0028	0.0032	0.0031	-0.0009	-0.0009	-0.0015	-0.0016	-0.0018
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0000	-0.0005	-0.0008	-0.0011	-0.0015	-0.0018	-0.0032	-0.0039	-0.0041	-0.0042	-0.0042	-0.0042
21	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	0.0005	0.0017	0.0003	0.0026	0.0032	0.0038	-0.0003	-0.0005	-0.0010	-0.0012	-0.0016	0.0001
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0004	-0.0008	-0.0010	-0.0013	-0.0017	-0.0031	-0.0039	-0.0043	-0.0046	-0.0045	-0.0045	-0.0045
22	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0025	-0.0022	0.0006	0.0022	0.0030	-0.0004	-0.0006	-0.0011	-0.0013	-0.0017	0.0000	-0.0005
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0008	-0.0011	-0.0013	-0.0015	-0.0029	-0.0038	-0.0042	-0.0045	-0.0047	-0.0048	-0.0047	-0.0048
23	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0026	0.0001	0.0021	0.0034	-0.0004	-0.0003	-0.0009	-0.0012	-0.0015	-0.0001	-0.0006	-0.0008
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	24
	-0.0009	-0.0011	-0.0012	-0.0025	-0.0034	-0.0039	-0.0042	-0.0046	-0.0047	-0.0047	-0.0047	-0.0047
24	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0019	-0.0003	0.0018	-0.0008	-0.0006	-0.0007	-0.0009	-0.0014	0.0001	-0.0005	-0.0008	-0.0009
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0010	-0.0012	-0.0025	-0.0033	-0.0037	-0.0041	-0.0044	-0.0047	-0.0049	-0.0049	-0.0048	-0.0049

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with lowest past returns are denoted as losers. The figures in the table are average returns of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at 10%, 5% and 1% using T-test respectively. Market Dynamics are defined by the past 3 months' value weighted cumulative market returns.*

Appendix C2

Table C2 Momentum Returns under Different Market Dynamics Following Past 6-month Cumulative Value-weighted Market Returns

Panel A: Results of Momentum Strategies under (UP, UP) conditional on Past 6-month Market Return

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	-0.0056	-0.0063	-0.0015	-0.0014	-0.0013	-0.0010	0.0000	-0.0009	-0.0046	-0.0006	0.0001	-0.0004
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0002	-0.0002	-0.0009	-0.0004	-0.0012	-0.0013	-0.0011	-0.0007	-0.0009	-0.0010	-0.0015	-0.0016
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
2	-0.0103	-0.0037	0.0000	-0.0006	-0.0009	0.0001	-0.0001	0.0000	0.0001	0.0006	0.0008	0.0006
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0008	0.0002	0.0003	-0.0001	-0.0005	-0.0001	-0.0006	-0.0008	-0.0009	-0.0016	-0.0019	-0.0016
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
3	-0.0040	-0.0005	0.0022	0.0012	0.0015	0.0013	0.0013	0.0010	0.0015	0.0012	0.0011	0.0009
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0003	0.0005	-0.0002	-0.0005	-0.0008	-0.0009	-0.0011	-0.0014	-0.0023	-0.0025	-0.0024	-0.0025
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
4	-0.0024	0.0003	0.0016	0.0018	0.0016	0.0020	0.0021	0.0024	0.0027	0.0023	0.0021	0.0013
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0012	0.0007	0.0001	0.0003	-0.0010	-0.0010	-0.0011	-0.0022	-0.0025	-0.0024	-0.0026	-0.0027
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
5	-0.0039	-0.0021	0.0011	0.0012	0.0014	0.0014	0.0019	0.0018	0.0021	0.0018	0.0013	0.0014
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0008	0.0001	-0.0001	-0.0016	-0.0016	-0.0017	-0.0030	-0.0033	-0.0032	-0.0032	-0.0034	-0.0035
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
6	-0.0059	-0.0021	0.0010	0.0018	0.0015	0.0019	0.0019	0.0016	0.0016	0.0007	0.0008	0.0000
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0005	-0.0006	-0.0022	-0.0021	-0.0025	-0.0037	-0.0041	-0.0041	-0.0042	-0.0042	-0.0043	-0.0053
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
7	-0.0037	-0.0015	0.0024	0.0018	0.0017	0.0017	0.0015	0.0012	0.0008	0.0005	0.0000	-0.0007
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0008	-0.0028	-0.0026	-0.0027	-0.0041	-0.0043	-0.0043	-0.0045	-0.0047	-0.0048	-0.0062	-0.0062
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
8	-0.0039	0.0000	0.0025	0.0026	0.0021	0.0019	0.0012	0.0004	0.0005	-0.0004	-0.0010	-0.0013
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0032	-0.0031	-0.0033	-0.0047	-0.0051	-0.0050	-0.0051	-0.0053	-0.0054	-0.0067	-0.0070	-0.0068
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
9	-0.0018	0.0009	0.0030	0.0028	0.0023	0.0014	0.0007	0.0001	-0.0007	-0.0015	-0.0015	-0.0038
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0034	-0.0037	-0.0052	-0.0055	-0.0055	-0.0054	-0.0057	-0.0059	-0.0074	-0.0075	-0.0075	-0.0067

Table C2, Panel A Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
10	-0.0028	0.0006	0.0024	0.0020	0.0013	0.0005	0.0002	-0.0012	-0.0015	-0.0017	-0.0044	-0.0038
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0040	-0.0056	-0.0058	-0.0058	-0.0059	-0.0060	-0.0062	-0.0078	-0.0079	-0.0077	-0.0071	-0.0073
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
11	-0.0002	0.0007	0.0020	0.0012	-0.0001	-0.0005	-0.0015	-0.0026	-0.0025	-0.0050	-0.0044	-0.0046
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0062	-0.0066	-0.0066	-0.0065	-0.0067	-0.0068	-0.0085	-0.0087	-0.0085	-0.0076	-0.0079	-0.0081
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
12	-0.0022	-0.0004	0.0009	-0.0003	-0.0006	-0.0013	-0.0021	-0.0025	-0.0051	-0.0043	-0.0045	-0.0062
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0066	-0.0067	-0.0068	-0.0068	-0.0071	-0.0087	-0.0089	-0.0087	-0.0079	-0.0081	-0.0084	-0.0085
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
13	-0.0024	-0.0005	0.0004	-0.0001	-0.0018	-0.0025	-0.0027	-0.0057	-0.0048	-0.0051	-0.0066	-0.0070
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0071	-0.0072	-0.0074	-0.0076	-0.0094	-0.0096	-0.0093	-0.0087	-0.0088	-0.0090	-0.0092	-0.0093
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
14	-0.0022	-0.0022	0.0001	-0.0010	-0.0019	-0.0025	-0.0057	-0.0049	-0.0050	-0.0068	-0.0070	-0.0071
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0074	-0.0076	-0.0079	-0.0097	-0.0100	-0.0097	-0.0090	-0.0093	-0.0096	-0.0097	-0.0099	-0.0100
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
15	-0.0037	-0.0011	-0.0007	-0.0017	-0.0019	-0.0050	-0.0047	-0.0050	-0.0067	-0.0072	-0.0072	-0.0075
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0077	-0.0079	-0.0099	-0.0101	-0.0099	-0.0092	-0.0095	-0.0098	-0.0099	-0.0100	-0.0102	-0.0102
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
16	-0.0024	-0.0022	-0.0017	-0.0019	-0.0050	-0.0043	-0.0048	-0.0070	-0.0073	-0.0073	-0.0074	-0.0076
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0078	-0.0100	-0.0102	-0.0099	-0.0092	-0.0095	-0.0099	-0.0101	-0.0102	-0.0104	-0.0105	-0.0105
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
17	-0.0051	-0.0043	-0.0021	-0.0045	-0.0040	-0.0044	-0.0068	-0.0075	-0.0074	-0.0076	-0.0077	-0.0080
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0102	-0.0105	-0.0103	-0.0096	-0.0099	-0.0103	-0.0106	-0.0107	-0.0109	-0.0108	-0.0109	-0.0097
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
18	-0.0067	-0.0039	-0.0032	-0.0031	-0.0038	-0.0063	-0.0071	-0.0073	-0.0075	-0.0079	-0.0081	-0.0105
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0108	-0.0107	-0.0100	-0.0103	-0.0107	-0.0109	-0.0112	-0.0114	-0.0112	-0.0113	-0.0102	-0.0106
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
19	-0.0035	-0.0035	-0.0018	-0.0029	-0.0059	-0.0067	-0.0070	-0.0075	-0.0077	-0.0080	-0.0105	-0.0109
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0109	-0.0104	-0.0107	-0.0110	-0.0112	-0.0114	-0.0116	-0.0117	-0.0117	-0.0105	-0.0110	-0.0107

Table C2, Panel A Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
20	-0.0034	-0.0030	-0.0019	-0.0052	-0.0064	-0.0066	-0.0072	-0.0078	-0.0083	-0.0110	-0.0113	-0.0113
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0108	-0.0112	-0.0115	-0.0118	-0.0120	-0.0122*	-0.0123*	-0.0124*	-0.0110	-0.0114	-0.0112	-0.0074
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
21	-0.0051	-0.0027	-0.0048	-0.0059	-0.0062	-0.0069	-0.0079	-0.0084	-0.0113	-0.0116	-0.0117	-0.0112
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0116	-0.0121	-0.0123	-0.0126	-0.0128*	-0.0128*	-0.0129*	-0.0114	-0.0118	-0.0117	-0.0078	-0.0084
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
22	-0.0032	-0.0056	-0.0054	-0.0059	-0.0069	-0.0077	-0.0083	-0.0115	-0.0119	-0.0121	-0.0115	-0.0118
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0124	-0.0127	-0.0130	-0.0132*	-0.0132*	-0.0134*	-0.0118	-0.0122	-0.0120	-0.0079	-0.0086	-0.0085
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
23	-0.0084	-0.0069	-0.0054	-0.0069	-0.0081	-0.0088	-0.0121	-0.0128*	-0.0131*	-0.0125	-0.0127	-0.0132
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0136*	-0.1384*	-0.0140*	-0.0140*	-0.0142*	-0.0125	-0.0129	-0.0129	-0.0085	-0.0091	-0.0089	-0.0050
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
24	-0.0078	-0.0056	-0.0054	-0.0066	-0.0079	-0.0111	-0.0121	-0.0127	-0.0124	-0.0128	-0.0132	-0.0135
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0138*	-0.0141*	-0.0140*	-0.0142*	-0.0125	-0.0130	-0.0128	-0.0085	-0.0092	-0.0090	-0.0049	-0.0038

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with lowest past returns are denoted as losers. The figures in the table are average returns of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at 10%, 5% and 1% using T-test respectively. Market Dynamics are defined by the past 6 months' value weighted cumulative market returns.*

Table C2 Continued

Panel B: Results of Momentum Strategies under (UP, DOWN) conditional on Past 6-month Market Return												
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	-0.0147**	-0.0213***	-0.0173***	-0.0147***	-0.0149***	-0.0107***	-0.0079***	-0.0072***	-0.0067***	-0.00563**	-0.0048**	-0.00457**
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0048**	-0.0045**	-0.0047**	-0.0048**	-0.0044**	-0.0040**	-0.0041**	-0.0040**	-0.0037**	-0.0041**	-0.0038**	-0.0038**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
2	-0.02944**	-0.02736**	-0.0221***	-0.0215***	-0.0178***	-0.0130***	-0.01059**	-0.01003**	-0.00889**	-0.00753**	-0.00684**	-0.00681**
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.00676**	-0.00669*	-0.00698**	-0.00692**	-0.00631**	-0.00575**	-0.00562**	-0.00552*	-0.00596**	-0.00607**	-0.00595**	-0.00513*
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
3	-0.0314***	-0.0314***	-0.0302***	-0.0272***	-0.0233***	-0.0182***	-0.01374**	-0.01192**	-0.01112**	-0.00968**	-0.00848*	-0.008*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0079*	-0.00798*	-0.00798*	-0.00808*	-0.00787*	-0.00732*	-0.00683*	-0.0068*	-0.00701*	-0.00683*	-0.00691*	-0.0061
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
4	-0.0334***	-0.0326***	-0.0271***	-0.0218***	-0.0176***	-0.01429**	-0.0126	-0.01123**	-0.00998*	-0.00927*	-0.00891*	-0.0087
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.00891*	-0.00895*	-0.00895*	-0.00884*	-0.00849*	-0.00801*	-0.00839*	-0.00814*	-0.00814*	-0.0072	-0.0067	-0.0065
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
5	-0.0378***	-0.0323***	-0.0250***	-0.0203***	-0.0176**	-0.01452**	-0.01254**	-0.01128*	-0.0105*	-0.0096	-0.0092	-0.0094
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0096	-0.0094	-0.0094	-0.00946*	-0.00902*	-0.00922*	-0.009*	-0.00909*	-0.0079	-0.0067	-0.0074	-0.0069
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
6	-0.0328***	-0.0269***	-0.02147**	-0.01868**	-0.01602**	-0.01288*	-0.0111	-0.0107	-0.0099	-0.0093	-0.0093	-0.0095
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0095	-0.0095	-0.0095	-0.0093	-0.0094	-0.0090	-0.0089	-0.0078	-0.0073	-0.0072	-0.0069	-0.0066
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
7	-0.0265***	-0.02326**	-0.02013**	-0.017**	-0.01461*	-0.0120	-0.0109	-0.0103	-0.0095	-0.0092	-0.0093	-0.0093
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0093	-0.0093	-0.0093	-0.0099	-0.0095	-0.0092	-0.0080	-0.0075	-0.0074	-0.0072	-0.0069	-0.0065
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
8	-0.02475**	-0.02401**	-0.02083**	-0.0178**	-0.0151*	-0.0130	-0.0115	-0.0110	-0.0107	-0.0104	-0.0104	-0.0103
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0104	-0.0103	-0.0109	-0.0108	-0.0104	-0.0090	-0.0084	-0.0082	-0.0079	-0.0077	-0.0073	-0.0072
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
9	-0.0276***	-0.02436**	-0.02042**	-0.01751**	-0.01558*	-0.0133	-0.0124	-0.0122	-0.0118	-0.0113	-0.0111	-0.0112
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0112	-0.0116	-0.0116	-0.0117	-0.0102	-0.0095	-0.0091	-0.0089	-0.0086	-0.0081	-0.0079	-0.0077

Table C2, Panel B Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
10	-0.02518**	-0.02342**	-0.01993**	-0.01828*	-0.01615*	-0.0146	-0.0139	-0.0135	-0.0128	-0.0122	-0.0120	-0.0118
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0123	-0.0122	-0.0123	-0.0111	-0.0103	-0.0100	-0.0096	-0.0094	-0.0090	-0.0088	-0.0086	-0.0072
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
11	-0.0252**	-0.02376**	-0.02163**	-0.01947**	-0.01803*	-0.01651*	-0.0154	-0.0149	-0.0139	-0.0132	-0.0128	-0.0134
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0132	-0.0132	-0.0122	-0.0116	-0.0111	-0.0106	-0.0101	-0.0098	-0.0095	-0.0093	-0.0077	-0.0071
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
12	-0.02521**	-0.02465**	-0.02155**	-0.01962*	-0.01861*	-0.01671*	-0.0157	-0.0149	-0.0142	-0.0135	-0.0139	-0.0138
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0139	-0.0127	-0.0123	-0.0119	-0.0113	-0.0107	-0.0103	-0.0101	-0.0099	-0.0082	-0.0074	-0.0074
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
13	-0.0286***	-0.02675**	-0.02388**	-0.02167**	-0.02015*	-0.01823*	-0.01678*	-0.0158	-0.0147	-0.0149	-0.0145	-0.0143
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0132	-0.0127	-0.0125	-0.0121	-0.0115	-0.0109	-0.0108	-0.0106	-0.0089	-0.0081	-0.0079	-0.0077
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
14	-0.02834**	-0.0266**	-0.0239**	-0.02172**	-0.01979*	-0.01773*	-0.0164	-0.0155	-0.0157	-0.0150	-0.0148	-0.0133
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0130	-0.0127	-0.0125	-0.0121	-0.0114	-0.0110	-0.0109	-0.0092	-0.0084	-0.0084	-0.0081	-0.0080
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
15	-0.02896**	-0.02789**	-0.02474**	-0.02197**	-0.01991*	-0.01768*	-0.0164	-0.0168	-0.0159	-0.0151	-0.0138	-0.0134
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0132	-0.0129	-0.0127	-0.0121	-0.0116	-0.0113	-0.0097	-0.0089	-0.0088	-0.0086	-0.0084	-0.0083
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
16	-0.02848**	-0.02704**	-0.02391**	-0.02136**	-0.01917*	-0.0173	-0.01803*	-0.01724*	-0.0152	-0.0146	-0.0141	-0.0140
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0137	-0.0134	-0.0130	-0.0126	-0.0122	-0.0102	-0.0095	-0.0095	-0.0091	-0.0090	-0.0088	-0.0088
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
17	-0.02944**	-0.02711**	-0.02364**	-0.02112**	-0.01956*	-0.01911*	-0.01837*	-0.0177	-0.0154	-0.0143	-0.0142	-0.0140
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0138	-0.0133	-0.0131	-0.0127	-0.0107	-0.0097	-0.0095	0.0093	-0.0091	-0.0090	-0.0089	-0.0088
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
18	-0.02877**	-0.02687**	-0.02724**	-0.02221**	-0.02161**	-0.01947*	-0.0181	-0.0161	-0.0149	-0.0142	-0.0140	-0.0138
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0135	-0.0132	-0.0131	-0.0111	-0.0101	-0.0099	-0.0095	-0.0094	-0.0092	-0.0092	-0.0091	-0.0090
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
19	-0.02804**	-0.02634**	-0.02358**	-0.02307**	-0.0211*	-0.01962*	-0.0171	-0.0161	-0.0154	-0.0148	-0.0146	-0.0141
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0140	-0.0138	-0.0120	-0.0111	-0.0108	-0.0103	-0.0101	-0.0099	-0.0098	-0.0097	-0.0096	-0.0094

Table C2, Panel B Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
20	-0.02957**	-0.02709**	-0.0261**	-0.02379**	-0.02203*	-0.0182	-0.0168	-0.0163	-0.0156	-0.0148	-0.0143	-0.0141
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0141	-0.0125	-0.0115	-0.0113	-0.0107	-0.0103	-0.0101	-0.0100	-0.0098	-0.0098	-0.0095	-0.0094
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
21	-0.02941**	-0.02958**	-0.02628**	-0.02363**	-0.01953*	-0.0176	-0.0168	-0.0161	-0.0153	-0.0144	-0.0142	-0.0141
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0126	-0.0120	-0.0117	-0.0112	-0.0108	-0.0105	-0.0103	-0.0101	-0.0100	-0.0098	-0.0097	-0.0095
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
22	-0.0337***	-0.03006**	-0.02724**	-0.02189*	-0.01968*	-0.0181	-0.0171	-0.0164	-0.0154	-0.0147	-0.0144	-0.0128
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0123	-0.0122	-0.0118	-0.0116	-0.0112	-0.0108	-0.0106	-0.0104	-0.0101	-0.0101	-0.0099	-0.0099
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
23	-0.0336***	-0.03066**	-0.02497**	-0.02171*	-0.02013*	-0.0184	-0.0174	-0.0165	-0.0158	-0.0150	-0.0133	-0.0128
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0127	-0.0123	-0.0122	-0.0120	-0.0117	-0.0113	-0.0110	-0.0108	-0.0106	-0.0104	-0.0103	-0.0100
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
24	-0.0315***	-0.02697**	-0.02312**	-0.02065*	-0.01912*	-0.0180	-0.0168	-0.0162	-0.0154	-0.0132	-0.0127	-0.0125
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0123	-0.0123	-0.0121	-0.0118	-0.0115	-0.0111	-0.0110	-0.0109	-0.0107	-0.0106	-0.0104	-0.0101

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with lowest past returns are denoted as losers. The figures in the table are average return of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at 10%, 5% and 1% using T-test respectively. Market Dynamics are defined by the past 6 months' value weighted cumulative market returns.*

Table C2 Continued

Panel C: Results of Momentum Strategies under (DONW, DOWN) conditional on Past 6-month Market Return												
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	-0.0080	-0.0024	0.0002	0.0012	0.0021	0.0025	0.0026	0.0012	0.0019	0.0009	0.0007	0.0012
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0002	0.0003	-0.0001	0.0000	-0.0005	-0.0005	-0.0002	-0.0004	-0.0001	0.0000	-0.0002	-0.0001
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
2	-0.0013	0.0043	0.0049	0.0067**	0.0063**	0.0065**	0.0051*	0.0042	0.0032	0.0026	0.0029	0.0020
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0016	0.0006	0.0004	-0.0002	-0.0005	0.0004	0.0003	0.0004	0.0006	0.0005	0.0005	0.0006
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
3	0.0012	0.0055	0.0072*	0.0081**	0.0076**	0.0062**	0.0058**	0.0040	0.0038	0.0030	0.0025	0.0024
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0012	0.0012	0.0005	0.0000	0.0006	0.0006	0.0007	0.0008	0.0008	0.0009	0.0009	0.0011
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
4	0.0032	0.0089*	0.0089**	0.0094**	0.0080**	0.0070*	0.0052	0.0039	0.0038	0.0025	0.0026	0.0012
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0008	0.0001	-0.0006	0.0004	0.0003	0.0004	0.0005	0.0005	0.0007	0.0007	0.0009	0.0008
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
5	0.0094*	0.0102**	0.0101**	0.0089**	0.0078*	0.0055	0.0045	0.0040	0.0024	0.0023	0.0007	0.0008
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0003	-0.0009	0.0002	-0.0002	-0.0001	0.0002	0.0002	0.0003	0.0005	0.0007	0.0006	0.0004
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
6	0.0070	0.0094*	0.0083*	0.0080	0.0058	0.0045	0.0037	0.0018	0.0016	-0.0001	0.0001	-0.0007
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0016	-0.0005	-0.0008	-0.0009	-0.0008	-0.0007	-0.0005	-0.0003	0.0000	0.0000	-0.0002	-0.0003
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
7	0.0070	0.0073	0.0074	0.0058	0.0043	0.0036	0.0015	0.0009	-0.0009	-0.0007	-0.0015	-0.0022
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0011	-0.0014	-0.0015	-0.0016	-0.0015	-0.0013	-0.0011	-0.0007	-0.0007	-0.0007	-0.0009	-0.0003
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
8	0.0058	0.0068	0.0059	0.0049	0.0045	0.0023	0.0016	-0.0007	-0.0006	-0.0017	-0.0026	-0.0012
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0018	-0.0019	-0.0019	-0.0021	-0.0019	-0.0017	-0.0013	-0.0012	-0.0012	-0.0013	-0.0006	-0.0007
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
9	0.0058	0.0059	0.0054	0.0051	0.0027	0.0020	-0.0005	-0.0007	-0.0019	-0.0030	-0.0018	-0.0022
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0025	-0.0025	-0.0026	-0.0026	-0.0024	-0.0019	-0.0018	-0.0019	-0.0018	-0.0011	-0.0013	-0.0013

Table C2, Panel C Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
10	0.0047	0.0044	0.0046	0.0023	0.0020	-0.0010	-0.0012	-0.0025	-0.0036	-0.0022	-0.0026	-0.0028
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0030	-0.0031	-0.0030	-0.0030	-0.0024	-0.0023	-0.0024	-0.0024	-0.0015	-0.0016	-0.0017	-0.0017
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
11	0.0018	0.0047	0.0023	0.0022	-0.0005	-0.0011	-0.0025	-0.0039	-0.0026	-0.0031	-0.0032	-0.0032
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0035	-0.0035	-0.0035	-0.0030	-0.0028	-0.0029	-0.0028	-0.0020	-0.0019	-0.0020	-0.0020	-0.0020
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
12	0.0044	0.0016	0.0015	-0.0010	-0.0014	-0.0029	-0.0041	-0.0030	-0.0035	-0.0037	-0.0038	-0.0040
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0041	-0.0040	-0.0035	-0.0035	-0.0035	-0.0034	-0.0025	-0.0024	-0.0024	-0.0024	-0.0025	-0.0029
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
13	-0.0018	0.0002	-0.0020	-0.0019	-0.0032	-0.0048	-0.0037	-0.0043	-0.0044	-0.0046	-0.0047	-0.0046
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0046	-0.0042	-0.0041	-0.0043	-0.0042	-0.0032	-0.0031	-0.0031	-0.0029	-0.0030	-0.0034	-0.0031
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
14	-0.0016	-0.0032	-0.0026	-0.0038	-0.0048	-0.0040	-0.0047	-0.0050	-0.0051	-0.0053	-0.0052	-0.0051
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0048	-0.0047	-0.0049	-0.0049	-0.0039	-0.0037	-0.0036	-0.0036	-0.0034	-0.0038	-0.0035	-0.0029
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
15	-0.0040	-0.0039	-0.0042	-0.0053	-0.0038	-0.0046	-0.0048	-0.0050	-0.0053	-0.0053	-0.0053	-0.0048
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0049	-0.0051	-0.0051	-0.0042	-0.0040	-0.0039	-0.0038	-0.0037	-0.0040	-0.0037	-0.0031	-0.0030
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
16	-0.0051	-0.0051	-0.0058	-0.0041	-0.0046	-0.0048	-0.0051	-0.0056	-0.0050	-0.0055	-0.0050	-0.0049
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0054	-0.0054	-0.0044	-0.0044	-0.0042	-0.0041	-0.0040	-0.0043	-0.0039	-0.0033	-0.0032	-0.0031
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
17	-0.0051	-0.0060	-0.0042	-0.0045	-0.0046	-0.0047	-0.0052	-0.0053	-0.0054	-0.0049	-0.0049	-0.0052
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0054	-0.0045	-0.0045	-0.0044	-0.0043	-0.0042	-0.0044	-0.0040	-0.0033	-0.0033	-0.0032	-0.0032
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
18	-0.0072	-0.0048	-0.0047	-0.0045	-0.0046	-0.0051	-0.0051	-0.0052	-0.0049	-0.0050	-0.0053	-0.0054
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0047	-0.0048	-0.0047	-0.0047	-0.0046	-0.0048	-0.0044	-0.0037	-0.0036	-0.0034	-0.0034	-0.0033
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
19	-0.0060	-0.0051	-0.0043	-0.0040	-0.0044	-0.0046	-0.0048	-0.0044	-0.0046	-0.0052	-0.0053	-0.0045
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0047	-0.0048	-0.0048	-0.0048	-0.0050	-0.0046	-0.0039	-0.0038	-0.0035	-0.0035	-0.0035	-0.0033

Table C2, Panel C Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
20	-0.0061	-0.0044	-0.0037	-0.0040	-0.0040	-0.0042	-0.0040	-0.0043	-0.0050	-0.0053	-0.0045	-0.0046
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0048	-0.0049	-0.0048	-0.0051	-0.0047	-0.0040	-0.0039	-0.0038	-0.0036	-0.0035	-0.0034	-0.0032
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
21	-0.0046	-0.0036	-0.0036	-0.0036	-0.0035	-0.0035	-0.0038	-0.0047	-0.0051	-0.0044	-0.0046	-0.0047
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0049	-0.0049	-0.0052	-0.0048	-0.0042	-0.0040	-0.0038	-0.0037	-0.0035	-0.0034	-0.0032	-0.0030
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
22	-0.0037	-0.0038	-0.0037	-0.0034	-0.0030	-0.0037	-0.0046	-0.0051	-0.0045	-0.0046	-0.0048	-0.0049
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0051	-0.0055	-0.0052	-0.0047	-0.0045	-0.0042	-0.0040	-0.0039	-0.0036	-0.0034	-0.0032	-0.0030
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
23	-0.0050	-0.0038	-0.0036	-0.0031	-0.0036	-0.0047	-0.0052	-0.0047	-0.0049	-0.0051	-0.0052	-0.0053
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0058	-0.0055	-0.0050	-0.0049	-0.0047	-0.0044	-0.0042	-0.0039	-0.0036	-0.0034	-0.0032	-0.0030
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
24	-0.0039	-0.0033	-0.0028	-0.0032	-0.0040	-0.0046	-0.0041	-0.0044	-0.0047	-0.0049	-0.0051	-0.0056
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0055	-0.0050	-0.0049	-0.0047	-0.0046	-0.0043	-0.0040	-0.0037	-0.0034	-0.0032	-0.0030	-0.0029

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with lowest past returns are denoted as losers. The figures in the table are average return of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at 10%, 5% and 1% using T-test respectively. Market Dynamics are defined by the past 6 months' value weighted cumulative market returns.*

Table C2 Continued

Panel D: Results of Momentum Strategies under (DONW, UP) conditional on Past 6-month Market Return

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	-0.0339***	-0.0314***	-0.0226***	-0.0162***	-0.0125***	-0.00997**	-0.00739*	-0.00736**	-0.0059*	-0.00512*	-0.00489*	-0.0035
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0035	-0.0036	-0.0033	-0.0029	-0.0029	-0.0024	-0.0022	-0.0025	-0.0023	-0.0024	-0.0023	-0.0025
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
2	-0.0433***	-0.0330***	-0.0270***	-0.0206***	-0.0160***	-0.01159**	-0.0084	-0.0093	-0.0058	-0.0062	-0.0047	-0.0038
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0039	-0.0038	-0.0033	-0.0030	-0.0026	-0.0020	-0.0023	-0.0023	-0.0024	-0.0022	-0.0021	-0.0024
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
3	-0.0434***	-0.0310***	-0.0248***	-0.0194**	-0.0135*	-0.0103	-0.0077	-0.0068	-0.0061	-0.0046	-0.0035	-0.0029
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0028	-0.0027	-0.0024	-0.0021	-0.0016	-0.0016	-0.0016	-0.0018	-0.0017	-0.0018	-0.0020	-0.0022
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
4	-0.0366***	-0.0284***	-0.0226**	-0.0162*	-0.0106	-0.0076	-0.0052	-0.0053	-0.0035	-0.0026	-0.0020	-0.0015
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0014	-0.0014	-0.0010	-0.0007	-0.0006	-0.0004	-0.0007	-0.0006	-0.0007	-0.0010	-0.0010	-0.0028
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
5	-0.0298***	-0.0239**	-0.01649*	-0.0104	-0.0070	-0.0043	-0.0046	-0.0029	-0.0016	-0.0011	-0.0007	-0.0002
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0003	-0.0003	0.0003	0.0003	0.0004	0.0001	0.0001	0.0000	-0.0003	-0.0005	-0.0027	-0.0030
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
6	-0.0260**	-0.01767*	-0.0129	-0.0086	-0.0052	-0.0042	-0.0020	-0.0010	-0.0001	0.0002	0.0007	0.0008
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0009	0.0011	0.0013	0.0012	0.0010	0.0012	0.0009	0.0005	0.0003	-0.0022	-0.0025	-0.0028
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
7	-0.0182	-0.0127	-0.0093	-0.0051	-0.0039	-0.0012	0.0004	0.0010	0.0014	0.0018	0.0021	0.0022
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0024	0.0023	0.0024	0.0021	0.0021	0.0020	0.0015	0.0013	-0.0015	-0.0018	-0.0023	-0.0024
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
8	-0.0163	-0.0129	-0.0087	-0.0062	-0.0027	-0.0005	0.0005	0.0010	0.0018	0.0020	0.0023	0.0027
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0035	0.0025	0.0024	0.0023	0.0022	0.0019	0.0016	-0.0015	-0.0018	-0.0023	-0.0025	-0.0028
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
9	-0.0169	-0.0121	-0.0088	-0.0041	-0.0012	0.0002	0.0012	0.0018	0.0023	0.0026	0.0030	0.0030
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0029	0.0027	0.0028	0.0026	0.0023	0.0023	-0.0010	-0.0014	-0.0020	-0.0023	-0.0026	-0.0027

Table C2, Panel D Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
10	-0.0147	-0.0114	-0.0064	-0.0024	-0.0005	0.0012	0.0022	0.0027	0.0033	0.0038	0.0038	0.0037
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0034	0.0032	0.0033	0.0029	0.0028	-0.0006	-0.0010	-0.0016	-0.0019	-0.0023	-0.0025	-0.0027
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
11	-0.0150	-0.0092	-0.0053	-0.0022	-0.0001	0.0014	0.0024	0.0030	0.0036	0.0037	0.0037	0.0034
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0032	0.0031	0.0028	0.0028	-0.0008	-0.0011	-0.0016	-0.0020	-0.0024	-0.0026	-0.0027	-0.0028
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
12	-0.0101	-0.0070	-0.0041	-0.0012	0.0009	0.0022	0.0032	0.0038	0.0039	0.0041	0.0038	0.0037
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0036	0.0032	0.0032	-0.0006	-0.0009	-0.0013	-0.0017	-0.0021	-0.0024	-0.0026	-0.0027	-0.0027
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
13	-0.0104	-0.0079	-0.0039	-0.0010	0.0009	0.0022	0.0034	0.0038	0.0039	0.0038	0.0038	0.0037
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0032	0.0030	-0.0008	-0.0011	-0.0013	-0.0016	-0.0021	-0.0024	-0.0027	-0.0028	-0.0028	-0.0028
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
14	-0.0111	-0.0069	-0.0034	-0.0006	0.0014	0.0028	0.0038	0.0044	0.0042	0.0042	0.0041	0.0037
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0034	-0.0006	-0.0008	-0.0011	-0.0012	-0.0015	-0.0019	-0.0023	-0.0024	-0.0025	-0.0025	-0.0026
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
15	-0.0091	-0.0056	-0.0029	-0.0002	0.0019	0.0031	0.0039	0.0040	0.0040	0.0040	0.0036	0.0036
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0007	-0.0010	-0.0013	-0.0015	-0.0018	-0.0020	-0.0023	-0.0026	-0.0028	-0.0028	-0.0028	-0.0038
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
16	-0.0088	-0.0062	-0.0034	-0.0004	0.0014	0.0028	0.0034	0.0037	0.0039	0.0036	0.0036	-0.0006
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0011	-0.0015	-0.0016	-0.0020	-0.0022	-0.0025	-0.0027	-0.0031	-0.0032	-0.0032	-0.0042	-0.0047
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
17	-0.0107	-0.0069	-0.0032	-0.0005	0.0011	0.0020	0.0028	0.0031	0.0030	0.0031	-0.0010	-0.0013
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0017	-0.0020	-0.0021	-0.0023	-0.0025	-0.0027	-0.0029	-0.0032	-0.0033	-0.0043	-0.0047	-0.0049
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
18	-0.0087	-0.0050	-0.0024	0.0000	0.0010	0.0022	0.0030	0.0029	0.0030	-0.0009	-0.0011	-0.0015
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0018	-0.0020	-0.0021	-0.0022	-0.0024	-0.0026	-0.0029	-0.0032	-0.0044	-0.0049	-0.0050	-0.0051
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
19	-0.0069	-0.0044	-0.0022	-0.0004	0.0011	0.0022	0.0025	0.0028	-0.0012	-0.0013	-0.0016	-0.0017
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0021	-0.0023	-0.0023	-0.0024	-0.0026	-0.0027	-0.0030	-0.0043	-0.0050	-0.0052	-0.0053	-0.0054

20	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0083	-0.0050	-0.0033	-0.0010	0.0006	0.0013	0.0019	-0.0018	-0.0018	-0.0020	-0.0021	-0.0022
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0025	-0.0027	-0.0027	-0.0028	-0.0030	0.0031	-0.0045	-0.0052	-0.0054	-0.0056	-0.0057	-0.0058
21	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0078	-0.0060	-0.0035	-0.0007	0.0005	0.0017	-0.0020	-0.0019	-0.0019	-0.0019	-0.0021	-0.0023
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0025	-0.0027	-0.0026	-0.0028	-0.0030	-0.0043	-0.0051	-0.0055	-0.0059	-0.0059	-0.0060	-0.0061
22	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0103	-0.0062	-0.0031	-0.0010	0.0006	-0.0025	-0.0022	-0.0022	-0.0022	-0.0023	-0.0023	-0.0024
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0026	-0.0027	-0.0027	-0.0029	-0.0042	-0.0050	-0.0054	-0.0058	-0.0060	-0.0062	-0.0063	-0.0064
23	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0084	-0.0051	-0.0026	-0.0005	-0.0037	-0.0029	-0.0027	-0.0025	-0.0025	-0.0025	-0.0026	-0.0027
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0028	-0.0028	-0.0028	-0.0041	-0.0049	-0.0052	-0.0055	-0.0059	-0.0062	-0.0062	-0.0064	-0.0066
24	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0072	-0.0050	-0.0027	-0.0050	-0.0040	-0.0031	-0.0026	-0.0025	-0.0025	-0.0026	-0.0025	-0.0026
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0027	-0.0029	-0.0041	-0.0049	-0.0052	-0.0055	-0.0058	-0.0062	-0.0065	-0.0067	-0.0069	-0.0071

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with lowest past returns are denoted as losers. The figures in the table are average return of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at 10%, 5% and 1% using T-test respectively. Market Dynamics are defined by the past 6 months' value weighted cumulative market returns.*

Appendix C3

Table C3 Momentum Returns under Different Market Dynamics Following Past 12-month Cumulative Value-weighted Market Returns

Panel A: Results of Momentum Strategies under (UP, UP) conditional on Past 12-month Market Return												
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	0.0021	-0.0035	0.0019	0.0019	0.0009	0.0017	0.0018	0.0008	0.0009	0.0008	0.0015	0.0013
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0014	0.0007	0.0003	0.0006	0.0000	0.0001	-0.0001	-0.0002	-0.0003	-0.0002	-0.0006	-0.0008
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
2	-0.0055	-0.0003	0.0044	0.0030	0.0022	0.0029	0.0021	0.0019	0.0018	0.0025	0.0031	0.0029
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0024	0.0018	0.0016	0.0011	0.0010	0.0009	0.0006	0.0002	0.0002	0.0001	-0.0005	-0.0003
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
3	0.0032	0.0054	0.0071	0.0058	0.0053	0.0049	0.0041	0.0035	0.0041	0.0040	0.0041	0.0034
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0027	0.0025	0.0020	0.0016	0.0014	0.0010	0.0004	0.0002	-0.0001	-0.0005	-0.0006	-0.0007
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
4	0.0068	0.0065	0.0755	0.0067	0.0057	0.0056	0.0051	0.0053	0.0056	0.0054	0.0050	0.0041
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0036	0.0027	0.0024	0.0021	0.0015	0.0011	0.0010	0.0006	0.0002	0.0002	-0.0002	-0.0005
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
5	0.0040	0.0053	0.0076	0.0066	0.0058	0.0054	0.0058	0.0057	0.0058	0.0053	0.0049	0.0043
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0033	0.0027	0.0022	0.0016	0.0010	0.0008	0.0003	-0.0002	-0.0002	-0.0004	-0.0009	-0.0011
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
6	0.0032	0.0047	0.0069	0.0066	0.0058	0.0062	0.0061	0.0056	0.0053	0.0046	0.0042	0.0033
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0026	0.0019	0.0013	0.0007	0.0003	-0.0002	-0.0007	-0.0009	-0.0012	-0.0015	-0.0018	-0.0032
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
7	0.0055	0.0052	0.0079	0.0067	0.0065	0.0065	0.0060	0.0053	0.0047	0.0041	0.0034	0.0027
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0019	0.0012	0.0006	0.0003	-0.0002	-0.0006	-0.0007	-0.0011	-0.0017	-0.0020	-0.0039	-0.0040
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
8	0.0043	0.0056	0.0074	0.0075	0.0068	0.0064	0.0055	0.0047	0.0044	0.0035	0.0029	0.0021
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0014	0.0005	0.0002	-0.0004	-0.0009	-0.0010	-0.0013	-0.0019	-0.0022	-0.0041	-0.0045	-0.0043
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
9	0.0042	0.0052	0.0073	0.0073	0.0065	0.0055	0.0048	0.0040	0.0032	0.0026	0.0021	0.0013
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0005	-0.0001	-0.0006	-0.0010	-0.0012	-0.0014	-0.0019	-0.0024	-0.0045	-0.0049	-0.0049	-0.0053

Table C3, Panel A Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
10	0.0032	0.0060	0.0079	0.0074	0.0060	0.0052	0.0044	0.0032	0.0028	0.0023	0.0016	0.0008
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0003	-0.0003	-0.0008	-0.0009	-0.0013	-0.0018	-0.0023	-0.0045	-0.0049	-0.0048	-0.0054	-0.0057
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
11	0.0071	0.0072	0.0086	0.0069	0.0055	0.0047	0.0036	0.0024	0.0021	0.0012	0.0006	0.0000
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0007	-0.0014	-0.0016	-0.0018	-0.0023	-0.0027	-0.0050	-0.0055	-0.0054	-0.0058	-0.0063	-0.0066
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
12	0.0062	0.0066	0.0069	0.0057	0.0046	0.0037	0.0027	0.0020	0.0013	0.0005	0.0002	-0.0006
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0013	-0.0017	-0.0020	-0.0024	-0.0030	-0.0052	-0.0057	-0.0056	-0.0060	-0.0063	-0.0068	-0.0071
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
13	0.0062	0.0055	0.0068	0.0056	0.0038	0.0028	0.0019	0.0009	0.0002	-0.0003	-0.0005	-0.0013
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0018	-0.0022	-0.0027	-0.0032	-0.0057	-0.0062	-0.0060	-0.0066	-0.0069	-0.0072	-0.0076	-0.0079
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
14	0.0046	0.0053	0.0066	0.0049	0.0035	0.0024	0.0012	0.0003	0.0001	-0.0005	-0.0009	-0.0014
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0021	-0.0028	-0.0033	-0.0059	-0.0064	-0.0062	-0.0068	-0.0073	-0.0076	-0.0079	-0.0083	-0.0086
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
15	0.0060	0.0062	0.0062	0.0047	0.0034	0.0022	0.0007	0.0002	-0.0002	-0.0011	-0.0013	-0.0020
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0027	-0.0033	-0.0060	-0.0065	-0.0063	-0.0069	-0.0074	-0.0078	-0.0081	-0.0083	-0.0087	-0.0089
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
16	0.0046	0.0046	0.0050	0.0038	0.0024	0.0010	0.0003	-0.0005	-0.0010	-0.0012	-0.0017	-0.0023
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0029	-0.0059	-0.0064	-0.0062	-0.0068	-0.0072	-0.0078	-0.0082	-0.0085	-0.0088	-0.0091	-0.0094
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
17	0.0023	0.0031	0.0042	0.0028	0.0012	0.0006	-0.0005	-0.0013	-0.0014	-0.0018	-0.0023	-0.0029
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0060	-0.0067	-0.0064	-0.0070	-0.0076	-0.0081	-0.0086	-0.0090	-0.0092	-0.0093	-0.0096	-0.0084
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
18	0.0030	0.0036	0.0043	0.0022	0.0013	0.0001	-0.0009	-0.0013	-0.0017	-0.0025	-0.0030	-0.0062
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0068	-0.0067	-0.0073	-0.0077	-0.0083	-0.0087	-0.0092	-0.0096	-0.0096	-0.0099	-0.0087	-0.0094
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
19	0.0052	0.0043	0.0037	0.0025	0.0009	-0.0003	-0.0007	-0.0015	-0.0020	-0.0026	-0.0058	-0.0065
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0066	-0.0073	-0.0077	-0.0082	-0.0087	-0.0091	-0.0095	-0.0097	-0.0100	-0.0086	-0.0095	-0.0094

Table C3, Panel A Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
20	0.0033	0.0021	0.0034	0.0017	0.0002	-0.0003	-0.0012	-0.0021	-0.0027	-0.0062	-0.0068	-0.0068
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0076	-0.0081	-0.0085	-0.0090	-0.0096	-0.0099	-0.0102	-0.0105	-0.0089	-0.0096	-0.0097	-0.0052
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
21	0.0008	0.0026	0.0022	0.0009	0.0004	-0.0007	-0.0021	-0.0029	-0.0065	-0.0070	-0.0070	-0.0077
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0084	-0.0090	-0.0094	-0.0099	-0.0103	-0.0106	-0.0110	-0.0093	-0.0100	-0.0100	-0.0053	-0.0063
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
22	0.0027	0.0015	0.0017	0.0008	-0.0006	-0.0019	-0.0028	-0.0068	-0.0074	-0.0074	-0.0078	-0.0084
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0092	-0.0097	-0.0102	-0.0106	-0.0108	-0.0113	-0.0094	-0.0101	-0.0101	-0.0052	-0.0062	-0.0064
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
23	-0.0011	0.0000	0.0014	-0.0005	-0.0021	-0.0031	-0.0073	-0.0083	-0.0085	-0.0088	-0.0091	-0.0099
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0105	-0.0110	-0.0113	-0.0115	-0.0120	-0.0101	-0.0108	-0.0109	-0.0057	-0.0066	-0.0067	-0.0019
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
24	-0.0005	0.0011	0.0009	-0.0007	-0.0023	-0.0065	-0.0076	-0.0081	-0.0088	-0.0092	-0.0098	-0.0103
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0109	-0.0113	-0.0114	-0.0119	-0.0100	-0.0107	-0.0108	-0.0056	-0.0066	-0.0067	-0.0017	-0.0005

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with lowest past returns are denoted as losers. The figures in the table are average return of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at 10%, 5% and 1% using T-test respectively. Market Dynamics are defined by the past 12 months' value weighted cumulative market returns.*

Table C3 Continued

Panel B: Results of Momentum Strategies under (UP, DOWN) conditional on Past 12-month Market Return

	1	2	3	4	5	6	7	8	9	10	11	12
1	-0.0146**	-0.0188***	-0.0161***	-0.0127***	-0.0118***	-0.0094***	-0.0081***	-0.0080***	-0.0079***	-0.0069***	-0.0064***	-0.0059***
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0064***	-0.0063***	-0.0064***	-0.0061***	-0.0057***	-0.0051***	-0.0050***	-0.0048***	-0.00437**	-0.0046***	-0.0045***	-0.0042***
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
2	-0.02605**	-0.0261***	-0.0200***	-0.0173***	-0.0147***	-0.0124***	-0.0116***	-0.0117***	-0.0105***	-0.0093***	-0.0086***	-0.0086***
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0090***	-0.0091***	-0.0091***	-0.0088***	-0.0081***	-0.0073***	-0.0071***	-0.0067***	-0.0065***	-0.0066***	-0.0062***	-0.00591**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
3	-0.0289***	-0.0265***	-0.0223***	-0.0189***	-0.0162***	-0.0144***	-0.0139***	-0.0132***	-0.0123***	-0.0111***	-0.0107***	-0.0107***
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0111***	-0.0110***	-0.0108***	-0.0103***	-0.0096***	-0.0089***	-0.0084**	-0.0082**	-0.0079**	-0.0077**	-0.0073**	-0.0068**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
4	-0.0278***	-0.0262***	-0.0212***	-0.0186***	-0.0166***	-0.0158***	-0.0148***	-0.0141***	-0.0133***	-0.0127***	-0.0127***	-0.0127***
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0128***	-0.0127***	-0.0124***	-0.0119***	-0.0113***	-0.0105**	-0.0101**	-0.0097**	-0.0092**	-0.0089**	-0.0085**	-0.0082**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
5	-0.0304***	-0.0269***	-0.0227***	-0.0198***	-0.0190***	-0.0175***	-0.0164***	-0.0154***	-0.0153***	-0.0146***	-0.0145***	-0.1442***
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0144***	-0.0139***	-0.0135***	-0.0131***	-0.0122**	-0.0115**	-0.0111**	-0.0107**	-0.0102**	-0.0098**	-0.0095**	-0.0094**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
6	-0.0300***	-0.0273***	-0.0241***	-0.0223***	-0.0207***	-0.0191***	-0.0176***	-0.0175***	-0.0171***	-0.0166***	-0.0163***	-0.0160
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.016***	-0.0152***	-0.0147***	-0.0139**	-0.0131**	-0.0124**	-0.0118**	-0.01127**	-0.01064**	-0.01039**	-0.01024**	-0.00993**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
7	-0.0297***	-0.0274***	-0.0253***	-0.0224***	-0.0210***	-0.0193***	-0.0187***	-0.0173***	-0.0178***	-0.0172***	-0.0170***	-0.0166***
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0160***	-0.0155***	-0.0148**	-0.0142**	-0.0135**	-0.0126**	-0.0121**	-0.0115**	-0.0111**	-0.0110**	-0.0106**	-0.0093**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
8	-0.0288***	-0.0291***	-0.0260***	-0.0236***	-0.0215***	-0.0205***	-0.0197***	-0.0194***	-0.0192***	-0.0186***	-0.0181***	-0.0175***
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0171***	-0.0163**	-0.016**	-0.0151**	-0.01431**	-0.01356**	-0.01284**	-0.0124**	-0.01221**	-0.01186**	-0.0103*	-0.01002*
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
9	-0.0331***	-0.0300***	-0.0266***	-0.0235***	-0.0224***	-0.0212***	-0.0208***	-0.0207***	-0.0202***	-0.0192***	-0.0186***	-0.0180***
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0174**	-0.0167**	-0.0162**	-0.0155**	-0.0147**	-0.0138**	-0.0132**	-0.0131**	-0.0127**	-0.0110*	-0.0107*	-0.0104*

Table C3, Panel B Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
10	-0.0295***	-0.0290***	-0.0255***	-0.0243***	-0.0232***	-0.0225***	-0.0222***	-0.0218***	-0.0209***	-0.0199***	-0.0191**	-0.0183**
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0178**	-0.0171**	-0.0166**	-0.0158**	-0.0148**	-0.0141**	-0.0142**	-0.0137**	-0.0119*	-0.0116*	-0.0113*	-0.0110*
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
11	-0.0317***	-0.0297***	-0.0281***	-0.0263***	-0.0254***	-0.0250***	-0.0242***	-0.0234***	-0.0223***	-0.0211***	-0.0200**	-0.0193**
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0187**	-0.018**	-0.0173**	-0.0163**	-0.0154**	-0.0152**	-0.0146**	-0.0128*	-0.0124*	-0.0120*	-0.0117*	-0.0111*
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
12	-0.0302***	-0.0308***	-0.0283***	-0.0269***	-0.0263***	-0.0253***	-0.0244***	-0.0235***	-0.0225***	-0.0211**	-0.0202**	-0.0194**
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0189**	-0.0182**	-0.0173**	-0.0166**	-0.0162**	-0.0154**	-0.0136*	-0.0132*	-0.0127*	-0.0124*	-0.0117*	-0.0115*
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
13	-0.0346***	-0.0331***	-0.0311***	-0.0295***	-0.0283***	-0.0270***	-0.0257***	-0.0244***	-0.0228***	-0.0215**	-0.0205**	-0.0197**
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.01914**	-0.01828**	-0.01756**	-0.01745**	-0.01662**	-0.0145**	-0.01408*	-0.01357*	-0.01313*	-0.01235*	-0.01214*	-0.01184*
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
14	-0.0354***	-0.0342***	-0.0319***	-0.0299***	-0.0283***	-0.0266***	-0.0251***	-0.0235***	-0.0225**	-0.0212**	-0.0202**	-0.0194**
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0187**	-0.0180**	-0.0180**	-0.0173**	-0.0150*	-0.0143*	-0.0139*	-0.0134*	-0.0126*	-0.0124*	-0.0121*	-0.0118
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
15	-0.0363***	-0.0354***	-0.0325***	-0.0300***	-0.0281***	-0.0263***	-0.0246***	-0.0234**	-0.0225**	-0.0212**	-0.0203**	-0.0194**
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0187**	-0.0189**	-0.018**	-0.0159*	-0.0151*	-0.0145*	-0.0141*	-0.0133*	-0.0130*	-0.0127*	-0.0123	-0.0121
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
16	-0.0357***	-0.0345***	-0.0316***	-0.0292***	-0.0272***	-0.0254***	-0.0242***	-0.0234**	-0.0223**	-0.0210**	-0.0200**	-0.0193**
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0195**	-0.0189**	-0.0167**	-0.0159*	-0.0152*	-0.1444*	-0.0137*	-0.0135*	-0.0130	-0.0127	-0.0124	-0.0121
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
17	-0.0355***	-0.0338***	-0.0307***	-0.0284***	-0.0264***	-0.0249***	-0.0239**	-0.0228**	-0.0217**	-0.0204**	-0.0196**	-0.0198**
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.01924**	-0.01711**	-0.01651*	-0.01576*	-0.015*	-0.014*	-0.01364*	-0.0132	-0.0127	-0.0124	-0.0121	-0.0118
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
18	-0.0356***	-0.0332***	-0.0305***	-0.0279***	-0.0263***	-0.0251**	-0.0237**	-0.0225**	-0.0211**	-0.0201**	-0.0202**	-0.0196**
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0176**	-0.0171*	-0.0166*	-0.0159*	-0.0148*	-0.0144*	-0.0139	-0.0134	-0.0130	-0.0126	-0.0123	-0.0120
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
19	-0.0348***	-0.0327***	-0.0292***	-0.0273***	-0.0260***	-0.0247**	-0.0234**	-0.0220**	-0.0211**	-0.0212**	-0.0206**	-0.0184**
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0179*	-0.0174*	-0.0169*	-0.0159*	-0.0154*	-0.0147*	-0.0142	-0.0138	-0.0133	-0.0139	-0.0126	-0.0123

Table C3, Panel B Continued

20	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0346***	-0.0312***	-0.0287***	-0.0270***	-0.0256**	-0.0241**	-0.0226**	-0.0217**	-0.0219**	-0.0210**	-0.0188*	-0.0183*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0179*	-0.0176*	-0.0166*	-0.0160*	-0.0153*	-0.0146	-0.0142	-0.0137	-0.0132	-0.0129	-0.0125	-0.0121
21	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0329***	-0.0311***	-0.0288***	-0.0263***	-0.0244**	-0.0229**	-0.0218**	-0.0222**	-0.0213**	-0.0189*	-0.0183*	-0.0180*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0177*	-0.01703*	-0.01652*	-0.01585*	-0.0152	-0.0145	-0.0140	-0.0136	-0.0131	-0.0127	-0.0123	-0.0118
22	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0340***	-0.0313***	-0.0287***	-0.0260***	-0.0241**	-0.0230**	-0.0232**	-0.0224**	-0.0200**	-0.0190*	-0.0185*	-0.0181*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0176*	-0.0173*	-0.0167*	-0.0161*	-0.0155	-0.0147	-0.0142	-0.0136	-0.0131	-0.0137	-0.0122	-0.0119
23	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0348***	-0.0311***	-0.0285***	-0.0259***	-0.0246**	-0.0247**	-0.0238**	-0.0216**	-0.0205**	-0.0196**	-0.0192*	-0.0186*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.01835*	-0.01782*	-0.01736*	-0.01677*	-0.01597*	-0.0153	-0.0146	-0.0141	-0.0135	-0.0129	-0.0125	-0.0120
24	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0314***	-0.0296***	-0.0267***	-0.0250**	-0.0250**	-0.0243**	-0.0219**	-0.0209**	-0.0201**	-0.0192*	-0.0187*	-0.0183*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0181*	-0.0176*	-0.0171*	-0.0163	-0.0156	-0.0148	-0.0143	-0.0137	-0.0131	-0.0127	-0.0123	-0.0118

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with lowest past returns are denoted as losers. The figures in the table are average return of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at 10%, 5% and 1% using T-test respectively. Market Dynamics are defined by the past 12 months' value weighted cumulative market returns.*

Table C3 Continued

Panel C: Results of Momentum Strategies under (DOWN, DOWN) conditional on Past 12-month Market Return

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	-0.0077	-0.0025	0.0007	0.0011	0.0016	0.0026	0.0033*	0.0021	0.0031*	0.0019	0.0019	0.0022
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0014	0.0016	0.0012	0.0010	0.0005	0.0004	0.0006	0.0004	0.0006	0.0007	0.0005	0.0006
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
2	-0.0012	0.0051	0.0054	0.0063*	0.0062*	0.0074**	0.0066**	0.0060**	0.0048**	0.0041	0.0044	0.0035
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0033	0.0024	0.0021	0.0013	0.0009	0.0017	0.0016	0.0016	0.0015	0.0014	0.0013	0.0018
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
3	0.0019	0.0058	0.0068*	0.0078**	0.0082**	0.0078**	0.0079**	0.0060*	0.0060*	0.0051*	0.0046	0.0046*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0035	0.0035	0.0026	0.0020	0.0025	0.0024	0.0022	0.0022	0.0021	0.0022	0.0025	0.0026
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
4	0.0026	0.0082*	0.0085*	0.0097**	0.0091**	0.0091**	0.0076*	0.0064*	0.0065*	0.0051	0.0054	0.0041
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0037	0.0028	0.0020	0.0029	0.0025	0.0025	0.0023	0.0022	0.0023	0.0027	0.0029	0.0028
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
5	0.0085	0.0101**	0.0112**	0.0105**	0.0101**	0.0084*	0.0077*	0.0072*	0.0058	0.0058	0.0043	0.0043
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0031	0.0023	0.0033	0.0026	0.0024	0.0023	0.0022	0.0022	0.0029	0.0031	0.0029	0.0027
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
6	0.0080	0.0118**	0.0115**	0.0116**	0.0096**	0.0088*	0.0081*	0.0063	0.0063	0.0045	0.0046	0.0036
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0025	0.0035	0.0028	0.0024	0.0021	0.0021	0.0021	0.0027	0.0030	0.0028	0.0026	0.0024
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
7	0.0108*	0.0114**	0.0118**	0.0100*	0.0089*	0.0085*	0.0065	0.0061	0.0043	0.0044	0.0034	0.0025
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0034	0.0028	0.0023	0.0017	0.0015	0.0016	0.0022	0.0025	0.0024	0.0023	0.0020	0.0019
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
8	0.0097	0.0114*	0.0103*	0.0094*	0.0092*	0.0073	0.0070	0.0047	0.0049	0.0036	0.0025	0.0036
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0027	0.0022	0.0017	0.0012	0.0013	0.0020	0.0024	0.0022	0.0021	0.0020	0.0018	0.0015
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
9	0.0108*	0.0108*	0.0103*	0.0098*	0.0075	0.0073	0.0049	0.0048	0.0036	0.0022	0.0033	0.0024
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0018	0.0014	0.0009	0.0007	0.0013	0.0017	0.0016	0.0014	0.0014	0.0013	0.0010	0.0009

Table C3, Panel C Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
10	0.0089	0.0092	0.0091	0.0069	0.0071	0.0043	0.0044	0.0030	0.0017	0.0031	0.0022	0.0017
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0011	0.0007	0.0005	0.0009	0.0014	0.0012	0.0012	0.0010	0.0010	0.0007	0.0005	0.0012
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
11	0.0070	0.0098	0.0074	0.0074	0.0048	0.0047	0.0034	0.0018	0.0032	0.0023	0.0017	0.0012
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0006	0.0004	0.0007	0.0010	0.0009	0.0008	0.0007	0.0005	0.0005	0.0003	0.0010	0.0009
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
12	0.0089	0.0066	0.0067	0.0043	0.0041	0.0029	0.0017	0.0029	0.0021	0.0015	0.0008	0.0003
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0000	0.0004	0.0007	0.0004	0.0003	0.0003	0.0002	0.0001	0.0000	0.0007	0.0006	0.0001
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
13	0.0031	0.0054	0.0034	0.0039	0.0026	0.0013	0.0025	0.0016	0.0010	0.0003	-0.0003	-0.0004
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0000	0.0003	0.0000	-0.0003	-0.0003	-0.0004	-0.0005	-0.0006	0.0002	0.0001	-0.0004	-0.0002
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
14	0.0010	0.0026	0.0034	0.0021	0.0012	0.0022	0.0013	0.0005	-0.0001	-0.0007	-0.0009	-0.0004
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0002	-0.0005	-0.0007	-0.0010	-0.0010	-0.0011	-0.0012	-0.0004	-0.0004	-0.0009	-0.0006	0.0000
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
15	0.0017	0.0019	0.0017	0.0005	0.0021	0.0014	0.0008	0.0000	-0.0005	-0.0007	-0.0003	0.0000
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0004	-0.0007	-0.0010	-0.0012	-0.0013	-0.0014	-0.0005	-0.0006	-0.0010	-0.0007	-0.0001	-0.0001
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
16	0.0006	0.0007	-0.0001	0.0017	0.0012	0.0008	-0.0003	-0.0009	0.0006	-0.0005	-0.0002	-0.0005
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0010	-0.0012	-0.0014	-0.0017	-0.0018	-0.0009	-0.0009	-0.0014	-0.0010	-0.0004	-0.0004	-0.0005
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
17	0.0000	-0.0006	0.0013	0.0009	0.0005	-0.0001	-0.0008	-0.0009	-0.0003	0.0000	-0.0004	-0.0008
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0012	-0.0014	-0.0017	-0.0019	-0.0010	-0.0010	-0.0014	-0.0011	-0.0004	-0.0005	-0.0006	-0.0006
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
18	-0.0017	0.0006	0.0004	0.0001	-0.0003	-0.0005	-0.0004	0.0000	0.0002	-0.0002	-0.0006	-0.0010
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0015	-0.0017	-0.0019	-0.0012	-0.0012	-0.0016	-0.0012	-0.0006	-0.0006	-0.0007	-0.0008	-0.0008
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
19	-0.0004	0.0001	0.0004	0.0002	0.0000	0.0000	0.0006	0.0007	0.0002	-0.0003	-0.0007	-0.0011
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0016	-0.0018	-0.0011	-0.0013	-0.0017	-0.0013	-0.0007	-0.0007	-0.0007	-0.0008	-0.0009	-0.0008

Table C3, Panel C Continued

20	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0015	-0.0004	-0.0002	-0.0004	0.0000	0.0010	0.0012	0.0005	0.0000	-0.0006	-0.0010	-0.0013
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0017	-0.0010	-0.0012	-0.0016	-0.0013	-0.0007	-0.0008	-0.0008	-0.0008	-0.0009	-0.0009	-0.0009
21	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0008	-0.0004	-0.0002	0.0001	0.0014	0.0015	0.0009	0.0003	-0.0003	-0.0008	-0.0013	-0.0016
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0010	-0.0011	-0.0016	-0.0013	-0.0008	-0.0008	-0.0008	-0.0009	-0.0009	-0.0009	-0.0009	-0.0008
22	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0009	-0.0008	-0.0004	0.0013	0.0017	0.0011	0.0005	-0.0002	-0.0007	-0.0012	-0.0016	-0.0009
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0012	-0.0017	-0.0015	-0.0011	-0.0012	-0.0011	-0.0011	-0.0011	-0.0011	-0.0011	-0.0011	-0.0010
23	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0018	-0.0008	0.0011	0.0018	0.0011	0.0006	0.0000	-0.0006	-0.0011	-0.0015	-0.0009	-0.0011
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0018	-0.0014	-0.0011	-0.0012	-0.0013	-0.0012	-0.0012	-0.0011	-0.0010	-0.0010	-0.0010	-0.0010
24	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	-0.0011	0.0011	0.0019	0.0016	0.0012	0.0006	0.0000	-0.0005	-0.0009	-0.0004	-0.0007	-0.0014
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0013	-0.0009	-0.0011	-0.0012	-0.0013	-0.0013	-0.0012	-0.0011	-0.0011	-0.0011	-0.0010	-0.0010

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with lowest past returns are denoted as losers. The figures in the table are average return of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at 10%, 5% and 1% using T-test respectively. Market Dynamics are defined by the past 12 months' value weighted cumulative market returns.*

Table C3 Continued

Panel D: Results of Momentum Strategies under (DOWN, UP) conditional on Past 12-month Market Return

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	-0.0340***	-0.0267***	-0.0196***	-0.015***	-0.0114***	-0.0100***	-0.0070**	-0.0071**	-0.0057**	-0.0053**	-0.0049**	-0.0044**
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.00401	-0.0036*	-0.0039*	-0.0032*	-0.0038*	-0.0035*	-0.0029	-0.0026	-0.0026	-0.0029*	-0.0032**	-0.0032**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
2	-0.0381***	-0.0275***	-0.0233***	-0.0183***	-0.0146***	-0.0109**	-0.0081**	-0.0070*	-0.0057	-0.0061*	-0.0055*	-0.0050
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0042	-0.0042	-0.0036	-0.0034	-0.0035	-0.0025	-0.0031	-0.0031	-0.0032	-0.0040	-0.0038	-0.0037
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
3	-0.0388***	-0.0277***	-0.0216***	-0.0180***	-0.0129**	-0.0104**	-0.0079*	-0.0070	-0.0064	-0.0060	-0.0053	-0.0045
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0046	-0.0039	-0.0041	-0.0039	-0.0038	-0.0036	-0.0031	-0.0035	-0.0044	-0.0045	-0.0044	-0.0043
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
4	-0.0357***	-0.0261***	0.0214***	-0.0159**	-0.0112**	-0.0084	-0.0062	-0.0060	-0.0047	-0.0045	-0.0038	-0.0038
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0031	-0.0030	-0.0032	-0.0025	-0.0036	-0.0031	-0.0032	-0.0044	-0.0044	-0.0045	-0.0043	-0.0054
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
5	-0.0302***	-0.0250***	-0.0179**	-0.0125**	-0.0091	-0.0068	-0.0067	-0.0057	-0.0045	-0.0041	-0.0040	-0.0029
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0028	-0.0030	-0.0024	-0.0040	-0.0032	-0.0033	-0.0046	-0.0047	-0.0047	-0.0047	-0.0060	-0.0060
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
6	-0.0294***	-0.0201**	-0.0149**	-0.0105	-0.0078	-0.0070	-0.0054	-0.0462	-0.0037	-0.0039	0.0031	0.0031
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0030	0.0023	0.0038	0.0031	0.0032	-0.0043	-0.0045	-0.0046	-0.0045	-0.0061	-0.0060	-0.0060
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
7	-0.0234**	-0.0165*	-0.0115	-0.0083	-0.0074	-0.0056	-0.0043	-0.0035	-0.0032	-0.0026	-0.0024	-0.0025
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0016	-0.0038	-0.0028	-0.0029	-0.0043	-0.0042	-0.0044	-0.0044	-0.0061	-0.0061	-0.0061	-0.0060
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
8	-0.0213**	-0.0148*	-0.0105	-0.0088	-0.0064	-0.0048	-0.0040	-0.0040	-0.0030	-0.0031	-0.0032	-0.0024
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0044	-0.0033	-0.0033	-0.0048	-0.0048	-0.0048	-0.0048	-0.0068	-0.0068	-0.0068	-0.0067	-0.0068
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
9	-0.0187**	-0.0127	-0.0098	-0.0068	-0.0048	-0.0040	-0.0035	-0.0031	-0.0030	-0.0034	-0.0026	-0.0049
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0035	-0.0035	-0.0050	-0.0050	-0.0050	-0.0047	-0.0069	-0.0069	-0.0069	-0.0069	-0.0070	-0.0055

Table C3, Panel D Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
10	-0.0174**	-0.0135	-0.0097	-0.0070	-0.0052	-0.0043	-0.0032	-0.0035	-0.0031	-0.0025	-0.0056	-0.0039
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0038	-0.0055	-0.0054	-0.0053	-0.0051	-0.0073	-0.0073	-0.0073	-0.0072	-0.0073	-0.0058	-0.0059
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
11	-0.0183**	-0.0132	-0.0102	-0.0073	-0.0064	-0.0050	-0.0046	-0.0044	-0.0035	-0.0062	-0.0045	-0.0044
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0060	-0.0058	-0.0058	-0.0055	-0.0079	-0.0077	-0.0077	-0.0076	-0.0077	-0.0061	-0.0061	-0.0060
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
12	-0.0169*	-0.0126	-0.0092	-0.0076	-0.0054	-0.0044	-0.0039	-0.0033	-0.0062	-0.0040	-0.0041	-0.0058
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0056	-0.0056	-0.0053	-0.0078	-0.0077	-0.0076	-0.0075	-0.0077	-0.0062	-0.0062	-0.0061	-0.0060
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
13	-0.017**	-0.0122	-0.0096	-0.0070	-0.0062	-0.0052	-0.0038	-0.0067	-0.0045	-0.0045	-0.0063	-0.0061
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0061	-0.0059	-0.0084	-0.0082	-0.0081	-0.0080	-0.0081	-0.0066	-0.0067	-0.0067	-0.0065	-0.0063
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
14	-0.0158*	-0.0138	-0.0095	-0.0074	-0.0057	-0.0044	-0.0070	-0.0043	-0.0044	-0.0064	-0.0062	-0.0061
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0059	-0.0085	-0.0084	-0.0082	-0.0080	-0.0080	-0.0066	-0.0067	-0.0067	-0.0066	-0.0064	-0.0063
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
15	-0.0181**	-0.0123	-0.0098	-0.0079	-0.0053	-0.0076	-0.0050	-0.0048	-0.0067	-0.0065	-0.0064	-0.0061
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0088	-0.0087	-0.0085	-0.0083	-0.0083	-0.0068	-0.0069	-0.0070	-0.0070	-0.0068	-0.0066	-0.0072
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
16	-0.0145	-0.0125	-0.0103	-0.0071	-0.0089	-0.0055	-0.0051	-0.0070	-0.0067	-0.0067	-0.0064	-0.0090
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0089	-0.0088	-0.0087	-0.0087	-0.0071	-0.0071	-0.0072	-0.0073	-0.0072	-0.0070	-0.0076	-0.0078
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
17	-0.0170*	-0.0143	-0.0098	-0.0100	-0.0064	-0.0057	-0.0075	-0.0072	-0.0071	-0.0068	-0.0095	-0.0093
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0092	-0.0090	-0.0090	-0.0074	-0.0074	-0.0074	-0.0074	-0.0074	-0.0073	-0.0079	-0.0080	-0.0079
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
18	-0.0189*	-0.0131	-0.0111	-0.0071	-0.0064	-0.0077	-0.0072	-0.0072	-0.0069	-0.0096	-0.0094	-0.0093
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0092	-0.0092	-0.0076	-0.0076	-0.0076	-0.0076	-0.0075	-0.0076	-0.0083	-0.0085	-0.0084	-0.0082
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
19	-0.0156*	-0.0130	-0.0084	-0.0074	-0.0088	-0.0079	-0.0076	-0.0071	-0.0100	-0.0098	-0.0098	-0.0095
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0097	-0.0082	-0.0081	-0.0081	-0.0080	-0.0079	-0.0079	-0.0087	-0.0090	-0.0090	-0.0088	-0.0085

Table C3, Panel D Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
20	-0.0143	-0.0103	-0.0090	-0.0103	-0.0093	-0.0084	-0.0078	-0.0105	-0.0104	-0.0104	-0.0102	-0.0101
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0087	-0.0087	-0.0087	-0.0085	-0.0084	-0.0084	-0.0092	-0.0096	-0.0095	-0.0094	-0.0091	-0.0088
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
21	-0.0138	-0.0111	-0.0121	-0.0103	-0.0093	-0.0082	-0.0107	-0.0105	-0.0103	-0.0102	-0.0103	-0.0088
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0098	-0.0090	-0.0088	-0.0086	-0.0087	-0.0094	-0.0098	-0.0098	-0.0098	-0.0096	-0.0093	-0.0091
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
22	-0.0149	-0.0145*	-0.0121	-0.0102	-0.0090	-0.0111	-0.0107	-0.0105	-0.0104	-0.0105	-0.0092	-0.0091
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0091	-0.0091	-0.0089	-0.0089	-0.0097	-0.0100	-0.0101	-0.0101	-0.0100	-0.0098	-0.0096	-0.0093
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
23	-0.0170*	-0.0137	-0.0115	-0.0099	-0.0123	-0.0114	-0.0111	-0.0109	-0.0109	-0.0097	-0.0097	-0.0096
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0095	-0.0093	-0.0092	-0.0100	-0.0103	-0.0102	-0.0102	-0.0102	-0.0101*	-0.0099*	-0.0097*	-0.0095*
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
24	-0.0160*	-0.0131	-0.0110	-0.0126	-0.0119	-0.0109	-0.0107	-0.0108	-0.0095	-0.0096	-0.0096	-0.0094
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0093	-0.0093	-0.0101	-0.0105	-0.0105	-0.0104	-0.0103	-0.0102	-0.0102*	-0.0100*	-0.0098*	-0.0097*

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with lowest past returns are denoted as losers. The figures in the table are average return of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at 10%, 5% and 1% using T-test respectively. Market Dynamics are defined by the past 12 months' value weighted cumulative market returns.*

Appendix C4

Table C4 Momentum Returns under Different Market Dynamics Following Past 24-month Cumulative Value-weighted Market Returns

Panel A: Results of Momentum Strategies under (UP, UP) conditional on Past 24-month Market Return												
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	-0.0067	-0.0111	-0.0010	0.0015	0.0015	0.0019	0.0020	0.0013	0.0008	0.0007	0.0007	0.0006
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0009	0.0001	-0.0004	0.0000	-0.0003	-0.0004	-0.0007	-0.0009	-0.0011	-0.0011	-0.0017	-0.0020
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
2	-0.0146	-0.0046	0.0025	0.0021	0.0017	0.0023	0.0025	0.0018	0.0013	0.0015	0.0018	0.0019
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0014	0.0006	0.0004	0.0001	0.0000	-0.0002	-0.0007	-0.0012	-0.0012	-0.0016	-0.0024	-0.0025
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
3	-0.0045	0.0033	0.0062	0.0052	0.0052	0.0054	0.0042	0.0031	0.0028	0.0025	0.0025	0.0018
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0011	0.0007	0.0003	0.0000	-0.0002	-0.0007	-0.0014	-0.0018	-0.0024	-0.0029	-0.0034	-0.0036
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
4	0.0043	0.0056	0.0074	0.0065	0.0068	0.0060	0.0051	0.0045	0.0042	0.0039	0.0032	0.0022
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0016	0.0009	0.0006	0.0003	-0.0003	-0.0010	-0.0012	-0.0019	-0.0027	-0.0030	-0.0037	-0.0040
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
5	0.0034	0.0045	0.0070	0.0076	0.0061	0.0052	0.0046	0.0039	0.0036	0.0030	0.0023	0.0017
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0009	0.0002	-0.0002	-0.0007	-0.0014	-0.0018	-0.0026	-0.0034	-0.0038	-0.0043	-0.0050	-0.0054
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
6	0.0020	0.0035	0.0070	0.0064	0.0051	0.0045	0.0039	0.0030	0.0023	0.0016	0.0011	0.0004
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0001	-0.0009	-0.0015	-0.0020	-0.0026	-0.0035	-0.0043	0.0049	-0.0054	-0.0060	-0.0066	-0.0070
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
7	0.0028	0.0051	0.0074	0.0060	0.0047	0.0041	0.0032	0.0020	0.0010	0.0004	-0.0001	-0.0007
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0013	-0.0021	-0.0027	-0.0031	-0.0039	-0.0047	-0.0052	-0.0060	-0.0067	-0.0073	-0.0081	-0.00835*
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
8	0.0044	0.0042	0.0059	0.0051	0.0039	0.0032	0.0018	0.0005	0.0000	-0.0007	-0.0013	-0.0019
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0026	-0.0035	-0.0039	-0.0046	-0.0055	-0.0060	-0.0065	-0.0074	-0.0080	-0.0086	-0.00933*	-0.0097*
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
9	0.0021	0.0033	0.0046	0.0041	0.0032	0.0017	0.0005	-0.0006	-0.0014	-0.0019	-0.0023	-0.0030
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0038	-0.0044	-0.0052	-0.0059	-0.0064	-0.0070	-0.0078	-0.0086	-0.0093*	-0.0099*	-0.0106*	-0.0110*

Table C4, Panel A Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
10	0.0015	0.0031	0.0046	0.0040	0.0021	0.0008	-0.0001	-0.0014	-0.0019	-0.0023	-0.0031	-0.0038
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0042	-0.0051	-0.0059	-0.0064	-0.0070	-0.0778	-0.0086	-0.0944	-0.0101*	-0.0108*	-0.0115*	-0.0118*
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
11	0.0023	0.0032	0.0043	0.0026	0.0008	-0.0002	-0.0013	-0.0024	-0.0029	-0.0037	-0.0044	-0.0050
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0060	-0.0069	-0.0074	-0.0078	-0.0086	-0.0093	-0.0102	-0.0110*	0.0118*	-0.0123*	-0.0128**	-0.0131**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
12	0.0016	0.0025	0.0027	0.0012	0.0001	-0.0008	-0.0017	-0.0025	-0.0035	-0.0045	-0.0050	-0.0060
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0070	-0.0077	-0.0083	-0.0090	-0.0098	-0.0105	-0.0113	-0.0121*	-0.0127*	-0.0131*	-0.0136**	-0.0138**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
13	0.0014	0.0007	0.0019	0.0007	-0.0008	-0.0019	-0.0029	-0.0041	-0.0049	-0.0055	-0.0061	-0.0073
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0081	-0.0088	-0.0096	-0.0103	-0.0111	-0.0119*	-0.0127*	-0.0134*	-0.0139*	-0.0142**	-0.0147**	-0.0149**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
14	-0.0002	0.0004	0.0017	0.0005	-0.0010	-0.0023	-0.0037	-0.0049	-0.0055	-0.0065	-0.0073	-0.0082
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0090	-0.0100	-0.0107	-0.0114	-0.0122	-0.0129*	-0.0137*	-0.0143*	-0.0148**	-0.0152**	-0.0156**	-0.0157**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
15	0.0008	0.0014	0.0016	0.0003	-0.0011	-0.0026	-0.0044	-0.0053	-0.0064	-0.0076	-0.0083	-0.0092
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0101	-0.0109	-0.0116	-0.0123	-0.0131*	-0.0138*	-0.0144*	-0.0150*	-0.0154**	-0.0157**	-0.0160**	-0.0161**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
16	0.0002	0.0007	0.0009	-0.0005	-0.0022	-0.0040	-0.0052	-0.0067	-0.0078	-0.0084	-0.0092	-0.0101
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0109	-0.0118	-0.0124	-0.0131	-0.0138*	-0.0145*	-0.0152*	-0.0157*	-0.0161**	-0.0164**	-0.0166**	-0.0167**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
17	-0.0017	-0.0009	0.0000	-0.0019	-0.0039	-0.0051	-0.0069	-0.0083	-0.0090	-0.0098	-0.0105	-0.0113
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0122	-0.0129	-0.0196*	-0.0143*	-0.015*	-0.0156*	-0.0162*	-0.0168**	-0.0171**	-0.0171**	-0.0173**	-0.0160*
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
18	-0.0014	-0.0009	-0.0006	-0.0032	-0.0048	-0.0067	-0.0084	-0.0095	-0.0104	-0.0113	-0.0119	-0.0129
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0136	-0.0143*	-0.0149*	-0.0154*	-0.0161*	-0.0166*	-0.0172**	-0.0177**	-0.0178**	-0.0179**	-0.0167*	-0.0174**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
19	0.0003	-0.0004	-0.0017	-0.0036	-0.0059	-0.0078	-0.0091	-0.0104	-0.0113	-0.0120	-0.0128	-0.0137
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0146*	-0.0153*	-0.0158*	-0.0163*	-0.0169*	-0.0174*	-0.0179**	-0.0182**	-0.0184**	-0.0169*	-0.0179*	-0.0178*

Table C4, Panel A Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
20	-0.0021	-0.0036	-0.0033	-0.0058	-0.0081	-0.0094	-0.0107	-0.0120	-0.0129	-0.0139	-0.0146	-0.0154*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0161*	-0.0166*	-0.0172*	-0.0177*	-0.0182*	-0.0187**	-0.0189**	-0.0193**	-0.0177*	-0.0184*	-0.0185*	-0.0136
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
21	-0.0060	-0.0045	-0.0060	-0.0080	-0.0095	-0.0110	-0.0127	-0.0139	-0.0149	-0.01556*	-0.01632*	-0.01687*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0174*	-0.0180*	-0.0184*	-0.0189*	-0.0194**	-0.0196**	-0.0199**	-0.0183*	-0.0191*	-0.0193*	-0.0142	-0.0151*
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
22	-0.0050	-0.0073	-0.0081	-0.0097	-0.0116	-0.0132	-0.0144	-0.0156	-0.0164*	-0.0172*	-0.0175*	-0.0179*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0186*	-0.0191*	-0.0195*	-0.0199**	-0.0200**	-0.0204**	-0.0186*	-0.0195*	-0.0197*	-0.0144	-0.0155*	-0.0157*
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
23	-0.0113	-0.0105	-0.0100	-0.0120	-0.0141	-0.0153	-0.0166*	-0.0178*	-0.0187*	-0.0189*	-0.0191*	-0.0197*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0202**	-0.0206**	-0.0208**	-0.0209**	-0.0213**	-0.0194*	-0.0203*	-0.0206*	-0.0150*	-0.0160*	-0.0161*	-0.0108
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
24	-0.0109	-0.0101	-0.0105	-0.0124	-0.0142	-0.0157	-0.0170*	-0.0185*	-0.0191*	-0.0195*	-0.0199*	-0.0202*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0208**	-0.0210**	-0.0210**	-0.0212**	-0.0193*	-0.0203*	-0.0205*	-0.0151	-0.0163*	-0.0164*	-0.0109	-0.0096

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with lowest past returns are denoted as losers. The figures in the table are average return of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at 10%, 5% and 1% using T-test respectively. Market Dynamics are defined by the past 24 months' value weighted cumulative market returns.*

Table C4 Continued

Panel B: Results of Momentum Strategies under (UP, DOWN) conditional on Past 24-month Market Return

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	-0.0166**	-0.0155***	-0.0112***	-0.0109***	-0.0089***	-0.0069***	-0.0052**	-0.0052**	-0.0051***	-0.0043**	-0.0038**	-0.0033*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0040**	-0.0043**	-0.0045***	-0.0047***	-0.0047***	-0.0043***	-0.0042***	-0.0041***	-0.0037***	-0.0038***	-0.0037***	-0.0034***
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
2	-0.0214**	-0.0141*	-0.0124**	-0.0108**	-0.0093**	-0.0065*	-0.0057*	-0.0070**	-0.0062**	-0.0053**	-0.0047*	-0.0050*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0056**	-0.0060**	-0.0064**	-0.0066***	-0.0063***	-0.0058***	-0.0056***	-0.0054**	-0.0051**	-0.0052**	-0.0049**	-0.0046**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
3	-0.0205***	-0.0176**	-0.0153**	-0.0126**	-0.0097**	-0.0078*	-0.0080**	-0.0077**	-0.0071**	-0.0061*	-0.0060*	-0.0063*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0070**	-0.0075**	-0.0078**	-0.0079***	-0.0076***	-0.0072**	-0.0069**	-0.0068**	-0.0064**	-0.0062**	-0.0058**	-0.0055**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
4	-0.0227***	-0.0172**	-0.0147**	-0.0114**	-0.0088*	-0.0089**	-0.0081*	-0.0079*	-0.0071*	-0.0069*	-0.0072*	-0.0077*
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0083**	-0.0088**	-0.0091**	-0.0091**	-0.0089**	-0.0084**	-0.0082**	-0.0079**	-0.0075**	-0.0072**	-0.0068**	-0.0067**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
5	-0.0183**	-0.0179**	-0.0133**	-0.0107*	-0.0112**	-0.0098*	-0.0090*	-0.0084*	-0.0084*	-0.0083*	-0.0087*	-0.0092**
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0099**	-0.0102**	-0.0103**	-0.0104**	-0.0100**	-0.0096**	-0.0092**	-0.0089**	-0.0085**	-0.0082**	-0.0080**	-0.0076**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
6	-0.0206***	-0.0161**	-0.0126**	-0.0126**	-0.0112**	-0.0099*	-0.0090*	-0.0093*	-0.0094*	-0.0095*	-0.0101**	-0.0106**
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0111**	-0.0113**	-0.0047**	-0.0112**	-0.0108**	-0.0104**	-0.0099**	-0.0094**	-0.0089**	-0.0087**	-0.0085**	-0.0082**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
7	-0.0180***	-0.0150**	-0.0145**	-0.0123**	-0.0112*	-0.0098*	-0.0097*	-0.0101*	-0.0103*	-0.0105*	-0.0112**	-0.0116**
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0119**	-0.0121**	-0.0121**	-0.0120**	-0.0116**	-0.0110**	-0.0106**	-0.0101**	-0.0098**	-0.0094**	-0.0091**	-0.0087**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
8	-0.0162**	-0.0180***	-0.0150**	-0.0134**	-0.0118*	-0.0111*	-0.0111*	-0.0116*	-0.0121**	-0.0124**	-0.0129**	-0.0131**
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0135**	-0.0134**	-0.0134**	-0.0132***	-0.0126**	-0.0121**	-0.0115**	-0.0112**	-0.0107**	-0.0103**	-0.0099**	-0.0096**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
9	-0.0219***	-0.0187***	-0.1574**	-0.0137**	-0.0129**	-0.0123*	-0.0127*	-0.0134**	-0.0137**	-0.0139**	-0.0142**	-0.0144**
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0145**	-0.0144***	-0.0144***	-0.0141***	-0.0135***	-0.0128***	-0.0124**	-0.0119**	-0.0114**	-0.0109**	-0.0106**	-0.0102**

Table C4, Panel B Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
10	-0.0182**	-0.0179**	-0.0152**	-0.0147**	-0.0143**	-0.0143**	-0.0148**	-0.0153**	-0.0154**	-0.0153**	-0.0155**	-0.0154**
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0155***	-0.0155***	-0.0153***	-0.0150***	-0.0142***	-0.0138***	-0.0132***	-0.0128***	-0.0122**	-0.0118**	-0.0113**	-0.0109**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
11	-0.0208***	-0.0188**	-0.0176**	-0.0169**	-0.0169**	-0.0170**	-0.0171**	-0.0175**	-0.0172**	-0.0170**	-0.0168***	-0.0168***
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0168***	-0.0166***	-0.0164***	-0.0158***	-0.0152***	-0.0146***	-0.0140***	-0.0135***	-0.0129**	-0.0123**	-0.0119**	-0.0116**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
12	-0.0199**	-0.0203***	-0.0187**	-0.0184**	-0.0187**	-0.0185**	-0.0186**	-0.0187***	-0.0186***	-0.0181***	-0.0181***	-0.0180***
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0180***	-0.0178***	-0.0173***	-0.0168***	-0.0161***	-0.0154***	-0.0148***	-0.0142***	-0.0135**	-0.0130**	-0.0126**	-0.0122**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
13	-0.0245***	-0.0236***	-0.0221***	-0.0217***	-0.0215***	-0.0211***	-0.0206***	-0.0206***	-0.0199***	-0.0195***	-0.0193***	-0.0190***
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0189***	-0.0184***	-0.0181***	-0.0176***	-0.0169***	-0.0160***	-0.0155***	-0.0149***	-0.0142***	-0.0138**	-0.0133**	-0.0128**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
14	-0.0266***	-0.0255***	-0.0241***	-0.0232***	-0.0224***	-0.0216***	-0.0212***	-0.0209***	-0.0206***	-0.0200***	-0.0199***	-0.0195***
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0193***	-0.0190***	-0.0185***	-0.0180***	-0.0171***	-0.0164***	-0.0158***	-0.0152***	-0.0146***	-0.0142**	-0.0136**	-0.0130**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
15	-0.0284***	-0.0228***	-0.0258***	-0.0244***	-0.0232***	-0.0223***	-0.0217***	-0.0215***	-0.0211***	-0.0205***	-0.0203***	-0.0199***
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0197***	-0.0193***	-0.0189***	-0.0181***	-0.0173***	-0.0166***	-0.0160***	-0.0155***	-0.0149**	-0.0143**	-0.0137**	-0.0132**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
16	-0.0289***	-0.0282***	-0.0263***	-0.0249***	-0.0237***	-0.0227***	-0.0223***	-0.0222***	-0.0216***	-0.0210***	-0.0205***	-0.0203***
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0201***	-0.0197***	-0.0191***	-0.0185***	-0.0177***	-0.0169***	-0.0164***	-0.0158***	-0.0151**	-0.0145**	-0.0139**	-0.0133**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
17	-0.0296***	-0.0284***	-0.0260***	-0.0248***	-0.0239***	-0.0229***	-0.0227***	-0.0224***	-0.0217***	-0.0209***	-0.0207***	-0.0204***
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0201***	-0.0196***	-0.0191***	-0.0184***	-0.0176***	-0.0169***	-0.0163***	-0.0155**	-0.0148**	-0.0142**	-0.0136**	-0.0131**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
18	-0.0304***	-0.0288***	-0.0269***	-0.0256***	-0.0246***	-0.0237***	-0.0229***	-0.0224***	-0.0216***	-0.0211***	-0.0209***	-0.0206***
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0202***	-0.0198***	-0.0193***	-0.0186***	-0.0179***	-0.0172***	-0.0164**	-0.0157**	-0.0149**	-0.0143**	-0.0138**	-0.0132**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
19	-0.0311***	-0.0295***	-0.0271***	-0.0257***	-0.0247***	-0.0237***	-0.0229***	-0.0225***	-0.0220***	-0.0215***	-0.0212***	-0.0208***
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0205***	-0.0201***	-0.0196***	-0.0189***	-0.0182***	-0.0174**	-0.0166**	-0.0159**	-0.0151**	-0.0145**	-0.0139**	-0.0133**

Table C4, Panel B Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
20	-0.0314***	-0.0289***	-0.0270***	-0.0260***	-0.0248***	-0.0237***	-0.0228***	-0.0226***	-0.0222***	-0.0216***	-0.0211***	-0.0208***
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0205***	-0.0201***	-0.0195***	-0.0188***	-0.0179**	-0.0170**	-0.0163**	-0.0156**	-0.0179**	-0.0143**	-0.0137**	-0.0130**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
21	-0.0312***	-0.0297***	-0.0276***	-0.0259***	-0.0243***	-0.0232***	-0.0227***	-0.0225***	-0.0220***	-0.0213***	-0.0209***	-0.0206***
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0203***	-0.0199***	-0.0194***	-0.0186**	-0.0177**	-0.0169**	-0.0161**	-0.0154**	-0.0147**	-0.0140**	-0.0134**	-0.0127*
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
22	-0.0316***	-0.0294***	-0.0278***	-0.0258***	-0.0244***	-0.0237***	-0.0231***	-0.0228***	-0.0221***	-0.0213***	-0.0209***	-0.0205***
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0203***	-0.0199***	-0.0192**	-0.0185**	-0.01767**	-0.0167**	-0.0159**	-0.0152**	-0.0144**	-0.0138**	-0.0131*	-0.0126*
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
23	-0.0323***	-0.0300***	-0.0283***	-0.0263***	-0.0253***	-0.0242***	-0.0235***	-0.0230***	-0.0223***	-0.0215***	-0.0211***	-0.0208***
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0205***	-0.0199***	-0.0193**	-0.0186**	-0.0177**	-0.0168**	-0.0160**	-0.0152**	-0.0144**	-0.0137**	-0.0131*	-0.0124*
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
24	-0.0300***	-0.0284***	-0.0264***	-0.0252***	-0.0241***	-0.0236***	-0.0227***	-0.0223***	-0.0215***	-0.0208***	-0.0205***	-0.0202**
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0199**	-0.0194**	-0.0188**	-0.0180**	-0.0173**	-0.0163**	-0.0155**	-0.0148**	-0.0140*	-0.0134*	-0.0127*	-0.0120*

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with lowest past returns are denoted as losers. The figures in the table are average return of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at 10%, 5% and 1% using T-test respectively. Market Dynamics are defined by the past 24 months' value weighted cumulative market returns.*

Table C4 Continued

Panel C: Results of Momentum Strategies under (DOWN, DOWN) conditional on Past 24-month Market Return												
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	-0.0042	-0.0012	0.0006	0.0029	0.0022	0.0031	0.0031	0.0018	0.0029	0.0015	0.0013	0.0016
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0009	0.0014	0.0011	0.0012	0.0008	0.0008	0.0011	0.0009	0.0010	0.0010	0.0008	0.0008
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
2	0.0010	0.0030	0.0050	0.0062	0.00615*	0.00645*	0.0053	0.00548*	0.0042	0.0033	0.0037	0.0028
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0028	0.0019	0.0019	0.0014	0.0011	0.0022	0.0020	0.0020	0.0020	0.0018	0.0017	0.0022
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
3	0.0020	0.0059	0.0075	0.0083*	0.0078*	0.0068*	0.0071	0.0051	0.0052	0.0040	0.0036	0.0038
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0029	0.0034	0.0026	0.0023	0.0032	0.0032	0.0031	0.0031	0.0029	0.0028	0.0032	0.0034
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
4	0.0056	0.0084	0.0089*	0.0094*	0.0079	0.0081*	0.0063	0.0052	0.0051	0.0036	0.0043	0.0030
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0030	0.0025	0.0019	0.0034	0.0032	0.0033	0.0031	0.0030	0.0031	0.0036	0.0038	0.0037
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
5	0.0072	0.0105*	0.0101*	0.0090*	0.0092*	0.0069	0.0061	0.0057	0.0040	0.0044	0.0030	0.0034
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0026	0.0023	0.0038	0.0035	0.0035	0.0035	0.0033	0.0033	0.0041	0.0043	0.0041	0.0038
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
6	0.0083	0.0104*	0.0092	0.0100*	0.0075	0.0065	0.0059	0.0040	0.0043	0.0026	0.0034	0.0028
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0021	0.0039	0.0035	0.0033	0.0032	0.0032	0.0033	0.0040	0.0044	0.0041	0.0039	0.0036
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
7	0.0092	0.0089	0.0099	0.0079	0.0065	0.0059	0.0037	0.0038	0.0021	0.0028	0.0024	0.0019
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0037	0.0035	0.0033	0.0030	0.0029	0.0032	0.0039	0.0043	0.0042	0.0039	0.0036	0.0043
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
8	0.0071	0.0099	0.0081	0.0072	0.0069	0.0048	0.0048	0.0027	0.0034	0.0026	0.0020	0.0040
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0036	0.0034	0.0032	0.0029	0.0031	0.0040	0.0044	0.0043	0.0041	0.0038	0.0046	0.0042
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
9	0.0098	0.0091	0.0083	0.0079	0.0053	0.0053	0.0030	0.0035	0.0027	0.0018	0.0037	0.0034
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0032	0.0030	0.0028	0.0028	0.0036	0.0042	0.0041	0.0038	0.0036	0.0044	0.0041	0.0037

Table C4, Panel C Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
10	0.0068	0.0072	0.0072	0.0048	0.0053	0.0025	0.0031	0.0022	0.0014	0.0036	0.0033	0.0032
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0030	0.0029	0.0030	0.0037	0.0044	0.0043	0.0040	0.0037	0.0047	0.0042	0.0038	0.0045
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
11	0.0052	0.0082	0.0054	0.0060	0.0033	0.0036	0.0027	0.0016	0.0038	0.0033	0.0033	0.0031
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0029	0.0030	0.0037	0.0043	0.0042	0.0041	0.0038	0.0047	0.0044	0.0040	0.0047	0.0050
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
12	0.0078	0.0049	0.0053	0.0031	0.0035	0.0025	0.0018	0.0040	0.0036	0.0035	0.0033	0.0031
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0032	0.0041	0.0047	0.0044	0.0043	0.0041	0.0050	0.0047	0.0043	0.0050	0.0053	0.0044
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
13	0.0019	0.0048	0.0025	0.0036	0.0027	0.0017	0.0037	0.0034	0.0033	0.0030	0.0029	0.0031
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0039	0.0046	0.0045	0.0041	0.0039	0.0050	0.0046	0.0042	0.0050	0.0053	0.0045	0.0046
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
14	0.0041	0.0023	0.0036	0.0026	0.0019	0.0037	0.0032	0.0031	0.0028	0.0025	0.0028	0.0039
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0045	0.0044	0.0040	0.0037	0.0049	0.0046	0.0042	0.0050	0.0054	0.0045	0.0046	0.0052
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
15	0.0023	0.0026	0.0026	0.0017	0.0039	0.0035	0.0034	0.0031	0.0029	0.0031	0.0040	0.0048
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0046	0.0042	0.0039	0.0050	0.0047	0.0044	0.0052	0.0055	0.0048	0.0049	0.0054	0.0049
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
16	0.0018	0.0022	0.0015	0.0041	0.0038	0.0037	0.0030	0.0028	0.0051	0.0039	0.0047	0.0047
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0042	0.0040	0.0052	0.0048	0.0044	0.0054	0.0057	0.0049	0.0051	0.0056	0.0051	0.0046
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
17	0.0019	0.0013	0.0039	0.0037	0.0038	0.0033	0.0030	0.0033	0.0044	0.0051	0.0049	0.0045
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0041	0.0053	0.0050	0.0046	0.0055	0.0059	0.0052	0.0054	0.0059	0.0053	0.0047	0.0043
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
18	0.0005	0.0035	0.0035	0.0038	0.0035	0.0034	0.0039	0.0048	0.0055	0.0053	0.0049	0.0045
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0055	0.0052	0.0048	0.0056	0.0060	0.0054	0.0056	0.0060	0.0056	0.0050	0.0046	0.0041
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
19	0.0033	0.0040	0.0046	0.0044	0.0043	0.0043	0.0053	0.0061	0.0058	0.0052	0.0048	0.0059
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0055	0.0051	0.0060	0.0063	0.0056	0.0059	0.0063	0.0059	0.0054	0.0048	0.0044	0.0040

Table C4, Panel C Continued

20	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	0.0024	0.0039	0.0043	0.0044	0.0047	0.0061	0.0066	0.0064	0.0056	0.0051	0.0062	0.0059
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0053	0.0062	0.0065	0.0058	0.0060	0.0065	0.0060	0.0054	0.0050	0.0045	0.0041	0.0038
21	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	0.0043	0.0047	0.0047	0.0053	0.0069	0.0073	0.0069	0.0061	0.0055	0.0065	0.0060	0.0055
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0063	0.0067	0.0060	0.0063	0.0067	0.0062	0.0058	0.0053	0.0048	0.0044	0.0040	0.0037
22	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	0.0038	0.0038	0.0048	0.0071	0.0078	0.0071	0.0062	0.0056	0.0065	0.0060	0.0055	0.0063
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0065	0.0058	0.0060	0.0044	0.0059	0.0055	0.0051	0.0046	0.0043	0.0039	0.0035	0.0032
23	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	0.0029	0.0046	0.0074	0.0083	0.0075	0.0063	0.0056	0.0065	0.0059	0.0053	0.0062	0.0065
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0057	0.0060	0.0063	0.0058	0.0054	0.0051	0.0047	0.0043	0.0040	0.0036	0.0033	0.0030
24	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	0.0041	0.0070	0.0080	0.0077	0.0067	0.0061	0.0068	0.0063	0.0057	0.0065	0.0066	0.0058
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0059	0.0064	0.0059	0.0055	0.0051	0.0047	0.0044	0.0041	0.0038	0.0034	0.0031	0.0027

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with lowest past returns are denoted as losers. The figures in the table are average return of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at 10%, 5% and 1% using T-test respectively. Market Dynamics are defined by the past 24 months' value weighted cumulative market returns.*

Table C4 Continued

Panel D: Results of Momentum Strategies under (DOWN, UP) conditional on Past 24-month Market Return

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	-0.0234**	-0.0181**	-0.0155***	-0.0133***	-0.0108***	-0.0092**	-0.0065**	-0.0068**	-0.0049**	-0.0045*	-0.0036*	-0.0032
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0031	-0.0026	-0.0029	-0.0023	-0.0304	-0.0027	-0.0021	-0.0017	-0.0016	-0.0018	-0.0019	-0.0018
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
2	-0.0276***	-0.0218***	-0.0192***	-0.0156***	-0.0127***	-0.0092**	-0.0074*	-0.0060*	-0.0045	-0.0044	-0.0034	-0.0032
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0026	-0.0025	-0.0020	-0.0020	-0.0021	-0.0012	-0.0016	-0.0014	-0.0015	-0.0020	-0.0016	-0.0013
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
3	-0.0289***	-0.0231***	-0.0184***	-0.0154***	-0.0113**	-0.0094*	-0.0068	-0.0055	-0.0042	-0.0035	-0.0029	-0.0023
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0023	-0.0016	-0.0020	-0.0019	-0.0019	-0.0016	-0.0011	-0.0013	-0.0018	-0.0017	-0.0013	-0.0012
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
4	-0.0299***	-0.0225***	-0.0188***	-0.0138**	-0.0104*	-0.0073	-0.0050	-0.0041	-0.0024	-0.0021	-0.0013	-0.0012
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0007	-0.0008	-0.0010	-0.0004	-0.0014	-0.0007	-0.0008	-0.0014	-0.0012	-0.0010	-0.0006	-0.0015
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
5	-0.0268***	-0.0217***	-0.0152**	-0.0115*	-0.0079	-0.0054	-0.0044	-0.0029	-0.0015	-0.0010	-0.0073	0.0001
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0000	-0.0002	0.0002	-0.0013	-0.0006	-0.0005	-0.0013	-0.0011	-0.0008	-0.0005	-0.0015	-0.0013
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
6	-0.0256***	-0.0169**	-0.0128*	-0.0086	-0.0058	-0.0042	-0.0022	-0.0012	-0.0001	-0.0003	0.0005	0.0002
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0000	0.0006	-0.0007	-0.0001	-0.0002	-0.0008	-0.0007	-0.0004	-0.0001	-0.0012	-0.0010	-0.0021
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
7	-0.0186*	-0.0142*	-0.0092	-0.0061	-0.0044	-0.0022	-0.0007	0.0003	0.0009	0.0014	0.0014	0.0010
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0016	-0.0002	0.0007	0.0006	-0.0003	0.0001	0.0003	0.0005	-0.0007	-0.0005	-0.0018	-0.0016
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
8	-0.0187*	-0.0115	-0.0074	-0.0050	-0.0024	-0.0008	0.0003	0.0006	0.0017	0.0014	0.0012	0.0017
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0002	0.0008	0.0008	-0.0004	-0.0001	0.0003	0.0006	-0.0009	-0.0007	-0.0021	-0.0018	-0.0012
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
9	-0.0145*	-0.0092	-0.0056	-0.0026	-0.0006	0.0004	0.0012	0.0017	0.0017	0.0013	0.0019	-0.0004
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0009	0.0009	-0.0002	0.0000	0.0004	0.0009	-0.0007	-0.0004	-0.0020	-0.0018	-0.0011	0.0003

Table C4, Panel D Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
10	-0.0139	-0.0088	-0.0049	-0.0024	-0.0006	0.0006	0.0016	0.0014	0.0016	0.0021	-0.0006	0.0009
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0009	-0.0004	0.0000	0.0003	0.0006	-0.0009	-0.0006	-0.0022	-0.0019	-0.0011	0.0005	0.0004
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
11	-0.0115	-0.0075	-0.0045	-0.0020	-0.0009	0.0004	0.0006	0.0006	0.0015	-0.0009	0.0007	0.0008
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0005	-0.0001	0.0002	0.0006	-0.0012	-0.0008	-0.0024	-0.0021	-0.0012	0.0005	0.0005	0.0005
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
12	-0.0104	-0.0069	-0.0037	-0.0022	-0.0003	0.0004	0.0008	0.0013	-0.0010	0.0011	0.0011	-0.0001
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0003	0.0006	0.0010	-0.0009	-0.0006	-0.0021	-0.0019	-0.0010	0.0006	0.0007	0.0007	0.0008
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
13	-0.0107	-0.0060	-0.0035	-0.0014	-0.0010	-0.0002	0.0011	-0.0014	0.0008	0.0008	-0.0004	0.0001
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0004	0.0008	-0.0012	-0.0008	-0.0026	0.0023	-0.0013	0.0003	0.0004	0.0005	0.0006	0.0007
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
14	-0.0094	-0.0074	-0.0034	-0.0021	-0.0007	0.0006	-0.0016	0.0010	0.0013	-0.0001	0.0004	0.0008
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0011	-0.0009	-0.0007	-0.0025	-0.0022	-0.0011	0.0005	0.0005	0.0006	0.0007	0.0008	0.0008
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
15	-0.0110	-0.0061	-0.0041	-0.0026	-0.0003	-0.0022	0.0004	0.0009	-0.0002	0.0003	0.0007	0.0011
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0010	-0.0007	-0.0027	-0.0025	-0.0014	0.0002	0.0003	0.0003	0.0004	0.0005	0.0006	0.0001
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
16	-0.0087	-0.0072	-0.0051	-0.0022	-0.0036	-0.0001	0.0006	-0.0004	0.0003	0.0007	0.0013	-0.0008
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0006	-0.0028	-0.0025	-0.0016	0.0001	0.0002	0.0003	0.0003	0.0005	0.0006	0.0001	-0.0001
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
17	-0.0115	-0.0090	-0.0046	-0.0044	-0.0008	0.0003	-0.0007	0.0001	0.0007	0.0012	-0.0008	-0.0006
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0028	-0.0026	-0.0015	0.0001	0.0002	0.0002	0.0003	0.0004	0.0005	0.0001	0.0000	-0.0001
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
18	-0.0127	-0.0073	-0.0050	-0.0010	0.0001	-0.0004	0.0005	0.0012	0.0019	-0.0003	-0.0001	-0.0024
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0023	-0.0014	0.0002	0.0003	0.0003	0.0004	0.0005	0.0006	0.0001	-0.0001	-0.0001	-0.0002
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
19	-0.0091	-0.0096	-0.0021	-0.0007	-0.0014	0.0001	0.0012	0.0019	-0.0001	0.0001	-0.0025	-0.0023
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	-0.0014	0.0001	0.0002	0.0002	0.0003	0.0004	0.0005	-0.0001	-0.0002	-0.0003	-0.0003	-0.0003

Table C4, Panel D Continued

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
20	-0.0075	-0.0037	-0.0015	-0.0020	-0.0004	0.0011	0.0020	0.0000	0.0003	-0.0024	-0.0022	-0.0013
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0001	0.0000	0.0001	0.0003	0.0003	0.0004	-0.0002	-0.0004	-0.0004	-0.0004	-0.0003	-0.0003
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
21	-0.0059	-0.0030	-0.0028	-0.0007	0.0011	0.0024	0.0005	0.0009	-0.0017	-0.0015	-0.0008	0.0006
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0004	0.0002	0.0034	0.0005	0.0004	-0.0001	-0.0004	-0.0004	-0.0004	-0.0004	-0.0003	-0.0035
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
22	-0.0059	-0.0044	-0.0013	0.0009	0.0023	0.0009	0.0013	-0.0015	-0.0013	-0.0005	0.0007	0.0006
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0005	0.0004	0.0005	0.0005	-0.0002	-0.0004	-0.0005	-0.0005	-0.0005	-0.0004	-0.0004	-0.0004
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
23	-0.0056	-0.0023	0.0007	0.0020	0.0004	0.0012	-0.0017	-0.0013	-0.0053	0.0007	0.0006	0.0004
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0003	0.0004	0.0004	-0.0003	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0007
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
24	-0.0044	-0.0010	0.0011	-0.0001	0.0007	-0.0015	-0.0011	-0.0002	0.0011	0.0009	0.0007	0.0006
	13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	0.0006	0.0004	-0.0003	-0.0007	-0.0007	0.0006	-0.0006	-0.0006	-0.0006	-0.0007	-0.0007	-0.0008

*Note: Returns are computed using monthly data January 1993 – December 2012. Method followed by Jegadeesh and Titman (1993). Stocks are ranked based on past J months' accumulated returns, then divided into quintiles (5 groups) by their market values. Then the group with the highest past returns are denoted as winners, while the groups with lowest past returns are denoted as losers. The figures in the table are average return of the winners minus the losers. Figures in parentheses are t values associated with coefficients respectively. *, **, *** denotes the coefficient is significant at 10%, 5% and 1% using T-test respectively. Market Dynamics are defined by the past 24 months' value weighted cumulative market returns.*