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Momentum Returns in Tehran Stock Exchange: The Influences of Size and Liquidity

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Abstract

A study was carried out during 2001 to 2010 to illustrate the profit of momentum strategy in Tehran stock Exchange, and possibility of higher abnormal return based on past performance trends. In this study, the effects of two substantial variables including size and liquidity on profitability of momentum strategy in Tehran stock Exchange were investigated. The study was conducted in two sub-periods: 2005-2010, and 2007-2010. The first is due to a significant change in the number of stock companies after privatization, and the second is to cover the effects of global financial crisis on Iran's economy. Our sample includes three separate samples of all stock market joined companies before the mentioned related periods that have been traded in at least half of the total trading days in the related period. Results showed that using momentum strategy in Tehran Stock Exchange created negative returns in all periods. Moreover, liquidity factor did not affect the profitability of momentum strategy. Meanwhile, considering size as another fundamental factor, the positive effect of small stocks was identified only in one period, from 2005 to 2010. In other periods, however, it led to negative returns.

Keywords: momentum strategy, contrarian strategy, return, liquidity, size

1. Introduction

The modern financial theory, which is based on efficient market hypothesis, has governed scientific financial circles for more than five decades. According to the modern financial theory, the cost of securities is equal to their intrinsic value. Due to the rational behavior of economic factors, if the cost of securities deviates from their intrinsic value, they make use of this issue and thus incorrect pricing is eliminated. Therefore, in such a market, no benefit can be achieved easily and in order to achieve any benefit, some risks must be welcomed (or accepted). Based on efficient market hypothesis, all data exists in the stock price and it is not possible to expect abnormal return without taking risks. The results of this perspective state that there is no particular trend in the stock price in order to use them to gain extra return, and none of the investment strategies can create extra return in proportion with risk. In other words, the obtained returns are exactly in proportion with their risk.

After the world's financial markets became accustomed to the efficient market paradigm, and the belief in market efficiency gained power increasingly, anomalies and dynamics in the world's financial markets were discovered. It was affirmed that this trend challenged the main paradigm for market efficiency. The focuses on these phenomena were the human behavioral approaches in investment issues, which were in clear contrast with efficient market hypothesis. One of these anomalies is return continuation (momentum). Momentum is a concept in physics based on Newton's First Law. It states that a moving object tends to continue its movement until an extra power stops it. In other words, the manifestation of this rule in the market is that the price trend tends to remain constant until an extra power stops it. This strategy consists of investing in the market's direction and claims that positive or negative return of the past will continue for a specific period in the future. This strategy also leads to obtaining abnormal return in the market.

One of the most challenging issues in financial management and investment is predicting security prices. Therefore, any individual and institutional investor in capital markets faces prediction of prices and use of approaches to obtain maximum return with respect to risk or extra market return. Momentum and contrarian strategies are two important strategies in portfolio management that try to gain abnormal return by prediction of

price trends and historical prices in the market. These strategies focus on the prediction of future performance and making abnormal returns using previous trends and historical prices. They take place based on over-reaction hypothesis. Momentum is usually defined as a trend or direction continuation. It states that the stocks with the best (worst) performance recently, continue to the better (worse) performance in the future medium-term horizon. Therefore, the strategy of buying the winners' and selling the losers' stocks in the past can create significant abnormal return. The medium-term horizon is usually considered between one to twelve months. Perversely, the "contrarian" strategy claims that the recent price trends reverses. Contrarian investors aim to profit from over-reaction to information in the market, often referred to as the reversal of a trend. They believe that after the first over-reaction, the stock's price will return to its true market value. Furthermore, if a stock underperforms due to negative information, they would expect this situation to create a higher profit to correct the over-reaction. Therefore, the strategy of buying loser and selling winner stocks in the past can lead to obtained significant abnormal return in the long-term horizon (from one to five years).

The momentum phenomenon has been proved in many of the world's markets including American (NASDAQ, AMEX, NYSE), European, and Asian markets. However, Jegadeesh and Titman (1993) first proposed the momentum trading strategy. It claimed that an investment strategy based on the buying and short selling of stocks that have had the best and the worst performance in the past led to achieve an annual abnormal return of 12.01 percent in the American stock market. This was a significant return in the market and showed that the weak form of efficient market hypothesis was contradicted, because historical information could predict the best and worst stocks in the future.

Different studies in different markets around the world have shown that there is much evidence for profitability of momentum trading in the global financial markets. Some of these studies include: Foerster, Prihar and Shmitz (1994,1995) and Korkie and Plas (1995) in the Canadian stock market, Rouwenhorst (1998) in 12 European markets, and Raven Horst (1999) in 20 emerging markets, Chui et al. (2000) in 8 Asian stock markets except Japan and Korea, Hameed and Tang in international stocks indices, Chordia and Shivakumar (2002) in NYSE and AMEX stocks, Hameed and Kusnadi (2002) in 6 emerging Asian stock markets, Demir et al. (2004) in Australian market, and Gunasekarage and Wan Kot in the New Zealand stocks market etc. The studies about momentum strategy do not have a strong background in Iranian markets. In a previous study, Momentum strategy was reported more profitable in the short-term horizon of one to six months in Tehran stock Exchange (TSE) (Fadaeenejad & Sadeghi, 2006). Foster and Kharazi (2006) investigated the momentum and contrarian strategies in TSE using weekly and daily returns of 50 more heavily traded stocks in TSE in the period from 1997 to 2002. They concluded that there is no evidence of contrarian behavior and short-term "Reversal" in TSE, whereas there was evidence of existing momentum returns in the short-term from three to twelve months, which led to generate significant abnormal returns. Moreover, different variables may affect the profitability of the momentum strategy, which its importance has been proved in some financial markets. These variables include liquidity, trading volume, book to market (BE/BM), firm size, transaction costs etc. In fact, there is a necessity to devise strategies, which consist of anomalies of a trend with the market microstructures in the world financial markets. In the present study, focus was placed on two substantial variables: liquidity and size, and their relation to the profitability of the momentum, rather than the existence of momentum, which is considered an anomaly in the market.

2. Methodology

2.1 Momentum Trading Strategies

To create the momentum portfolios, a method similar to Jegadeesh and Titman's (1993) was used. In this way, stocks were ranked in ascending order based on their returns at the end of each i-month (estimation periods). These stocks were then assigned to 1 to 9 equally weighted relative portfolios. The first portfolio, P1 represented "winner" with the stocks that had the best performance (maximum returns), and the last portfolio, P9, represented "loser", with the stocks that had the worst performance (minimum returns). The portfolios were then held for the following j-months (prediction period) and their return was calculated at the end of j-months. Finally, the differential winner-loser portfolio returns were calculated. To investigate the statistical significance of winner-loser portfolios returns, "Compare Mean Test" (one sample t-test) was used.

In the present study, different values for (i) and (j) were chosen as (i), (j) ε {1, 3, 6, 9, 12}. Therefore, in order to study the momentum in each of the three samples, 25 strategies were tested with respect to the estimation and prediction period.

To calculate the continuously compounded return, the following equation was used:

$$R_t = log(^{P_t}/_{P_{t-1}}) \quad (1)$$

That P_{t-1} is the close price at the beginning of the estimation/prediction period, P_t is the close price at the end of estimation/prediction, and R_t is the portfolio return at the end of the estimation/prediction period.

2.2 Liquidity

Liquidity is one of the important and effective factors in financial studies, and a factor that can affect a company's performance. Market participants consider many parameters during trading decision-making. One of these criteria is the liquidity of the stock. Many investors believe that liquid securities are more attractive, assuming that other factors are stable. Moreover, liquidity makes them more confident and decreases the risk of loss when they want to carry out a high volume of transaction. In other words, liquidity is buying and selling securities without any significant price change. Amihud and Mendleson (1986) evaluated the relationship between liquidity and stock returns, and concluded that since liquidity leads to increase in company return and its value, companies tend to adopt policies to increase the liquidity of their stocks. Different studies confirm the positive effect of stocks with high liquidity (or high trading volume, which is considered as a proxy of liquidity) on profitability of the momentum strategy (Lee & Swaminathan, 2000; Hameed & Kusnadi, 2002; Chui et al., 2000; Chan et al., 2000; Drew et al., 2007). In contrast, for the first time, it was shown that companies with low (high) stock trading volume achieve higher (lower) abnormal return (Datar et al., 1998). Brennan et al., (1998) also attempted to prove the negative relation between average return and dollar trading volume. They found a negative relationship between average returns and dollar trading volume, and reported that when the trading volume was low and consequently stocks were liquid, the momentum strategy led to generate higher returns.

In order to investigate the influence of liquidity on momentum returns, stocks were sorted according to liquidity at the end of i-month periods (estimation period). The momentum portfolios were then created in the form that the liquidity-stored stocks were ranked into three categories in which 30% of the stocks with the highest liquidity were allocated to the first category (P1), the next 30% to P2 and the last 30% with the lowest liquidity allocated to P3. Then, 30% of the stocks in each category with highest liquidity were allocated to S1 portfolio, the next 30% to S2, and the last one with the lowest liquidity to S3. Portfolio returns were measured at the end of the j-month (estimation periods). In each category, the portfolios with maximum and minimum returns were assigned as "winner" and "loser", respectively. Then, these portfolios were held for the next j- months and their return was calculated at the end of the prediction period. Finally, the winner-loser portfolio returns were calculated. In order to investigate the significance of abnormal returns, "Compare Mean Test" was used and the liquidity proxy was the turnover ratio as follows:

$$Turnover\ Ratio = \frac{\text{Total traded stocks during the estimation period}}{Total\ number\ of\ shares} \quad (2)$$

Moreover, different values chosen for (i) and (j), and the number of investigated strategies were similar to 2.1.

2.3 Size

The momentum return in size-stored portfolios is an important issue in financial literature. Several studies have been conducted to analyze the effect of firm size on returns of the momentum strategy. Some results believe that the momentum profits are negatively related to small-cap firms, and then small-size stocks. In fact, these profit changes are observed when the whole sample is divided into sub-samples according to size or market capitalization. In general, the small-size stocks create higher momentum returns compared to the large-size stocks.

So far, the literature lacks consensus on considering size for calculating momentum returns. Few studies have documented significant momentum returns taking into account the size factor, while other researchers failed to document any significant differences. If this test is taken to a global context with detailed investigations, a clear picture may emerge.

For example, Demir et al. (2004), Rouwenhorst (1998), Hong et al. (2000), Hameed and Kusnadi (2002), Siganos (2007) etc., have documented the positive effect of small-size stocks on profitability of the momentum strategy. On the contrary, other studies have failed to document any evidence to separate contribution of small-size stocks on profitability of the momentum strategy such as the studies by T. Hou and Mcknight (2004), Mengolie (2004) etc.

To examine the effect of small-size stock on momentum return, the firms were sorted according to size at the end of i-month (estimation period). Then the momentum portfolios were created using the same method used in

section 2.2. The market value at the end of the estimation period was used to calculate the firm size, which was the total number of shares multiplied by the close price (Note 1). The different values chosen for (i) and (j) and the number of investigated strategies were similar to 2.1.

3. Data

The period of analysis was from 21 March 2001 (firstFarvardin, 1380, according to the beginning of the New Year in the Persian calendar) to 21 of March 2010. Moreover, to ensure precision of results and make them more reliable, the present study was conducted in two sub-periods: 2005 to 2010, and 2007 to 2010. The first one is due to significant change in the number of stock companies after the execution of principle 44 of the constitution (privatization), and the second is to cover the effects of the global financial crisis on the economy of Iran. In addition, these sub-periods were analyzed to strengthen the results by evaluating time-variation of returns and to know whether results were consistent through time, or were mainly obtained in just one sub-period. Our sample consists of three separate samples of all companies that joined the stock market before the mentioned periods and have been traded in at least 50% of the total trading days in the related period. The number of companies in these samples is as follows:

- 2001 to 2010: 81 companies;
- 2005 to 2010: 126 companies; and
- 2007 to 2010: 126 companies.

In this study, the Kolmogorov-Smirnov Test tested normality, and then the Compare Mean Test was used to investigate the statistical significance of the momentum portfolio returns.

4. Results

This section indicates the findings of the tests. The profitability of the momentum strategy and the influence of liquidity and size on momentum returns were analyzed in three samples. In each test, the monthly and average period return, T-statistic, significance, and the lower/ upper limits at the 5% significant level were indicated.

4.1 Momentum

Table 1 shows the momentum profits in three samples. Positivity or negativity (or zero value) of momentum portfolios return was identified according to the significance upper and lower limits because of the two-tailed test in SPSS software. In addition, the mean monthly return of momentum portfolios was summarized for each of the 25 strategies (i-month/j-month).

Table 1. Returns to Momentum portfolios

1-A. (Return of P_1 – Return of P_9) Period 2001 to 2010

Strategy	J=1			J=3			J=6			J=9			J=12		
	Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic
i=1	0.01	0.01	1.47	0.03	0.01	**2.074***[1]	0.04	0.01	**2.078***	0.06	0	**2.056***	0.11	0.01	**3.309 ***
i=3	0	0	0.32	0	0	0.16	-0.03	0	-1.03	-0.01	0	-0.37	0.02	0	0.53
i=6	0.01	0	0.6	-0.04	-0.01	-2.6	-0.06	-0.01	-2.69	-0.02	0	-0.59	-0.01	0	-0.29
i=9	0	0	-0.27	-0.04	-0.01	-2.2	-0.04	0	-1.76	-0.03	0	-1.24	-0.07	0	-2.13
i=12	0	0	0	-0.01	0	-0.78	-0.05	-0.01	-2.11	-0.06	0	-1.85	-0.1	-0.01	-2.67

Strategy	J=1			J=3			J=6			J=9			J=12		
	lower	upper	sig	lower	upper	sig	lower	upper	sig	lower	upper	sig	lower	upper	sig
i=1	-0.01	0.03	0.14	0	0.06	**0.04 ***	0	0.09	**0.04 ***	0	0.11	**0.04 ***	0.05	0.18	**0.00 ***
i=3	-0.02	0.02	0.75	-0.03	0.03	0.87	-0.08	0.02	0.31	-0.07	0.05	0.71	-0.05	0.09	0.6
i=6	-0.01	0.03	0.55	-0.08	-0.01	0.01	-0.11	-0.02	0.01	-0.07	0.04	0.56	-0.08	0.06	0.78
i=9	-0.02	0.02	0.79	-0.07	0	0.03	-0.09	0.01	0.08	-0.08	0.02	0.22	-0.13	0	0.04
i=12	-0.02	0.02	1	-0.05	0.02	0.44	-0.09	0	0.04	-0.12	0	0.07	-0.17	-0.02	0.01

Note: [1] The t-statistic and significant have been marked with "*" to indicated the Return significancy.

1-B. (Return of P_1 – Return of P_9) Period 2005 to 2010

Strategy	J=1			J=3			J=6			J=9			J=12		
	Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic
i=1	0.02	0.01	1.62	0.02	0.01	1.36	0.05	0.01	**2.12***	0.05	0.00	**2.02***	0.08	0.00	**2.11***
i=3	0.01	0.01	0.54	(0.01)	(0.01)	(0.49)	(0.01)	(0.00)	(0.50)	0.03	0.00	0.77	0.08	0.00	1.86
i=6	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.34)	(0.02)	(0.00)	(0.74)	0.04	0.00	1.07	0.03	0.00	0.84
i=9	(0.02)	(0.01)	(1.47)	(0.03)	(0.02)	(1.60)	0.00	0.00	0.09	0.02	0.00	0.49	(0.04)	(0.00)	(0.99)
i=12	0.01	0.01	0.61	0.00	0.00	0.16	(0.00)	(0.00)	(0.13)	(0.03)	(0.00)	(0.89)	(0.09)	(0.01)	(1.98)

Strategy	J=1			J=3			J=6			J=9			J=12		
	lower	upper	sig	lower	upper	sig	lower	upper	sig	lower	upper	sig	lower	upper	sig
i=1	(0.00)	0.04	0.11	(0.01)	0.05	0.18	0.00	0.09	**0.04***	0.00	0.10	**0.05***	0.00	0.16	**0.04***
i=3	(0.02)	0.04	0.59	(0.04)	0.03	0.62	(0.07)	0.04	0.62	(0.04)	0.09	0.45	(0.01)	0.17	0.07
i=6	(0.02)	0.02	0.99	(0.05)	0.04	0.74	(0.07)	0.03	0.46	(0.03)	0.10	0.29	(0.05)	0.11	0.40
i=9	(0.04)	0.01	0.15	(0.07)	0.01	0.12	(0.06)	0.06	0.93	(0.06)	0.09	0.63	(0.13)	0.04	0.33
i=12	(0.02)	0.03	0.55	(0.04)	0.04	0.87	(0.07)	0.06	0.90	(0.11)	0.04	0.38	(0.19)	0.00	0.06

1-C. (Return of P_1 – Return of P_9) Period 2007 to 2010

Strategy	J=1			J=3			J=6			J=9			J=12		
	Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic
i=1	0.04	0.03	**2.21***	0.01	0.00	0.52	0.01	0.00	0.32	0.00	0.00	0.06	0.08	0.01	1.43
i=3	(0.01)	(0.01)	(0.71)	(0.03)	(0.01)	(1.53)	(0.05)	(0.01)	(1.48)	(0.02)	(0.00)	(0.35)	(0.01)	(0.00)	(0.12)
i=6	(0.02)	(0.02)	(1.99)	(0.04)	(0.01)	(1.51)	(0.07)	(0.01)	(1.89)	(0.04)	(0.00)	(0.68)	(0.09)	(0.01)	(1.29)
i=9	(0.03)	(0.02)	(1.78)	(0.06)	(0.01)	(1.75)	(0.05)	(0.01)	(1.01)	(0.09)	(0.01)	(1.37)	(0.20)	(0.01)	(2.99)
i=12	(0.01)	(0.01)	(0.62)	(0.03)	(0.01)	(0.70)	(0.09)	(0.01)	(1.41)	(0.18)	(0.01)	(2.88)	(0.32)	(0.02)	(4.48)

Strategy	J=1			J=3			J=6			J=9			J=12		
	lower	upper	sig	lower	upper	sig	lower	upper	sig	lower	upper	sig	lower	upper	sig
i=1	0.003	0.07	**0.03***	(0.03)	0.04	0.60	(0.05)	0.07	0.75	(0.07)	0.08	0.95	(0.04)	0.21	0.17
i=3	(0.05)	0.02	0.48	(0.07)	0.01	0.14	(0.13)	0.02	0.15	(0.12)	0.08	0.73	(0.15)	0.13	0.91
i=6	(0.05)	0.00	0.06	(0.10)	0.01	0.14	(0.16)	0.01	0.07	(0.16)	0.08	0.51	(0.24)	0.06	0.22
i=9	(0.06)	0.00	0.09	(0.12)	0.01	0.09	(0.16)	0.05	0.32	(0.22)	0.05	0.19	(0.35)	(0.06)	0.01
i=12	(0.05)	0.03	0.54	(0.11)	0.05	0.49	(0.22)	0.04	0.18	(0.32)	(0.05)	0.01	(0.48)	(0.17)	0.00

In panel 1-A, regarding the significance, upper and lower limits, the momentum returns were positive only in four strategies in the 2001-2010 period, and other period values were negative or zero. Therefore, it was concluded that in this period, momentum had not existed in TSE, and using this strategy led to the generation of negative or zero returns. Panel 1-B presented momentum returns from 2005 to 2010, after privatization. According to that, only in three strategies, the momentum returns were positive. Moreover, in the panel 1-C the momentum returns were positive only in one strategy from 2007 to 2010 (the effect of global financial crisis on economy of Iran), and in others, values were negative or zero. Therefore, in these two sub-periods, the momentum had not existed in TSE, and the momentum trading strategy generated negative or zero returns.

4.2 Liquidity

Liquidity results are presented in table 2. The average monthly momentum portfolio returns was calculated for each i-month/j-months strategies for the high-liquidity and low-liquidity stock categories (each containing 25 strategies).

In panel 2-A it was observed that all the strategies generate negative (or zero) momentum returns in

high-liquidity and low-liquidity stocks (except the i=9/j=9 strategy for low-liquidity stocks) from 2001 to 2010. Therefore, momentum has not existed in the high-liquidity stocks. 2-B panel was related to the liquidity effect between 2007 and 2010. Results showed that momentum returns in the high and low-liquidity stocks were only positive for nine and 10 strategies, respectively. Our results in panel 2-C illustrated that from 2005 to 2010, momentum returns were positive in the high-liquidity stocks only for eight strategies, and for six strategies in the low-liquidity stocks. In both stock categories with high and low liquidity in all three periods, the average momentum portfolio return was negative (or zero) for most of the strategies. It is concluded that no particular relationship can be found between momentum returns and the liquidity factor, and using this strategy taking into account liquidity in Tehran stock Exchange, generates negative returns.

Table 2. Momentum Returns to Liquidity-stored portfolios

2-A. (Return to winner-loser portfolios based on the liquidity) Period 2001to 2010

Strategy			J=1			J=3			J=6			J=9			J=12		
			Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic
i=1	P1	S1-S3	0	0	0.006	-0.02	-0.005	-1.582	-0.011	-0.001	-0.64	0.015	0.001	0.634	-0.001	0	-0.022
	P3	S1-S3	0.006	0.004	0.677	0.015	0.003	1.023	-0.021	-0.003	-1.211	-0.004	0	-0.184	-0.005	0	-0.207
i=3	P1	S1-S3	-0.003	-0.002	-0.477	-0.015	-0.004	-1.282	0.001	0	0.073	0.026	0.002	1.323	0.036	0.002	1.301
	P3	S1-S3	0.008	0.006	0.947	-0.011	-0.003	-0.882	-0.002	0	-0.096	0.008	0.001	0.323	0.019	0.001	0.756
i=6	P1	S1-S3	0.007	0.005	0.77	-0.005	-0.001	-0.39	-0.022	-0.003	-1.248	-0.011	-0.001	-0.459	-0.002	0	-0.056
	P3	S1-S3	0.006	0.004	0.951	0.021	0.005	1.62	0.005	0.001	0.222	0.025	0.002	1.233	0.008	0	0.347
i=9	P1	S1-S3	-0.005	-0.004	-0.621	-0.037	-0.009	-2.505	-0.044	-0.005	-2.201	-0.037	-0.003	-1.446	-0.007	0	-0.243
	P3	S1-S3	0.006	0.004	0.594	0.006	0.001	0.465	0.02	0.002	1.158	0.049	0.004	**2.767***	0.038	0.002	1.973
i=12	P1	S1-S3	-0.011	-0.008	-1.228	-0.017	-0.004	-1.26	-0.037	-0.004	-1.888	-0.04	-0.003	-1.719	-0.049	-0.003	-1.798
	P3	S1-S3	0	0	0.04	-0.012	-0.003	-0.988	-0.015	-0.002	-0.78	-0.026	-0.002	-1.116	-0.02	-0.001	-0.821

Strategy			J=1			J=3			J=6			J=9			J=12		
			lower	upper	sig	lower	upper	sig	lower	upper	sig	lower	upper	sig	lower	upper	sig
i=1	P1	S1-S3	(0.017)	0.017	0.995	(0.046)	0.005	0.117	(0.043)	0.022	0.524	(0.032)	0.061	0.527	(0.060)	0.058	0.983
	P3	S1-S3	(0.012)	0.024	0.500	(0.014)	0.043	0.309	(0.057)	0.014	0.229	(0.046)	0.038	0.854	(0.051)	0.042	0.836
i=3	P1	S1-S3	(0.014)	0.009	0.635	(0.039)	0.008	0.203	(0.034)	0.037	0.942	(0.013)	0.066	0.189	(0.019)	0.091	0.197
	P3	S1-S3	(0.009)	0.024	0.346	(0.034)	0.013	0.380	(0.044)	0.040	0.924	(0.039)	0.055	0.747	(0.030)	0.067	0.452
i=6	P1	S1-S3	(0.010)	0.023	0.443	(0.028)	0.019	0.697	(0.058)	0.013	0.215	(0.058)	0.036	0.647	(0.064)	0.060	0.956
	P3	S1-S3	(0.006)	0.017	0.344	(0.005)	0.047	0.108	(0.036)	0.045	0.825	(0.015)	0.066	0.221	(0.036)	0.051	0.730
i=9	P1	S1-S3	(0.023)	0.012	0.536	(0.066)	(0.008)	0.014	(0.083)	(0.004)	0.030	(0.087)	0.014	0.152	(0.062)	0.048	0.809
	P3	S1-S3	(0.014)	0.025	0.554	(0.019)	0.030	0.643	(0.014)	0.054	0.250	0.014	0.085	**0.007***	(0.000)	0.077	0.052
i=12	P1	S1-S3	(0.029)	0.007	0.223	(0.044)	0.010	0.211	(0.077)	0.002	0.062	(0.086)	0.006	0.089	(0.103)	0.005	0.076
	P3	S1-S3	(0.018)	0.019	0.968	(0.036)	0.012	0.326	(0.053)	0.023	0.437	(0.072)	0.020	0.267	(0.069)	0.029	0.414

2-B. (Return to winner-loser portfolios based on the liquidity) Period 2005 to 2010

Strategy			J=1			J=3			J=6			J=9			J=12		
			Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic
i=1	P1	S1-S3	(0.014)	(0.010)	(1.868)	0.013	0.009	0.814	0.028	0.003	1.478	0.083	0.007	**3.362***	0.133	0.008	**3.842***
	P3	S1-S3	0.006	0.005	0.552	(0.044)	(0.031)	(3.034)	0.035	0.004	1.794	0.063	0.005	**2.694***	0.075	0.004	**2.875***
i=3	P1	S1-S3	(0.030)	(0.021)	(2.454)	0.012	0.009	0.791	0.031	0.004	1.465	0.052	0.004	1.869	0.156	0.009	**4.832***
	P3	S1-S3	0.012	0.009	1.321	(0.027)	(0.019)	(1.918)	0.024	0.003	1.391	0.027	0.002	1.344	0.049	0.003	**2.090***
i=6	P1	S1-S3	0.007	0.005	0.631	0.016	0.011	1.250	0.049	0.006	1.878	0.131	0.010	**3.878***	0.249	0.015	**7.289***
	P3	S1-S3	0.016	0.011	1.385	(0.006)	(0.004)	(0.406)	0.022	0.003	1.092	0.046	0.004	**2.030***	0.081	0.005	**3.708***
i=9	P1	S1-S3	0.008	0.006	1.189	(0.001)	(0.001)	(0.132)	0.021	0.002	1.364	0.048	0.004	1.802	0.081	0.005	**3.371***
	P3	S1-S3	(0.006)	(0.005)	(0.549)	(0.011)	(0.008)	(0.715)	0.008	0.001	0.492	0.046	0.004	**2.195***	0.063	0.004	**2.788***
i=12	P1	S1-S3	0.006	0.005	0.603	(0.016)	(0.012)	(0.867)	0.061	0.007	**2.045***	0.168	0.013	**5.589***	0.191	0.011	**5.864***
	P3	S1-S3	0.030	0.022	**2.570***	0.024	0.017	1.482	0.026	0.003	1.361	0.062	0.005	**2.812***	0.084	0.005	**3.734***

Strategy			J=1			J=3			J=6			J=9			J=12		
			lower	upper	sig	lower	upper	sig	lower	upper	sig	lower	upper	sig	lower	upper	sig
i=1	P1	S1-S3	(0.029)	0.001	0.067	(0.019)	0.045	0.419	(0.010)	0.067	0.145	0.033	0.132	**0.001***	0.064	0.203	**0.000***
	P3	**S1-S3**	(0.02)	0.03	0.58	(0.07)	(0.01)	0.00	(0.00)	0.07	0.08	0.02	0.11	**0.01***	0.02	0.13	**0.01***
i=3	P1	S1-S3	(0.055)	(0.006)	0.017	(0.019)	0.043	0.433	(0.011)	0.072	0.149	(0.004)	0.108	0.068	0.091	0.221	**0.000***
	P3	**S1-S3**	(0.01)	0.03	0.19	(0.05)	0.00	0.06	(0.01)	0.06	0.17	(0.01)	0.07	0.19	0.00	0.10	**0.04***
i=6	P1	S1-S3	(0.015)	0.030	0.531	(0.009)	0.040	0.217	(0.003)	0.101	0.066	0.063	0.199	**0.000***	0.180	0.317	**0.000***
	P3	**S1-S3**	(0.01)	0.04	0.17	(0.03)	0.02	0.69	(0.02)	0.06	0.28	0.00	0.09	**0.05***	0.04	0.13	**0.00***
i=9	P1	S1-S3	(0.006)	0.021	0.240	(0.021)	0.018	0.896	(0.010)	0.051	0.179	(0.006)	0.101	0.079	0.033	0.130	**0.002***
	P3	**S1-S3**	(0.03)	0.02	0.59	(0.04)	0.02	0.48	(0.03)	0.04	0.63	0.00	0.09	**0.03***	0.02	0.11	**0.01***
i=12	P1	S1-S3	(0.015)	0.028	0.549	(0.054)	0.021	0.390	0.001	0.121	**0.047***	0.107	0.229	**0.000***	0.125	0.257	**0.000***
	P3	**S1-S3**	0.01	0.05	0.01	(0.01)	0.06	0.15	(0.01)	0.07	0.18	0.02	0.11	**0.01***	0.04	0.13	**0.00***

2-C. (Return to winner-loser portfolios based on the liquidity) Period 2007 to 2010

Strategy			J=1			J=3			J=6			J=9			J=12		
			Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic
i=1	P1	S1-S3	(0.009)	(0.007)	(0.795)	0.019	0.005	1.263	0.020	0.002	0.783	0.070	0.006	**2.726***	0.102	0.006	**3.127***
	P3	S1-S3	0.000	0.000	0.018	(0.038)	(0.009)	(2.532)	0.088	0.011	**5.100***	0.026	0.002	0.785	0.029	0.002	1.191
i=3	P1	S1-S3	(0.016)	(0.011)	(1.305)	0.044	0.011	**3.284***	(0.001)	(0.000)	(0.038)	0.084	0.007	**3.011 ***	0.103	0.006	**2.549 ***
	P3	S1-S3	0.008	0.006	0.779	(0.024)	(0.006)	(1.221)	0.037	0.004	1.244	0.037	0.003	1.013	0.075	0.004	**2.137 ***
i=6	P1	S1-S3	0.018	0.013	1.656	0.037	0.009	**2.833 ***	0.012	0.001	0.432	0.092	0.007	**2.304 ***	0.075	0.004	1.917
	P3	S1-S3	0.001	0.001	0.043	(0.015)	(0.003)	(0.802)	0.012	0.001	0.453	0.035	0.003	1.074	0.097	0.006	**2.813 ***
i=9	P1	S1-S3	0.010	0.007	0.977	0.021	0.005	1.085	0.055	0.007	1.909	0.152	0.012	**3.986 ***	0.061	0.004	1.710
	P3	S1-S3	(0.009)	(0.006)	(0.430)	(0.032)	(0.008)	(1.320)	0.064	0.008	**2.082 ***	0.127	0.010	**4.402 ***	0.096	0.006	**2.648 ***
i=12	P1	S1-S3	0.020	0.014	1.241	0.036	0.009	1.605	0.001	0.000	0.032	0.065	0.005	1.382	0.006	0.000	0.150
	P3	S1-S3	0.015	0.011	0.653	(0.010)	(0.002)	(0.426)	0.051	0.006	1.843	0.018	0.001	0.442	0.048	0.003	1.197

Strategy			J=1			J=3			J=6			J=9			J=12		
			lower	upper	sig	lower	upper	sig	lower	upper	sig	lower	upper	sig	lower	upper	sig
i=1	P1	S1-S3	(0.034)	0.015	0.432	(0.012)	0.050	0.216	(0.032)	0.071	0.440	0.017	0.122	**0.011***	0.035	0.170	**0.005***
	P3	S1-S3	(0.023)	0.024	0.985	(0.069)	(0.008)	0.016	0.053	0.124	**0.000***	(0.042)	0.095	0.440	(0.021)	0.079	0.246
i=3	P1	S1-S3	(0.041)	0.009	0.201	0.017	0.072	**0.003***	(0.055)	0.053	0.970	0.026	0.142	**0.006 ***	0.019	0.187	**0.019 ***
	P3	S1-S3	(0.013)	0.029	0.442	(0.063)	0.016	0.232	(0.024)	0.098	0.224	(0.039)	0.114	0.321	0.002	0.148	**0.045 ***
i=6	P1	S1-S3	(0.004)	0.040	0.108	0.010	0.064	**0.009 ***	(0.045)	0.069	0.669	0.009	0.174	**0.032 ***	(0.007)	0.157	0.071
	P3	S1-S3	(0.039)	0.041	0.966	(0.052)	0.023	0.430	(0.041)	0.064	0.655	(0.033)	0.103	0.295	0.024	0.169	**0.012 ***
i=9	P1	S1-S3	(0.011)	0.032	0.338	(0.019)	0.061	0.289	(0.005)	0.115	0.070	0.072	0.232	**0.001 ***	(0.015)	0.136	0.108
	P3	S1-S3	(0.052)	0.034	0.671	(0.081)	0.018	0.199	0.000	0.129	**0.050 ***	0.066	0.188	**0.000 ***	0.019	0.174	**0.018 ***
i=12	P1	S1-S3	(0.013)	0.053	0.227	(0.011)	0.083	0.123	(0.085)	0.088	0.975	(0.035)	0.166	0.187	(0.075)	0.086	0.884
	P3	S1-S3	(0.032)	0.062	0.520	(0.057)	0.038	0.675	(0.007)	0.109	0.082	(0.070)	0.106	0.665	(0.040)	0.136	0.254

4.3 Size

Table 3 shows the effect of size on momentum profits. The average monthly momentum portfolio returns were presented for each i-month/ j-month strategy and two categories, the large-size and small-size stocks (e.g. section 4.2).

The panel 3-A illustrates that between 2001 and 2010, all strategies generateى negative (or zero) momentum returns in both large and small-size stock categories. Therefore, there is no significant relationship between momentum profits and firm size in this period, and small-size stocks do not have the separate roll on profitability of the momentum strategy. The results in Panel 3-B indicate that between 2005 and 2010, momentum returns were only positive for 10 strategies in the large-size stocks. However, it was positive in small-size stocks for 19 strategies. Therefore, it was concluded that the return continuation or momentum was drastic in small-size stocks. However, when large-size stocks were tested, it gradually diminished. The results of the 3-C panel

showed that momentum returns in large-size stock for six strategies, and the small-size stocks for nice strategies were positive between 2007 and 2010. Thus, because of the negative (or zero) average momentum returns in both stock categories for most strategies, it was concluded that there is no significant relationship between momentum profits and firm size in this period.

Table 3. Momentum Returns to Size-stored portfolios

3-A. (Return to winner-loser portfolios based on the Size) Period 2001 to 2010

Strategy			J=1			J=3			J=6			J=9			J=12		
			Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic
i=1	P1	S1-S3	(0.044)	(0.032)	(0.622)	0.016	0.004	1.184	0.018	0.002	1.091	0.030	0.002	1.411	0.024	0.001	0.936
	P3	S1-S3	(0.037)	(0.026)	(0.520)	(0.009)	(0.002)	(0.719)	(0.016)	(0.002)	(1.023)	(0.018)	(0.001)	(0.877)	(0.038)	(0.002)	(1.427)
i=3	P1	S1-S3	(0.005)	(0.003)	(0.586)	(0.000)	(0.000)	(0.003)	(0.010)	(0.001)	(0.579)	(0.024)	(0.002)	(1.112)	(0.029)	(0.002)	(1.119)
	P3	S1-S3	(0.022)	(0.016)	(2.937)	(0.035)	(0.008)	(2.836)	(0.036)	(0.004)	(2.290)	(0.048)	(0.004)	(2.311)	(0.035)	(0.002)	(1.314)
i=6	P1	S1-S3	(0.012)	(0.008)	(1.543)	(0.016)	(0.004)	(1.169)	(0.022)	(0.003)	(1.292)	(0.021)	(0.002)	(0.947)	(0.046)	(0.003)	(1.816)
	P3	S1-S3	(0.017)	(0.012)	(2.235)	(0.028)	(0.007)	(2.159)	(0.019)	(0.002)	(1.174)	(0.033)	(0.003)	(1.590)	(0.074)	(0.004)	(2.938)
i=9	P1	S1-S3	(0.009)	(0.006)	(1.140)	(0.032)	(0.008)	(2.421)	(0.038)	(0.004)	(2.171)	(0.058)	(0.005)	(2.630)	(0.065)	(0.004)	(2.505)
	P3	S1-S3	(0.007)	(0.005)	(0.922)	(0.022)	(0.005)	(1.696)	(0.016)	(0.002)	(0.971)	(0.032)	(0.003)	(1.502)	(0.089)	(0.005)	(3.300)
i=12	P1	S1-S3	(0.003)	(0.002)	(0.434)	(0.016)	(0.004)	(1.145)	(0.036)	(0.004)	(1.979)	(0.060)	(0.005)	(2.640)	(0.063)	(0.004)	(2.351)
	P3	S1-S3	(0.015)	(0.011)	(1.866)	(0.026)	(0.006)	(1.908)	(0.005)	(0.001)	(0.308)	(0.025)	(0.002)	(1.115)	(0.061)	(0.004)	(2.228)

Strategy			J=1			J=3			J=6			J=9			J=12		
			lower	upper	sig	lower	upper	sig	lower	upper	sig	lower	upper	sig	lower	upper	sig
i=1	P1	S1-S3	(0.186)	0.097	0.535	(0.011)	0.042	0.239	(0.015)	0.050	0.278	(0.012)	0.072	0.162	(0.027)	0.075	0.351
	P3	S1-S3	(0.179)	0.104	0.604	(0.034)	0.016	0.474	(0.048)	0.016	0.309	(0.060)	0.023	0.383	(0.091)	0.015	0.157
i=3	P1	S1-S3	(0.020)	0.011	0.559	(0.028)	0.028	0.998	(0.044)	0.024	0.564	(0.067)	0.019	0.269	(0.080)	0.022	0.266
	P3	S1-S3	(0.037)	(0.007)	0.004	(0.060)	(0.011)	0.006	(0.068)	(0.005)	0.024	(0.090)	(0.007)	0.023	(0.087)	0.018	0.192
i=6	P1	S1-S3	(0.026)	0.003	0.126	(0.043)	0.011	0.245	(0.057)	0.012	0.200	(0.065)	0.023	0.346	(0.097)	0.004	0.073
	P3	S1-S3	(0.032)	(0.002)	0.028	(0.054)	(0.002)	0.033	(0.050)	0.013	0.243	(0.075)	0.008	0.115	(0.124)	(0.024)	0.004
i=9	P1	S1-S3	(0.024)	0.007	0.257	(0.059)	(0.006)	0.017	(0.072)	(0.003)	0.032	(0.101)	(0.014)	0.010	(0.117)	(0.013)	0.014
	P3	S1-S3	(0.023)	0.008	0.359	(0.048)	0.004	0.093	(0.047)	0.016	0.334	(0.075)	0.010	0.137	(0.143)	(0.035)	0.001
i=12	P1	S1-S3	(0.019)	0.013	0.665	(0.045)	0.012	0.255	(0.072)	0.000	0.051	(0.104)	(0.015)	0.010	(0.116)	(0.010)	0.021
	P3	S1-S3	(0.031)	0.001	0.065	(0.054)	0.001	0.060	(0.040)	0.029	0.758	(0.068)	0.019	0.268	(0.115)	(0.007)	0.029

3-B. (Return to winner-loser portfolios based on the Size) Period 2005 to 2010

Strategy			J=1			J=3			J=6			J=9			J=12		
			Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic
i=1	P1	S1-S3	0.003	0.002	0.203	(0.000)	(0.000)	(0.029)	0.016	0.002	0.863	0.067	0.005	**3.440***	0.073	0.004	**3.130***
	P3	S1-S3	(0.001)	(0.001)	(0.072)	0.045	0.032	**3.106***	0.075	0.009	**4.389***	0.090	0.007	**3.765***	0.126	0.008	**4.526***
i=3	P1	S1-S3	0.014	0.010	0.984	0.010	0.007	0.638	0.032	0.004	1.618	0.060	0.005	**3.154***	0.076	0.005	**3.317***
	P3	S1-S3	0.000	0.000	0.007	0.045	0.032	**3.188***	0.042	0.005	**2.322***	0.095	0.008	**3.950***	0.139	0.008	**4.911***
i=6	P1	S1-S3	0.012	0.008	0.836	0.026	0.019	1.532	0.032	0.004	1.619	0.054	0.004	**2.635***	0.062	0.004	**2.433***
	P3	S1-S3	(0.020)	(0.014)	(1.703)	0.035	0.025	**2.088***	0.064	0.008	**3.433***	0.096	0.008	**3.732***	0.133	0.008	**4.483***
i=9	P1	S1-S3	0.005	0.003	0.317	0.012	0.008	0.707	0.017	0.002	0.793	0.068	0.005	**3.019***	0.081	0.005	**3.104***
	P3	S1-S3	(0.017)	(0.012)	(1.465)	0.027	0.019	1.784	0.052	0.006	**2.752***	0.078	0.006	**2.671***	0.131	0.008	**3.959***
i=12	P1	S1-S3	0.002	0.002	0.139	0.018	0.013	1.024	0.027	0.003	1.206	0.056	0.004	**2.476***	0.095	0.006	**3.249***
	P3	S1-S3	0.003	0.002	0.213	0.038	0.027	**2.427***	0.067	0.008	**3.375***	0.091	0.007	**3.221***	0.128	0.008	**3.841***

Strategy			J=1			J=3			J=6			J=9			J=12		
			lower	upper	sig	lower	upper	sig	lower	upper	sig	lower	upper	Sig	lower	upper	Sig
i=1	P1	S1-S3	(0.026)	0.032	0.840	(0.034)	0.033	0.977	(0.022)	0.054	0.392	0.028	0.105	**0.001***	0.026	0.119	**0.003***
	P3	S1-S3	(0.02)	0.02	0.94	0.02	0.07	**0.00***	0.04	0.11	**0.00***	0.04	0.14	**0.00***	0.07	0.18	**0.00***
i=3	P1	S1-S3	(0.015)	0.044	0.330	(0.021)	0.041	0.526	(0.008)	0.071	0.112	0.022	0.098	**0.003***	0.030	0.122	**0.002***
	P3	S1-S3	(0.02)	0.02	0.99	0.02	0.07	**0.00***	0.01	0.08	**0.02***	0.05	0.14	**0.00***	0.08	0.20	**0.00***
i=6	P1	S1-S3	(0.017)	0.040	0.407	(0.008)	0.061	0.132	(0.008)	0.072	0.112	0.013	0.096	**0.012***	0.011	0.113	**0.019***
	P3	S1-S3	(0.04)	0.00	0.09	0.00	0.07	**0.04***	0.03	0.10	**0.00***	0.04	0.15	**0.00***	0.07	0.19	**0.00***
i=9	P1	S1-S3	(0.025)	0.034	0.752	(0.021)	0.045	0.483	(0.027)	0.061	0.432	0.023	0.113	**0.004***	0.028	0.134	**0.004***
	P3	S1-S3	(0.04)	0.01	0.15	(0.00)	0.06	0.08	0.01	0.09	**0.01***	0.02	0.14	**0.01***	0.06	0.20	**0.00***
i=12	P1	S1-S3	(0.029)	0.034	0.890	(0.017)	0.053	0.311	(0.018)	0.073	0.235	0.010	0.101	**0.018***	0.036	0.155	**0.003***
	P3	S1-S3	(0.02)	0.03	0.83	0.01	0.07	**0.02***	0.03	0.11	**0.00***	0.03	0.15	**0.00***	0.06	0.20	**0.00***

3-C. (Return to winner-loser portfolios based on the Size) Period 2007 to 2010

Strategy			J=1			J=3			J=6			J=9			J=12		
			Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic	Return	M_R	t-statistic
i=1	P1	S1-S3	0.001	0.001	0.059	0.004	0.001	0.212	0.024	0.003	0.916	0.089	0.007	**3.054***	0.099	0.006	**2.493***
	P3	S1-S3	(0.009)	(0.007)	(0.795)	0.019	0.005	1.263	0.020	0.002	0.783	0.070	0.006	**2.726***	0.102	0.006	**3.127***
i=3	P1	S1-S3	0.027	0.019	1.695	0.011	0.003	0.503	0.021	0.003	0.718	0.097	0.008	**3.063***	0.069	0.004	1.865
	P3	S1-S3	(0.016)	(0.011)	(1.305)	0.044	0.011	**3.284***	(0.001)	(0.000)	(0.038)	0.084	0.007	**3.011***	0.103	0.006	**2.549***
i=6	P1	S1-S3	0.006	0.004	0.332	0.021	0.005	1.058	0.017	0.002	0.587	0.060	0.005	1.923	0.075	0.004	**2.511***
	P3	S1-S3	0.018	0.013	1.656	0.037	0.009	**2.833***	0.012	0.001	**0.432***	0.092	0.007	2.304	0.075	0.004	1.917
i=9	P1	S1-S3	(0.004)	(0.003)	(0.220)	0.026	0.006	1.135	0.012	0.001	0.336	0.079	0.006	**2.858***	0.069	0.004	1.842
	P3	S1-S3	0.010	0.007	0.977	0.021	0.005	1.085	0.055	0.007	**1.909***	0.152	0.012	**3.986***	0.061	0.004	1.710
i=12	P1	S1-S3	(0.014)	(0.010)	(0.767)	0.035	0.008	1.407	0.021	0.003	0.573	0.098	0.008	**3.184***	0.106	0.006	**2.824***
	P3	S1-S3	0.020	0.014	1.241	0.036	0.009	1.605	0.001	0.000	0.032	0.065	0.005	1.382	0.006	0.000	0.150

Strategy			J=1			J=3			J=6			J=9			J=12		
			lower	upper	sig	lower	upper	sig	lower	upper	sig	lower	upper	sig	lower	upper	sig
i=1	P1	S1-S3	(0.030)	0.031	0.953	(0.038)	0.046	0.833	(0.030)	0.078	0.367	0.029	0.148	**0.005***	0.017	0.181	**0.020***
	P3	S1-S3	(0.034)	0.015	0.432	(0.012)	0.050	0.216	(0.032)	0.071	0.440	0.017	0.122	**0.011***	0.035	0.170	**0.005***
i=3	P1	S1-S3	(0.005)	0.059	0.100	(0.033)	0.054	0.619	(0.040)	0.082	0.479	0.032	0.162	**0.005***	(0.008)	0.145	0.075
	P3	S1-S3	(0.041)	0.009	0.201	0.017	0.072	**0.003***	(0.055)	0.053	0.970	0.026	0.142	**0.006***	0.019	0.187	**0.019***
i=6	P1	S1-S3	(0.029)	0.041	0.742	(0.020)	0.061	0.299	(0.044)	0.079	0.562	(0.005)	0.125	0.068	0.012	0.138	**0.022***
	P3	S1-S3	(0.004)	0.040	0.108	0.010	0.064	**0.009***	(0.045)	0.069	**0.669***	0.009	0.174	0.032	(0.007)	0.157	0.071
i=9	P1	S1-S3	(0.043)	0.035	0.827	(0.021)	0.073	0.268	(0.061)	0.085	0.740	0.021	0.137	**0.010***	(0.011)	0.149	0.085
	P3	S1-S3	(0.011)	0.032	0.338	(0.019)	0.061	0.289	(0.005)	0.115	**0.070***	0.072	0.232	**0.001***	(0.015)	0.136	0.108
i=12	P1	S1-S3	(0.052)	0.024	0.451	(0.017)	0.088	0.174	(0.056)	0.098	0.574*	0.032	0.163	**0.006 ***	0.024	0.188	**0.015***
	P3	S1-S3	(0.013)	0.053	0.227	(0.011)	0.083	0.123	(0.085)	0.088	**0.975***	(0.035)	0.166	0.187	(0.075)	0.086	0.884

5. Conclusion

This paper investigated the return continuation in medium-term horizon in Tehran Stock Exchange from 2001 to 2010, and two sub-periods: 2005-2010, and 2007-2010. Moreover, the focus of attention was the effect of two important and substantial factors on profitability of the momentum strategy: Size and Liquidity. Regarding the fact that the TSE-data generally existed after the war, from 1991, and because of the few stock companies and low trading volumes to provide data and achieve reliable results we consider the period from 2001 onwards. In this research, three separate samples of all the companies that joined the stock market before the mentioned periods, and have been traded in at least 50% of the total trading days in the related period, have been tested. To

implement the strategies, 1, 3, 6, 9 and 12-months estimation/prediction periods was used.

Similar to the Studies by Kho et al. (1997), Chui, Titman and Wei (2000), Griffin and Martin (2003), C. Liu and Lee (2001), Du et al. (2009), etc., our results suggested that there was no evidence of return continuation in TSE and using momentum strategy has created negative returns in all periods. In addition, considering the liquidity required to form momentum portfolios, we observed that the liquidity factor has no effect on profitability of the momentum strategy, and using this strategy taking into account, liquidity have generated negative returns in TSE in all periods. A justifiable reason is less liquidity risk in the high-liquidity stocks leads to lower investors' expected return.

Like many studies in the world, our results confirmed the negative effect of small-size stocks on profitability of the momentum strategy that was only true between 2005 and 2010 (after privatization). Therefore, it was concluded that the return continuation in small-size stocks was strong, but by large-size stocks entries, it was gradually diminished. In contrary, in other periods it was observed that the stock-size had no effect on momentum profits, such as the studies by T. Hou and McKnight (2004), Mengoli (2004), etc. Since small-size stocks had low liquidity, their trading ability without moving the price was lower, and then the transaction and market impact costs were high. Therefore, they had negative expected return.

Overall, we found that the momentum strategy was not profitable in TSE in all periods. Moreover, considering size and liquidity, the positive effect of small-size stocks between 2005 and 2010, no evidence of liquidity effect was observed, which could be attributed to the related periods, liquidity and return criteria, or the methodology.

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Note

Note 1. To calculate the firm size that has had capital increase, its average market value at the beginning and end of the estimation period is used.