

Evaluating the profitability of contrarian vs. Momentum strategies
in China`s Stock market

by

Dongming Han

A research project submitted in partial fulfillment of the requirements for the degree
of Master of Finance

Saint Mary`s University
Copyright Dongming Han 2013

Written for MFIN 6692 under the direction of
Dr. Francis Boabang

Approved: Dr. Francis Boabang
Faculty Advisor

Approved: Dr. Francis Boabang
MFIN Director

Date: August 28, 2013

Acknowledgement

I would like to give my appreciation and respect to Dr. Francis Boabang. I thank him for his help and advice during the time of my stay in the Master of Finance program. I would like to thank all professors of Master of Finance program. They gave me the knowledge and help us as needed, the support and encouragement from my parents. Without their help, I would not have achieved this goal.

Abstract

Evaluating the profitability of Contrarian vs. Momentum Strategies in China`s stock market

By

Dongming Han

This paper focuses on the profitability of short term and medium-term momentum and contrarian effect in Chinese capital market. The result of the research shows the theory that momentum and contrarian effects exist in Chinese capital market. Using momentum strategies and contrarian strategies could earn abnormal return under different investment methods. In addition, the profitability of momentum and contrarian strategies based on different market caps is also evaluated. The regression analysis reveals that historical returns contribute the most to momentum return.

Table of Contents

Acknowledgement.....	ii
Abstract	iii
Chapter 1	1
Introduction.....	1
1.1 Purpose of Study	1
1.2 Background.....	2
1.3 Need for study	3
1.4 Statement of problem	3
1.5 The structure of the research paper	4
Chapter 2	5
Literature Review	5
2.1 Efficient Market Hypothesis	5
2.2 Momentum Effect	6
2.3 Contrarian effect	7
2.4 Reasons of the momentum effect and contrarian effect.....	8
2.5 Other factors caused momentum and contrarian effect	10
2.5.1 Frequency of turnover.....	10
2.5.2 Market states.....	10
2.5.3 Psychological factors	11
2.5.4 Growth rate	11
2.5.5 Trading volume.....	11
2.5.6 Firm specific component	12
2.5.7 Cultural difference.....	12
2.5.8 Credit rating.....	12
2.5.9 January anomaly.....	12
Chapter 3	13
Methodology and Model.....	13
3.1 Source of Data	13
3.2 Methodology	13

3.3 Regression model	14
Chapter 4	16
Results and Analysis	16
4.1 Returns for all stocks	16
Table 1. Momentum and Contrarian average return of all stocks	16
4.2 Returns for large cap stocks	17
Table 2. Momentum and Contrarian returns of large cap stocks	18
4.3 Returns for medium cap stocks	19
Table 3. Momentum and Contrarian return of medium cap stocks	19
4.4 Returns for small cap stocks	20
Table 4. Momentum and Contrarian return of small cap stocks	20
Table 5. Regression table	21
Chapter 5	23
Conclusion	23
Reference	24

Chapter 1

Introduction

1.1 Purpose of Study

The purpose of study is to test the profitability generated by momentum and contrarian strategies in the China Stock market. If the momentum and contrarian strategies exist in Chinese market, it will bring benefits to investors who use these strategies. If the momentum effect or contrarian effect in Chinese capital market can be predictable, investors can make abnormal return easily. As long as the momentum or contrarian strategy can be predictable based on the historical market information, investors will have the simple and profitable method to earn abnormal returns. The main purpose is to evaluate the profitability of momentum (contrarian) effect in China` market. We follow the technique by Jegadeesh and Timan (1993). Another purpose is to see the difference of momentum (contrarian) return based on different firm size. Recently, most research focused on analysis of firm size and on momentum or contrarian strategy. For example, they grouped firms by size into small cap, medium cap and high-cap firms. After that they tested the winners` returns and losers` returns for each category. In this paper, the same method would be used for the analysis about the different firm size. Additional purpose is to test whether the returns generated from momentum and contrarian investment strategy for high cap firms are significantly less than those for low cap firms or vice versa.

Usually investors have limited knowledge about Chinese market very well. Chinese capital market is emerging market in Asia. The history of Chinese stock market is less than 30 years so far. Even though researchers analyzed different stock markets around the

world, they tried to explain the momentum and contrarian effect by themselves. However the Chinese stock market is an emerging market which was restricted from foreign investment before. Not too much researchers did analysis on Chinese stock market about the momentum and contrarian effect yet.

1.2 Background

As all know the market efficiency is basic hypothesis in stock market. However not all hypothesis is correct all the time. There are two anomalies in the stock market which are the momentum and contrarian strategies. The momentum effect is a phenomenon which asserts that if past stock performance is good, in the future performance will continue to be good. The stock which had bad performance in past period will perform badly in the future. This is a famous anomaly in capital market. The contrarian strategy is the opposite effect. It means that the past winner which performed well in last period will perform badly in the future. However the past loser which performed badly in last period will perform well in the future. This is also a famous anomaly in stock market. A lot of researchers found that these two effects exist in almost all stock markets around the world. Jegadeesh and Timan (1993) first found the momentum effect. DeBondt and Thaler (1985, 1987) first reported that the loser portfolio in last three to five year will outperform the winner in the future. Under the time-series patterns in stock returns, there exist two strategies which can generate abnormal return: momentum strategy and contrarian strategy.

This study will focus on the short term, medium term and long term momentum effect and contrarian effect. The Shanghai Composite index is chosen to be the benchmark. The

securities whose performance is the top ones can be defined as winners. Also the securities whose performance is in the bottom of the securities can be identified as losers.

1.3 Need for study

In order to support the purpose of study, the following things need to analyze.

- Identify the winner and loser return based on the Jegadeesh and Titman(1993) method.
- Generate the momentum and contrarian return according to the winners and losers` returns.
- Generate the momentum and contrarian returns based on different market capitalization.
- Test the relationship between existence of momentum return and historical return

1.4 Statement of problem

There are some limitations in the research paper. The major limitation is that the transaction cost is assumed to be zero. In other word, there is no transaction cost when rebalancing the portfolio. If transaction cost exists, the results may change significantly. In the reality, large investors always enjoy economies of scale on transaction costs. In this research paper, we only focus on evaluating the return from momentum and contrarian strategies not did deep analysis about the factors cause momentum (contrarian) effect. In this Study, the following questions will be solved:

Question 1: Does the momentum effect exist in Chinese stock market and the momentum effect can generate abnormal returns?

Question 2: Does the contrarian effect exist in Chinese stock market and the contrarian effect can generate excess returns?

Question 3: Does the abnormal returns of momentum investment strategy for high cap stocks are less than those for low cap stocks?

Question 4: Does the excess returns of contrarian investment strategy for high cap stocks are less than those for low cap stocks?

1.5 The structure of the research paper

The study is focus on the momentum and contrarian strategies` profitability on Chinese stock market. This research paper includes five chapters. Chapter one is to give the brief introduction of the research paper. Chapter two will be the literature reviews which introduce the researchers` results on their paper before. A lot of analysts already did studies on the momentum and contrarian strategies on different stock markets. In Chapter three, the methodology and data in the research paper would be discussed. It will be described in detail how the data be collected and how the methodology works. The fourth chapter would show the results from the methodology and analysis about the results. The last chapter would conclude all the research papers.

Chapter 2

Literature Review

Momentum effect was firstly demonstrated by Jegadeesh and Titman (1993). Some researchers doubted that the momentum effect come from the data mining. Fortunately, Jegadeesh and Titman (2001) used different sample period to demonstrate the existing of momentum effect. Some researchers have found some reasonable theories to explain the momentum and contrarian effect. They found the several factors which affects the momentum (contrarian) effect, such as time horizon, size and so on. Some previous studies are below.

2.1 Efficient Market Hypothesis

The efficient market hypothesis (EMH) was introduced by Fama in 1965. There are three types of market efficiency: weak form market efficiency, semi-strong form market efficiency and strong form of market efficiency (Fama 1970). The difference of the three types of market efficiency is based on how the market reflects the information.

Weak form EMH asserts that market has reflects all the past market information. The information includes historical market price, trading volume and rate of return. Under the weak form efficient market hypothesis, the future rates of return should not relate to historical data. Opposite, they should be independent. Therefore, investors should not base on their decisions on technical analysis to gain from investment.

Semi-strong form EMH assumes that market reflects quickly to the new information and also reflects all public information. The public information includes historical price data, total trading volume data, rates of return, earning, dividend payments, price/earnings(P/E)

ratios, book value(B/V) ratios, market value(/V) ratios, stock splits, and economical and political news. Since the public information is already incorporated in the price, based on the semi-strong form EMH, investors would expect profit that reflects an average risk rate of return. According to the assumption of semi-strong form EMH, investors rely on their fundamental analysis and the study of a firm`s financial statements to make investment.

Strong-form EMH assumes that the security prices reflect all both public and private information. The strong-form efficient market hypothesis includes both the weak-form EMH and semi-strong form EMH assuming perfect markets. In strong-form hypothesis, information is no cost. Also investors cannot control the market. Therefore, investors cannot rely on technical analysis, fundamental analysis or inside information to make investment decisions.

Based on the assumption of EMH, investors cannot generate excess return than market since the market reflects all information. Therefore it is impossible for investors to buy undervalued stocks and sell overvalued stocks to make profits.

2.2 Momentum Effect

A lot of studies and researches already found the momentum effect in capital market. To test the momentum effect, researchers has to form a momentum portfolio. Researchers first need to identify the winners and losers according to the stocks` performance. Researchers buy the best performing stocks and short the worst based on the previous period. The benchmark will be used to compare the return of momentum portfolio. The benchmark is usually the market average return or market index return.

Jegadeesh and Timan (1993) found that the momentum effect exists in the medium term, 3 month to 12 month. Jegadeesh and Timan (1993) also found in short term (less than 3 month and long term (more than 12 month), the momentum effect would be reversal. Jegadeesh and Timan (2001) did another research demonstrated that the momentum effect exists not because of the data mining. They did the test in different time periods to demonstrate the momentum effect not come from the data mining.

After Jegadeesh and Timan's discovery, more and more researchers studied other regions' market around world. Rouwenhorst (1998) found the existence of momentum effect in a lot of European countries and developed countries (1999); Hameed and Yuanto (2000) found momentum effect in Asian capital markets. Isabelle et, al (2003) also researched the Australian capital market. They showed the existence of momentum effect in Australian capital market. Kang, Liu and Ni (2002) showed that the short term momentum effect is negative but positive for the medium term period (3 month -6 month) on Chinese stock market. Although a lot of studies on momentum effect have been analyzed, the reasons of momentum effect are still not clear.

2.3 Contrarian effect

Contrarian effect assumes that the stock market is not efficient. Sometime the securities would be overvalued or undervalued since stock market's overreaction. Contrarian effect is mutual co-existing with momentum effect. Contrarian effect always exists on the short term (less than 3 month) and long term (longer than 12 month). Jegadeesh and Timan (1993) already found that the momentum portfolio would be reversal in short term and long term. Also De Bondt and Thaler (1985, 1987) found that the contrarian effect exist on the 3-5 year term the losers outperform the previous winners by nearly 25% in the

subsequent three to five years. There is a lot of researchers studied contrarian effect on different regions' stock markets. Subadar and Hossenbaccus A.R. (2010) did analysis about contrarian strategy on Mauritius' stock market. Campbell and Limmack (1997) showed that contrarian profits were possible even after 12 months following the formation of the portfolio in the UK market. Another study conducted by Baytas and Caciki (1999) analyzed long-term contrarian strategies on seven developed countries. They found the contrarian strategy generated significant positive returns. Similarly, Chang, McLeavey and Rhee (1995) found contrarian strategy generated short term abnormal return on Japanese stock markets. Their study demonstrated that when losers are greater or smaller than winners, the abnormal return can be generated. They also found there is significant asymmetry between the performance of winners and losers. Moreover, Zamri and Simon (2001) found that past 3 year loser outperform the past 3 year winner during the following 3 years on the Kuala Lumpur Stock Exchange.

In addition, Jegadeesh and Titman (2001) found that small firms experience more return reversals than large firms when they evaluating portfolio profitability base on the Fama and French (1993) benchmark. But still the reason of contrarian effect is a mystery.

2.4 Reasons of the momentum effect and contrarian effect

There are some explanations for the momentum and contrarian effect. The first is a size effect. It shows that the small firms are more easily become the losers. Also small firms are more easily overreacted in the markets. Zarowin (1990) and Chopra et al. (1992) examine the size effect. The returns of the losers were reduced when they controlled the size. In their argument that the efficient market hypothesis still exist for larger firms.

Second, Chan (1988) and Ball and Kothari (1989) said that the time varying risk was ignored during the previous studies. Ball and Kothari (1989) showed that the coefficients of the risk premium of the losers are larger than those of the winners in the period after the formation of the portfolios. Therefore the differences in risk premium can explain the why the winners and losers return are different. Fama and French (1996) examine both contrarian and momentum strategies. They showed that their three factor model can explain the contrarian strategy. However their multi-factor model did not explain momentum profits in the intermediate term.

The third explanation is another theory which tries to explain the abnormal return of the momentum effect comes from Conrad and Kaul (1998).

Conard and Kaul (1998) showed that some of the contrarian effects were caused by the bid-ask bounce of the price. They also argued that the abnormal return from momentum effect come from a bias when constructing the momentum portfolio. The bias is that some industries would cause the momentum effect, since some industries have higher expected return than others. They said the higher However, Conrad and Kaul (1998) didn't deny that time-series prices contribute to the high return. They said the time series prices are not the whole reason caused the momentum return. According to their theory, the historical price is not necessary to predict the momentum return.

The fourth explanation was the behaviors of investors. Many researchers try to explain the momentum effect and contrarian effect from behavioral finance way. Daniel and Subrahmanyam (1998) and Hong and Stein (1999) said that the momentum (contrarian) effect is caused by how investors react to information. They asserted that investors tend

to overreact to information in the short run. However investors would recognize their mistakes in long run. Jegadeesh and Titman (1995) argue that contrarian profits occur due to overreaction to firm-specific information. This process of overreaction would result the abnormal return for investors with momentum (contrarian) strategy.

2.5 Other factors caused momentum and contrarian effect

2.5.1 Frequency of turnover

There are other factors caused the momentum effect. Some researchers found that the momentum effect is related to the frequency of turnover of the securities in momentum portfolio. Lee and Swaminathan (2000) show that momentum profits are more popular in high-turnover stock returns.

2.5.2 Market states

Some analysts showed that the momentum effect is related to the market states. They said difference of market states will generate different momentum profits. Wang, Jiang and Huang (2009) examines the impact of market states on the profitability of momentum strategies using weekly data from the Taiwan Stock exchange during 1997-2006. They found that momentum profits are different in trend of bearish holding period and a bullish holding period. Therefore, they said that the market states in the holding period impacts the profitability of the momentum strategies.

Kathy Hung and John L. Glascock (2008) investigated Real Estate Investment Trusts' (REIT) momentum returns in different market states. Their discovery is similar to Wang, Jiang and Huang's (2009). Their result showed that momentum returns of REITs are

higher during bullish markets. Kathy Hung and John L. Glascock (2008) asserted that momentum returns of REITs can be explained by market state.

However, Griffin et al. (2003) suggested that market states cannot explain momentum profit. They showed that momentum profits are large and exist in both good and bad states.

2.5.3 Psychological factors

More recently, Chui et al. (2005) suggested that momentum is related to individualism and cultural or psychological explanations. Cooper et al. (2004) find that for U.S. stocks momentum profits occur only in the “up” market. This finding supports Daniel et al. (1998), who suggested that investors attribute investing success to their skills, causing overconfidence and further pushing up stock prices.

2.5.4 Growth rate

Safieddine and Sonti (2007) asserted that highest growth industry would generate more momentum profits than lowest growth industry. Rouwenhorst (1999) tested momentum and contrarian phenomena in emerging markets.

2.5.5 Trading volume

Hameed and Ting (2000) examined the effect of trading volume on contrarian profits. Their results showed that contrarian profits are higher from high trading volume securities than from low trading volume securities. In addition, Ding et al. (2008) showed that the contrarian effects occur frequently in high-volume firms than low-volume ones in the Asian emerging markets.

2.5.6 Firm specific component

Galariotis (2004) used the methodology of Jegadeesh and Titman (1995) to find the sources of contrarian profits on the Athens stock market. The result showed that short-term contrarian profits exist and firm-specific component contributes to overreaction in stock returns.

2.5.7 Cultural difference

However, Ding et al. (2009) suggest that the lack of momentum in an Asian emerging market such as Taiwan is due more to state dependence than to cultural differences between Asian and developed markets.

2.5.8 Credit rating

Doron Avramov (2007) establishes a robust link between momentum and credit rating. The result showed that the momentum profitability for the low grade firms is larger and more significant rather than high-grade firms. Based on Doron Avramov's study, the difference of momentum payoff among different credit rating groups cannot be explained by other factors. These factors include firm size, firm age, analyst forecast dispersion, leverage level, return volatility, and cash flow volatility.

2.5.9 January anomaly

Chelsea Yaqiong Yao (2011) reexamined long-term contrarian and intermediate-term momentum. His studies showed that long-term contrarian is entirely due to the classic January size effect.

Chapter 3

Methodology and Model

3.1 Source of Data

This research paper will study the momentum effect and contrarian effect in Chinese capital market using historical data from last 10 years (2003 to 2013). The sample includes about 180 companies randomly selected from different industries that have stocks listed Shanghai Composite index. The industries include finance, basic industry, insurance, oil & gas and so on. All the data come from the Bloomberg database. The data includes historical price and market capitalization. The return of Shanghai composite will be the benchmark.

3.2 Methodology

Following the methodology of Jegadeesh and Timan (1993), we construct the momentum portfolio using the different time intervals. The buy and hold returns of all stocks in different interval are the returns in estimation periods. The different estimation periods include 1 month, 3 months, 6 months and 12 months. Assume the estimation period is K , where $K=1$ means the estimation period is 1 month. $K=3$ means that the estimation period is 3 month. Rank the returns of stocks in ascending order. Choose the top 5 stocks equally weighted as the portfolio of winner. Then choose the bottom 5 stocks equally weighted as the portfolio of loser. For example, according to the last month return, choose the top 5 stocks as the winner portfolio (W); the bottom 5 stocks are the loser portfolio (L). The momentum portfolios are constructed by buying the winner stocks and shorting the loser stocks (W-L). The winner and loser stocks will be different from the different estimation periods.

Next step is to choose the prediction periods. The prediction periods can be defined as L . In this paper, the prediction periods includes 1 month, 3 months, 6 months and 12 months ($L=1, 3, 6, 12$ month). The portfolios will be held for the different prediction periods until they are rebalanced. Therefore, there will be 16 strategies constructed under Jegadeesh and Timan`s method. Generate the returns of the difference of winner and loser ($W-L$) in different time interval for example $K=1 L=1$; $K=1 L=3$; $K=1 L=6$ and so on. If the difference of return ($W-L$) is positive, then it means under this strategy there is exists momentum effect. Otherwise, if the difference of return ($W-L$) is negative, it means the contrarian effect exists on this strategy. In this paper, there are 16 strategies will be observed for the momentum (contrarian) effect on Chinese stock market.

In addition, the firm size also should be considered for the momentum portfolio and contrarian portfolio. The firm sizes are divided by three types: large cap firm, medium cap firm and low cap firm. Therefore under the different firm size category, there will be three different winner and loser returns in each strategy of the 16 strategies in momentum effect and 12 strategies in contrarian effect. Based on different market capitalization, each group of companies in the sample would be checked for their momentum (contrarian) effect.

3.3 Regression model

To identify how the factors: historical return and market capitalization make contribution to the momentum and contrarian effect, there is a regress model can be used. This model is modified based on the three factors regression model used by the Isabelle et, al (2003).

The model states:

$$(R_{pt} - R_m)_t = \alpha + \beta(R_{pt} - R_m)_{t-1} + \varepsilon$$

Where:

R_p = Return on the momentum portfolio

R_m = Return on the market

$(R_p - R_m)_t$ = Excess return in prediction period

$(R_p - R_m)_{t-1}$ = Excess return in estimation period

The regression model above is to test the relationship between momentum effect and historical momentum return

The coefficient of factor can show how the factor influences the momentum effect on the prediction period. If the coefficient of the factor is positive, that means the factor is positive related to the momentum effect.

Chapter 4

Results and Analysis

First the momentum effect for all companies would be observed. After generating the winner returns and loser returns, find the average return of winner and loser. The winner return minus loser return can get the return of momentum portfolio. If this return is positive, it means momentum effect exist on this strategy. If this return is negative, it means the previous winner will not continue win. Therefore, the contrarian effect exists. The table below shows the results in different estimation periods and prediction period.

4.1 Returns for all stocks

Table 1. Momentum and Contrarian average return of all stocks

	L=1	L=3	L=6	L=12
K=1 winner	3.51%	5.56%	8.65%	6.88%
K=3 winner	3.59%	2.55%	2.35%	2.88%
K=6 winner	1.23%	2.31%	2.8%	2.76%
K=12 winner	0.79%	3.97%	10.36%	1.6%
K=1 loser	5.72%	4.62%	6.01%	3.49%
K=3 loser	7.35%	4.46%	6.42%	7.95%
K=6 loser	2.89%	3.52%	6.63%	5.19%
K=12 loser	8.64%	7.6%	10.44%	-1.45%
K=1 W-L	-2.21%	0.94%	2.64%	3.39%
K=3 W-L	-3.76%	-1.91%	-4.07%	-5.07%
K=6 W-L	-1.66%	-1.21%	-3.83%	-2.43%

K=12 W-L	2.45%	-3.63%	-0.08%	3.05%
----------	-------	--------	--------	-------

The table above shows that when the estimation period is 1 month (K=1), the prediction periods are 3 month, 6 months, and 12 months (L=3, L=6, and L=12), the momentum effect exists. The return for momentum strategies K=1 L=3 is 0.94%. When K=1 L=6 the momentum return is 2.64%. When K=1 and L=12 the momentum return is 3.39%. The profits for contrarian effect on K=1 and L=1 is 2.21%. When the estimation period is 3 month (K=3), the contrarian effect exists. The return for these contrarian returns are between 1.91% and 5.07%. When the estimation period is 6 months, the contrarian effect exists in all holding periods. The return for contrarian strategy are 1.66%, 1.21%, 3.83% and 2.43% for K=6, L=1 L=3 L=6 and L=12 respectively. When the estimation period is 12 month (K=12), the momentum effect exists only in L=1 and L=12. The profits for their momentum effect are 2.45% and 3.05%. When the K=12, L=3 and K=12, L=6 the contrarian effect exists. Their returns are 3.63%, 0.08% when the holding periods are 3 month and 6 month respectively.

The returns for momentum strategy are not high in Chinese stock market. Maybe the reason is that there are errors in the sample of companies. Maybe there an error in the stata commands. Next step is to analyze different groups of companies based on different market capitalization.

4.2 Returns for large cap stocks

Table 2. Momentum and Contrarian returns of large cap stocks

Large cap	L=1	L=3	L=6	L=12
K=1 winner	6.55%	2.33%	2.53%	5.02
K=3 winner	2.1%	1.4%	3.12%	2.42%
K=6 winner	3.08%	2.52%	3.54%	4.28%
K=12 winner	15.87%	4.81%	1.51%	3.02%
K=1 loser	1.43%	3.05%	4.01%	1.7%
K=3 loser	2.37%	5.37%	4.48%	7.49%
K=6 loser	3%	5.21%	1.79%	4.19%
K=12 loser	3.63%	3.58%	4.14%	5.53%
K=1 W-L	5.12%	-0.72%	-1.48%	3.32%
K=3 W-L	-0.27%	-3.97%	-1.36%	-5.07%
K=6 W-L	0.08%	-2.69%	1.75%	0.09%
K=12 W-L	12.24%	1.23%	-2.63%	-2.51%

For the large cap companies, the momentum effect exists on the short term and long term period. When K=1 and L=1, the momentum profit is 5.12%. When K=6 and L=1, the momentum profit is 0.08%. Also when K=6 and L=6, the momentum profit is 1.75%. When the estimation period is 12 month, the momentum effects occur. For example when the holding period is 1 month, the momentum profit is about 12.24%. When the holding period is more than 3 month, the momentum profit is about 1.23.

However, the contrarian effect is smaller and exists in the all term period. For example, the contrarian portfolio profit for K=1 L=3 is 0.72%. When K=6, L=3 the contrarian

return is 2.69%. When the estimation period is 3 month, the contrarian effect exists in all different holding period. For example, when K=3 and L=1, the contrarian return is 0.27%.

When K=3 and L=12 the return for contrarian strategy is 5.07%.

The return of momentum (contrarian) strategy is reasonable. It is because that the large cap companies are much more maturity.

4.3 Returns for medium cap stocks

Table 3. Momentum and Contrarian return of medium cap stocks

Medium cap	L=1	L=3	L=6	L=12
K=1 winner	6.55%	1.5%	2.51%	6.2%
K=3 winner	1.2%	0.9%	-0.43%	-0.21%
K=6 winner	3.56%	7.44%	5.69%	7.46%
K=12 winner	8.66%	1.81%	1.96%	-0.1%
K=1 loser	1.43%	1.56%	1.07%	1.76%
K=3 loser	1.29%	2.1%	1.85%	3.26%
K=6 loser	1.27%	2.01%	0.28%	-2.18%
K=12 loser	3.55%	5.97%	1.97%	2.72%
K=1 W-L	5.12%	-0.06%	1.44%	4.44%
K=3 W-L	-0.09%	-1.2%	-2.28%	-3.47%
K=6 W-L	2.29%	5.43%	5.41%	9.64%
K=12 W-L	5.11%	-4.16%	-0.01%	-2.82%

For the medium cap companies, the momentum effect exists on the short term estimation period and medium term estimation period basically. For example when the estimation period is 1 month (K=1), only one contrarian effect exists for the 3 month holding period. When K=6, the momentum portfolio returns are positive. When K=12, the 1 month holding period return is 5.11%.

The contrarian effect occurs when the K=3. For example, when K=3 and L=6, the contrarian's portfolio return is 2.28% (For momentum portfolio the return is -2.28%).

When the estimation period is 1 month and L=1, 6 and 12, the returns are positive. It means that when the holding period are 1 month, 6 month or 12 month, the momentum effect occurs under K=1 this situation. When the estimation period is long term, the contrarian effect exists except the 1 month holding period.

The returns of contrarian (momentum) for medium cap companies are also reasonable.

4.4 Returns for small cap stocks

Table 4. Momentum and Contrarian return of small cap stocks

Small cap	L=1	L=3	L=6	L=12
K=1 winner	2.0%	1.83%	3.42%	-0.26%
K=3 winner	1.87%	2.56%	2.77%	-1.81%
K=6 winner	0.59%	1.42%	0.86%	-1.65%
K=12 winner	1.24%	-0.48%	-1.98%	-3.01%
K=1 loser	3.42%	2.94%	5.3%	1.06%
K=3 loser	1.69%	0.23%	1.85%	-1.29%

K=6 loser	2.29%	3.3%	3.53%	0.47%
K=12 loser	0.25%	0.6%	-1.03%	-2.02%
K=1 W-L	-1.42%	-1.11%	-1.88%	-1.32%
K=3 W-L	0.18%	2.33%	0.92%	-0.52%
K=6 W-L	-1.7%	-1.88%	-2.67%	-2.12%
K=12 W-L	0.99%	-1.08%	-0.95%	-0.99%

For the small cap companies, the momentum effect exists on medium term. The volatility of momentum returns is low. The maximum return is about 2.33%. The minimum return is about 0.18%. Therefore, the small cap companies are not more easily cause the momentum effect.

The contrarian effects exist on the short term and long term for small cap companies. The reason may be that the long-term securities are overreacted in the stock market. Also the capital of investment for small cap companies is not large.

Final step is to run the momentum regression model. According to the return above tables, the large cap companies are chosen to run the regression model. Since there are 16 strategies on the large cap companies. The K=1, L=1 can be chosen to run the regression model.

Table 5. Regression table

$(R_{pt} - R_m)_t$	Coef.	t value	P value	R square	F value
$(R_{pt} - R_m)_{t-1}$	0.942	2.461	0.003	0.654	4.76
Constant	-0.516	-1.75	0.017		

From this regression table, we can see the excess momentum return is significant. The regression model can explain the momentum return very well since the R square is about 65%.

Therefore the equation of the regression should be the following

$$(R_{pt} - R_m)_t = -0.516 + 0.942(R_{pt} - R_m)_{t-1}$$

From these results of momentum (contrarian) effect in Chinese stock market, we can find that the momentum effect exists in Chinese stock market and the momentum effect can generate abnormal returns. The results also shows that the contrarian effect exists in Chinese stock market and the contrarian effect can generate excess returns. The abnormal returns of momentum investment strategy for high cap stocks are less than those for low cap stocks. More than 50% of the returns for momentum (contrarian) strategies in large cap companies group are greater than 3%. But in small cap companies group, 9 of 16 returns are about 1%. From the regression model, we also can see that for the momentum strategy, the most source of momentum return is the historical return.

Chapter 5

Conclusion

In this research paper, the momentum effect and contrarian effect has been found in the Chinese stock market. Following the methods of investment, the average returns for momentum and contrarian effect are also found in different time periods. In addition, the different size of stocks selected can influence the returns of momentum and contrarian effects in Chinese stock market. The excess returns for different formation periods are different. Moreover, the excess returns for different holding periods are different. For the medium cap stocks in the medium term formation periods, the longer the holding periods, the larger the momentum returns. Most of contrarian effect exists on the short term formation periods and holding periods. The regression model is trying to explain the momentum effect by the historical return. The relationship between the two returns is highly correlated. Following the results of the paper, investors can use different method to generate abnormal returns. Investors also can follow the different types of stock cap to generate different abnormal returns. The specific returns of contrarian and momentum effect are showed in the tables.

Reference

Jegadeesh, N. 1990. Evidence of predictable behavior of security returns, *Journal of Finance*, 45, 881-898.

Jegadeesh N, and Titman S. 1993. Returns to buying winners and selling losers: Implications for stock market efficiency. *Journal of Finance* 1,65-91.

Jegadeesh, N., Titman, 2001. Profitability of momentum strategies: An evaluation of alternative explanations. *Journal of Finance* 56, 699–720.

DE Bondt, W.F.M., & Thaler, R.H. 1987. Further Evidence of Investor Overreaction and Stock Market Seasonality. *Journal of Finance*, 42, 557–581.

Cátia da Mota Lopes 2012. Momentum strategies in the Portuguese Stock Market.

Baytas A and Cakici N. 1999. Do markets overreact? International evidence. *Journal of Banking and Finance*, 23:1121-1144.

Chan KC. 1988. On the contrarian investment strategy. *Journal of Business*, 61:147-163.

Chopra N, Lakonishok J and Ritter, J. 1992. Measuring abnormal performance: do stocks overreact? *Journal of Financial Economics*, 31:235-268.

JH Venter 2009. Intraday momentum and contrarian effects on the JSE. *Investment Analysis Journal*, 70: 47-60. Herbert Yan To Lam June 2007. Momentum Strategies: Sources and Implications. Doctoral thesis, Durham University. <http://etheses.dur.ac.uk/1851/>

Lehmann, Bruce N., (1990), Fads, martingales, and market efficiency, *Quarterly Journal of Economics* 60, 1-28.

Schumaker and Chen 2008, Evaluating a News-Aware Quantitative Trader: The Effect of Momentum and Contrarian Stock Selection Strategies. *Journal of the American Society for Information Science and Technology* 59: 247-255

Chan, Hameed and Tong 1999, Profitability of Momentum Strategies in the International Equity Markets. *Journal of Financial and Quantitative Analysis* 35: 153-172

Jones, S. L. 1993, Another look at time-varying risk and return in a long-horizon contrarian strategy, *Journal of Financial Economics*, 33, 119-144.

Kang, Liu and Ni 2002, Contrarian and momentum strategies in the China stock market: 1993–2000. *Pacific-Basin Finance Journal* 10: 243-265

Bildik and GÜLAY Jan 2008, Profitability of Contrarian vs. Momentum Strategies: Evidence from the Istanbul Stock Exchange. *International Review of Finance* 7: 61-87

Abraham, Santosh June 2013, Testing for Contrarian Effects in the Chinese Shanghai Composite Index and the Australian Resource Stocks. From <http://ssrn.com/abstract=2276847> or <http://dx.doi.org/10.2139/ssrn.2276847>

Fama and French June 1992, The Cross-section of Expected Stock Returns. *The Journal of Finance* 2: 427-466.

Subadar and Hossenbaccus 2010, Profitability of Contrarian Strategies: Evidence from the Stock Exchange of Mauritius. *Organizations and Market in Emerging Market* 1: 123-139

Rouwenhorst, K. G. 1998. International momentum strategies. *Journal of Finance*, 53:267–284.

Zamri, A., & Simon, H. 2001. KLSE Long Run Overreaction and the Chinese New Year Effect. *Journal of Business Finance & Accounting*, 28, 63–105.