The relationship between stock returns and institutional and individual trading in the Iranian capital market

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Abstract

The aim of the present study was to investigate the relationship between the daily returns in the Tehran Stock Exchange and institutional and individual trading based on vector autoregressive (VAR) model. The relationship between these three variables (the value of institutional trading, individual trading, and market return) from the perspective of investors (in order to predict future market trends and make correct investment decisions) and from the perspective of market observers including observers in the Tehran Securities and Stock Exchange (to determine an appropriate and effective regulatory policies and regulations) is highly significant. The results of the study indicated that this is individual trading that plays a leading role in the Tehran Stock Exchange while institutional trading is subordinate to individual trading. Besides, it was noted that none of these variables influence stock returns while stock returns affect both institutional and individual trading. It was also found that market trends (whether positive or negative) do not change this result. In another part of this study, the relationships between these three variables were explored by creating three categories of portfolios: value, middle, and growth portfolios. The results indicated that there is a two-way relationship between individual and institutional trading for middle and growth portfolios. However, in the case of value portfolios such as the overall market, individual trading play their leading role. Besides, the results of the Granger test indicated that individual trading in middle portfolios were subordinate to the stock returns but this relationship was reversed for growth portfolios. On the other hand, there was no relationship between returns and individual trading in value portfolios. Furthermore, there was no significant relationship between institutional trading and stock returns in all portfolios under study.

Keywords: stock returns, individual trading, institutional trading, vector autoregressive (VAR) model, value portfolios, middle portfolios, and growth portfolios

1. Introduction

The relationship between stock returns and institutional trading has been studied frequently in finance literature. Previous studies illustrate a positive association between returns and institutional trading in developed markets. However, this relationship has not been explored in less developed markets such as the Tehran Stock Exchange. Many previous studies have focused on particular groups of institutional investors such as investment funds or a small group of individual investors such as the accounts of individual investors in as brokerage firm. Furthermore, the studies conducted based on an annual or quarterly institutional investment data may not reflect the dynamics of individual and institutional trading (Badrinath and Wahal, 2002).

In addition, previous studies have often focused on the markets in the U.S. and developed countries and on the relationship between stock returns and institutional trading while very few studies have addressed the relationship between stock returns and individual trading (Grinblatt and Keloharju, 2001; Ng and Wu, 2006,2007; Kaniel et al., 2008; Barber et al., 2009). Therefore, it is important to find out how is the relationship between stock returns and the volume of trading between different groups of individual and institutional investors. It is also of significance to know how individual and institutional investors would act when they face past returns. Two main questions in this regard are: Do the trading performed by such investors have the power of predicting the returns? How institutional and individual trading affect each other? Another significant issue is the value given by the investors to the information available in the market and their own information as it is very interesting to know how individual and institutional investors react to price shocks.
2. Theoretical framework and review of literature

In the theoretical models of economy and finance, it has been assumed that investors have fixed behaviors and the effects of their personality and judgments are assumed to be constant. However, in many situations investors’ behavior and the culture of decision-making to invest in securities have made unrest in many stock markets. The predictability of stock prices and future movements of the stock prices will result in opportunities for returns. Therefore, predicting stock prices is of vital importance. Theoretically speaking, the existence of predicting models in financial variables will challenge the validity of the fundamental principles of finance that is the efficient market hypothesis (EMH).

In 1999, two researchers, Goetzman and Massa, collected some evidence that showed there are different groups of investors whose behavior affects market trends and market returns and this may be a great challenge to the efficient market hypothesis (Schiller, 2003).

Similarly, there are some institutional and individual investors in the Tehran Stock Exchange with their own specific behaviors originating form special situations. Identification of these behaviors and reactions in different market conditions enables the analysts to predict the market movements and indicators and lead the market towards higher levels of efficiency. In addition, if the investors’ behaviors in different market conditions are identified, it may help policy makers to take more accurate decisions and to achieve their goals more quickly.

An awareness of how institutional and individual investors absorb new information in their interactions, what factors affect this process, and finally how the stock market becomes efficient in terms of information are among controversial issues in the field of finance. Therefore, the ongoing dynamics of the trading in the stock market, the volatility and the trading volume as well as the analysis of the data in the stock market have been emphasized.

A very important factor that will affect investment decisions is the stock returns. If it is possible to predict institutional and individual investors’ returns and introduce some models for such returns, in fact it will create more reliable conditions in the capital market that will help the growth of investment in financial markets.

From the early twentieth century, a group of activists in the securities markets believe that on the historical study of prices contains useful information for predicting future prices. Therefore, an awareness of the price trends will show the pattern of price changes and it tells us how often and at what times a specific trend occurs. The believers in this idea were called chartist as they used to focus on charts. According to this school of thought, fundamental analysis is not necessary and its supporters believe that history repeats itself. From the 1930s another research approach as the antithesis of the chartist idea came on surface. The main focus of these studies was on randomness of the behavior of prices and that the prices do not follow a particular pattern. The results of these studies entered into the economy and investment issues as a strong intellectual and theoretical stream and the theory of stochastic behavior of prices emerged accordingly.

The proponents of the random walk school through experimental tests have demonstrated that successive price changes in short periods such as a day, a week or a month are independent from one another. However, after the 1960s; the research moved away from statistical analysis of behavior of prices towards the economic characteristics of the stock market that cause random changes. This resulted in the emergence of the efficient market theory. Fundamentalists believe that it is possible to estimate the true value of the stocks through the analysis of key economic and financial variables. According to this theory, no one can obtain returns systematically in the long term more than the risk incurred. Then Kohem challenged the efficient market hypothesis by pointing out to abnormalities. Finally, Lo and McKinley introduced theoretical foundations for the rejection of random walk hypothesis and the dependence of the future movement of prices on the past movement.

2.1. Factors affecting investors’ decisions to invest in stock market

The study of decision-making process can improve the quality of decision making and solving the problems more efficiently. Besides, choosing the correct investment option to is one of the most important decisions to be taken by individuals and companies. During the last years, scholars in the field of management, psychology, and decision making have conducted lots of studies in this regard. In fact, knowing that how and where investors collect the information needed for decision-making is one of the main concerns of financial researchers in recent years.
The stock market like any other markets has its own special principles and conditions that are needed to be taken into account for the purpose of the investment, sales, and purchase as well as a true understanding of the problems of the stock market. Basically, investors must do extensive investigations when buying and selling stocks because they want to change their most cash assets into stocks. If they start to make investment without taking into account a set of factors, they would not get the desired results. This is the case in countries where stock market is not efficient. In these countries there is no need to do extensive investigations about securities because the stock market price is close to the intrinsic value of securities. In other words, the market price of securities is good indicator of the true value of securities in such countries.

The underlying assumption of the most financial theories is that investors logically think to raise their capital and thus they pay attention to financial symptoms. When making investment decisions, investors compare the related risks and returns with other potential investments they can make. Besides, the level of risk that investors are willing to tolerate depends on their psychological characteristics (conservatism and risk aversion). However, in the case of two investment options with the same level of risk; a rational investor will choose the one with higher returns. More recent research on behavioral finance suggested that investment decisions may be influenced by the internal behavior factors such as self-knowing and external behavioral factors such as how to choose an investment (Shiller, 2000).

It is not surprising to know that the trends of stock prices are more important for investors than well-known factors such as returns and earnings per share. This suggests that financial ratios are not so significant for investors but the position of stock returns and dividends is to be taken into account as they are at a low position. In general it can be said that the investors’ lack of confidence in the financial statements, financial ratios, and overall accounting system is evident. Instead they pay attention to factors that are more tangible such as the trend of the stock price and the market position (Aghaie, Mokhtarian, 2004).

Research shows that investors who transact based on speculation or do risky trading make less profit. Financial measures such as dividends and earnings per share are of significance for making decisions to buy stocks.

In less efficient markets, the trends of historical prices of assets or historical prices of other assets do not show the direction of the current or future prices. Conducted tests on the stock market returns provide evidence that refutes the above hypotheses and they point to the fact that prices do not follow random walk theory. Random walk theory has been supported by many unpredictable studies that have confirmed the price changes. However, Lo and McKinley suggested that historical prices of the stock market do not follow the random walk (Lo and McKinley, 1990).

The rejection of the random walk theory means that stock price changes are somewhat predictable, but the remarkable thing is that the current evidence to predict the stock returns are still significant are susceptible to significant prediction errors so that market inefficiency and arbitrage opportunities cannot be necessarily regarded as the results of this prediction. The results of many studies indicate that this predictability is due to the theory of stock market over-reaction. According to this hypothesis, because investors have been surrounded by a wave of optimism and pessimism; they create a momentum that temporarily deviates prices from their intrinsic value (Debondt and Thaler, 1985). Although such an assumption implies predictability, over-reaction equilibrium theory expresses with Sharp’s empirical concepts is still not complete and needs to be developed.

However, a thing that is common in all theories that explain the market over-reaction is that price changes show negative autocorrelation in some situations. For example, Debondt and Thaler (1985) suggested that if stock prices go up systematically higher than their usual limit, then their returns are only predictable based on the past prices. so the main question here is: Can the turnover of the returns explain the predictability of stock returns? One particular results of the stock market over-reaction is the returns gained by reverse portfolio strategy. This strategy is obtained by serial negative orientation of the returns. The strategy recommends investors to buy stocks that have performed poorly in the past and sell those stocks that have a better performance in the past.

The sale of winners and the purchase of losers create positive expected profit if there is negative serial correlation because today’s losers are probably future winners and vice versa. Therefore, one reason for the stock market over-reaction is the expected returns due to reverse investment strategy. Lo and McKinley (1990) tested the hypothesis that whether the returns from the reverse strategy necessarily mean the stock market over-reaction or not. The results of the studies done by these two researchers indicated that the returns from the reverse strategy cannot be entirely attributed to the stock market over-reaction and more than 50% of the expected returns are due to cross effects.

The most striking aspect of studies done by Lo and McKinley is that these cross effects have generally a positive sign and they follow a given progressive-regressive structure. It implies that the stock returns of the
firms with a high market value can always predict the returns of the firms with lower market value. This is due to a positive cross-autocovariance between stocks that benefit from the reverse portfolio strategy. Progressive-regressive effects as well as autocorrelation between weekly stock returns suggest that the negative autocorrelation between the weekly returns is due to cross effects. These findings provide a basis for theoretical models of asset pricing that explain positive autocorrelation through time-varying expected returns (Lo and McKinley, 1997).

Nonsynchronous or tiny trading also results in positive autocorrelations and progressive-regressive effects in stock returns. Nonsynchronous trading suggests that different stock prices are mistakenly assumed to be sampled from identical times. Fisher (1996) was the first who introduced nonsynchronous trading. So the effect of asynchronous trading is also called Fisher effect. Progressive-regressive effects may also occur due to tiny trading (Boudoukh and Richardson, 1994).

Cross-autocorrelation patterns among portfolio returns have been examined by various researchers. The investigation of this phenomenon could lead to the prediction of short-term returns and the development of pricing models that are related to the autocorrelations in portfolio returns.

Patterns and sources of cross autocorrelation between the returns can be explained in several aspects. The most famous pattern is the difference in the adjustment rate of various assets that is to say that the price of small stocks reacts more slowly to current market information than the price of large stocks and nonsynchronous and tiny trading can explain this delayed reaction (Lo and McKinley, 1990). But these two factors are not the only reason for such delayed reaction. Another possible explanation for the delayed reaction is related to information transaction mechanism in the sense that different speeds of reaction of large and small stocks to the market information result in cross autocorrelations. As a result, the assumption that the small portfolio returns predict large portfolio returns can be explained by the delayed reactions of stock prices to informational shocks (Bodrinath and Kale, 1995).

The second category of studies attributes progressive-regressive effects between stock returns to time-varying expected returns (Hammeed, 1997, Kaul and Konrad, 1988).

The third category of studies attributes progressive-regressive effects to the concentration on a specific group of stocks and obtaining more information about this type of stocks. As a result, changes in stock prices that are efficient in terms of information show some implications for pricing stocks that have less informational values. In addition, it was observed that small stock returns react more quickly to bad news than to good news (Thorly, Pinegar, and McQueen, 1996). The evidence also suggests that the trading costs, trading rules, and market microstructures can also explain autocorrelation (Hammeed, 1997).

Campbell, Ramadorai, and Schwartz (2008) observed that there is a positive relationship between institutional trading and recent daily returns (short-term horizon) and a negative relationship between institutional trading and past long-term daily returns (long-term horizon). They also believe that institutional trading, particularly sales appear to be detrimental in the short term (because of the demand for liquidity) but in the end they are profitable in the long run.

In addition, changes in the value of institutional investment assets are positively correlated with future stock returns and it seems that institutional investment purchases are positively correlated with previous stock returns. Campbell et al., (2008) also found that institutional investors can trade continuously and that their trading is profitable on average. They will buy recent winners and sell the past losers. Simultaneously, changes in the value of institutional investment assets are positively correlated with stock returns and the value of earnings.

Institutional trading predicts short-term daily returns negatively but it predicts long-term daily returns positively. There is an asymmetry in this cycle. The next day returns are considerably positive for institutional investment sales but they are not significantly negative for institutional investment purchases. Therefore, it can be said that institutional investors’ demands contain more liquidity than in when they are buyers.

Bong Soo Lee, Wei Li, and Steven Shuye Wang (2007) have conducted a number of studies about the dynamics of individual and institutional trading on the Shanghai Stock Exchange that are summarized as follows: They studied 180 stocks of Shanghai Stock Exchange from July 2002 to December 2004. The stocks were adjusted every 6 months and each time about 10% or less of the stocks were removed and the same number was added. A total number of 251 stocks were examined in this study with these adjustments during a 2.5 year period. The authors defined the sale and purchase volumes of individual and institutional trading. For instance,

\[ \text{Buy}_{it} = \frac{\text{Purchase volume of institutional investors}}{\text{Pit} \times \text{Number of stocks supplied}} \]
Where, $P_n$ is the average price of daily stocks. The difference between the supply and the demand for institutional investors is calculated as follows:

$$ IMBS_{it} = \text{BuyS}_n - \text{SellS}_n $$

The total volume of trading by both groups of the individual and institutional investors is obtained through the following equation:

$$ Trade_{it} = \frac{\text{Total volume of trading}}{\text{Pit} \times \text{Number of stocks supplied}} $$

The researchers first calculated all these variables for individual and institutional investors on a daily basis and obtained a weighted average for all shares (shares inside a portfolios) to estimate the activities done by individual and institutional investors in the whole market at the portfolio level.

To examine the difference between trading behaviors of individual and institutional investors, five portfolios were created. These portfolios were adjusted every six months to calculate the minimum level of returns to study differences between variables in two portfolios. They found that the greater the volumes of portfolios, the institutional investors were more willing to invest in them. In addition, the institutional investors were the net buyers of large stocks and the net sellers of small stocks. The researchers then investigated the dynamic relationship between the market returns and total trading as well as the supply and demand of institutional investors. They used the dual Granger Causality Test based on vector autoregressions (VAR) with k lags to investigate the dynamic daily behavior of total turnover (supply and demand of institutional investors) and index market returns.

Market returns are the Granger cause of institutional trading while the institutional trading is not the Granger cause of the market returns. The sum of institutional trading coefficients were significantly negative which showed the negative relationship between institutional trading and previous market returns, suggesting that if the market returns are positive, institutional investors are the net sellers while individual investors are the net buyers.

Market returns react to total turnover shocks but they do not in practice react to institutional investors shocks. According to Granger causality tests, institutional investors have little effect on market returns due to lower number of institutional investors over the individual investors (13.5%).

It was noted that the market returns are Granger cause of all turnover variables at the significance level of 5%. Besides, the relationship between returns and all turnover variables for individual trading was stronger than that of institutional trading. Another result was that although both individual and institutional investors showed positive reactions to the price shocks, institutional investors’ reactions to return shocks were stronger than institutional investors’ reactions to market return shocks and they took more time to reach equilibrium. This shows that less informed individual investors attach more weights to the market returns and they overact to the return shocks. This finding is in line with those observed by Grinblatt and Keloharju (2001) and Barber and Odean (2008). Lee et al., (2008) concluded that individual investors are the net buyers after the return shocks.

In another part of their studies, they found that individual trading (purchase and sales) is the Granger cause of market daily returns while the purchase (sales) by institutional investors are the Granger cause of the market returns in a longer term horizon.

Institutional trading reactions to their own shocks are positive and much stronger than their reactions to the market returns shocks; showing strong autocorrelation in institutional trading. In addition, individual trading reactions to their own shocks are positive and they are stronger than the market return shocks only in a short period of time.

They also found that individual trading is the Granger cause of institutional trading in a very short time period, especially for cases with a lag while institutional trading is the Granger cause of individual trading with 10 lags at longer periods of time so that less informed individual investors follow more informed institutional investors. Lee et al., (2008) investigated the progressive-regressive relationship between institutional trading in the largest portfolio Q5 and the smallest portfolio Q1 using the variance model:

$$ Trade_{Q5,t} = \alpha_{Q5} + \sum_{k=1}^{5} \lambda_{2k} \cdot Trade_{Q5,t-k} + \sum_{k=1}^{5} \gamma_{2k} \cdot Trade_{Q5,t-k} + \epsilon_{Q5,t} $$

$$ Trade_{Q1,t} = \alpha_{Q1} + \sum_{k=1}^{5} \lambda_{1k} \cdot Trade_{Q1,t-k} + \sum_{k=1}^{5} \gamma_{1k} \cdot Trade_{Q1,t-k} + \epsilon_{Q1,t} $$

They observed that institutional trading in the largest portfolio could predict their trading in the smallest portfolio while this was not the case for individual trading.
Finally, they studied the effects of declaring dividends on the average of individual and institutional unusual trading about the third day of dividends declaration and observed that the number of individual unusual trading is much more than the number of institutional unusual trading in this regard.

Institutional investors are willing to buy stocks with high earnings per share (EPS) and sell the stocks with lower EPS. In addition, individual investors are more willing to trade in (both buy and sell) stocks with higher EPS.

Hong and Lee (n.d.) conducted a number of studies about the investment behavior of individual, institutional, and foreign investors in the Korean market, summarized as follows:

First of all, they calculated the percentage ownership of any group of investors. They also estimated the investors’ daily purchases and sales to investigate their investment behavior and performance. Net investment flow (NIF) was estimated to find out which group of investors have been the net buyer on a given day. The value of NIF at the time t for the group J of investors was calculated as follows:

\[ NIF_{Jt} = \frac{\sum_{i} \text{purchase amount}_{i,t} - \sum_{i} \text{sale amount}_{i,t}}{\sum_{i} \text{purchase amount}_{i,t} + \sum_{i} \text{sale amount}_{i,t}} \]

They also defined the Koran return index as RET and showed the serial relationship between variables (the correlation between individual, institutional, and foreign investors). To determine which group of investors is driving the market, they examined the correlation between RET and NIF_{Jt} (t-k), where J stands for foreign investors, D shows the individual investors, and S shows institutional investors. They found a positive correlation between foreign trading, institutional trading, and simultaneously the Korean market returns (RET). Besides, there was a negative correlation between individual investors and RET. It was also noted there is a significant relationship between individual investors and 2-day market returns. Institutional investors are willing to buy (sell) stocks before market prices rise (fall). On the other hand, individual investors tend to sell (buy) stocks before market prices rise (fall).

Hong and Lee (n.d.) also found a similar pattern for each time sample. However in the last time period, institutional investors were found to predict market changes more efficiently than individual and foreign investors. They also studied the cross-correlations between different groups of investors and the U.S market returns, USMR (t), and they found that there is a positive significant cross-correlation between foreign investors and USMR. However, individual investors were negatively correlated with USMR on several days. Besides, there was a weak correlation between institutional investors and USMR. Overall, it was noted that foreign investors are momentum traders while individual investors are contrarian traders in both the Korean and American stock exchanges.

The results of their study also indicated that generally there is a negative strong correlation between individual and foreign investors, which suggests each groups is willing to take a decisions contrary to the other. Besides, there was a negative significant correlation between foreign and institutional investors and between individual and institutional investors; indicating that each groups is willing to take a decisions contrary to the other. In other words, on a given day while individual investors tend to buy stocks, foreign and institutional investors may prefer selling the stocks.

Another part of the study dealt with the cumulative performance of each group of investors for the period under study. To do so, the cumulative return in billion dollars was estimated using the following equation:

\[ \text{Cumulative return} = \sum \left[ \text{Buy}_{i, t-1} - \text{sell}_{i, t-1} \right]. R_t \]

The results indicated that foreign and institutional investors obtained positive abnormal returns and the two groups had a very similar performance. In contrast, individual investors experienced negative significant returns at the same time period.

One of the objectives of the study was to find out which group of investors were the main players in the Korean market. Accordingly, the researchers examined the dynamic causal relationship by regressing Korean market on the previous values of the market returns, previous values of three types of capital flows, and the previous values of the American market returns. The results suggested that institutional and foreign investors were the main players in the Korean market.

In general, it was noted that if the stock market has a relatively poor performance it would be difficult to find any financial and economic variable that could predict the market returns. The results also suggested that the
cash flows of investment funds are not the Granger cause of the U. S. market returns but the cash flows of the American investment funds are the Granger cause of the U. S. market returns.

The findings of the study showing that institutional and foreign investors are the Granger cause of the Korean market returns were different from the market efficiency view.

Hong and Lee (n.d.) also studied the relationship between the speed of price adjustment and stock ownership by foreigners and institutional investors using data from the Korean stock market. The results showed that foreign institutional investors had faster access or ability to process more new information than domestic institutional investors. It was also noted that the Granger cause can be interpreted as the predictable evidence based on information asymmetry.

In another part of the study, the researchers formed 10 portfolios in which portfolios 1 contained large stocks (with high capital) and portfolios were re-balanced at the end of each year. They observed that individual trading is not the Granger cause of any of the portfolio returns and its final effect is negligible. Besides, foreign trading is the Granger causes of returns for 3 portfolios with a positive and significant effect. It was also noted that USMR is the Granger cause of all portfolio returns and it has a positive and significant impact on all portfolios. In general, foreign investors tend to focus on portfolios of large companies, leaving a positive impact on them. Institutional investors prefer to focus on a wide range of portfolios with their positive effects. However, individual investors do not have significant effect on portfolio returns.

3. Research population and data collection

The present study was performed for a three-year period from 2010-2013. Besides, since the data related to individual and institutional trading were collected on a daily basis, the findings of the study are reliable. The population under study included all the companies listed in Tehran Stock Exchange whose stocks have been traded from 2010-2013.

4. The estimated model

The econometric model and the vector autoregressive (VAR) model were used to analyze the data. The variables manipulated in this study were as follows:

- Returns (R): Its value to study the overall market is equal to the growth of the total index of Tehran Stock Exchange and its value to examine portfolios (portfolio selection based on value, middle, and growth stocks) is equal to the returns on these portfolios.
- Volume of institutional trading (TINS),
- Volume of individual trading (TIND)

The model used in this study based on VAR model is as follows:

To test the research hypotheses the following model was used:

1. \[ TINS_t = \alpha_{11} + \sum_{i=1}^{p} \beta_{i1} TINS_{t-i} + \sum_{k=1}^{k} \beta_{1k} R_{t-k} + \epsilon_{1t} \]
2. \[ TIND_t = \alpha_{12} + \sum_{i=1}^{p} \beta_{2i} TIND_{t-i} + \sum_{j=1}^{q} \beta_{2j} TINS_{t-j} + \sum_{k=1}^{k} \beta_{2k} R_{t-k} + \epsilon_{2t} \]
3. \[ R_t = \alpha_{13} + \sum_{k=1}^{k} \beta_{3k} R_{t-k} + \sum_{i=1}^{p} \beta_{3i} TIND_{t-i} + \sum_{j=1}^{q} \beta_{3j} TINS_{t-j} + \epsilon_{3t} \]

5. Conclusions and suggestions

In this study, individual trading, institutional trading, and the total market returns were studied using the vector autoregressive (VAR) model. The results suggested that this is individual trading that plays a leading role in the Tehran Stock Exchange. In other words, institutional trading is subordinate to individual trading. Besides, it was noted that none of these variables influence stock returns while stock returns affect both institutional and individual trading and this is fully compatible with the Tehran Stock Exchange. Then the model under study was implemented taking into account the effect of the market trend. To do so, a dummy variable, DR, (that is equal to 1 for the positive market and 0 for the negative market) was added to the model to explore individual and institutional investors’ behaviors based on the market climate but again there was no change in the results of the study.
Table 1: Relationship between individual and institutional trading and the total market returns

<table>
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<th>Dependent variable</th>
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<th>Institutional trading</th>
<th>Return</th>
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<tr>
<td>Institutional Trading</td>
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<td>No</td>
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<tr>
<td>Return</td>
<td>Yes</td>
<td>Yes</td>
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Another part of the study, three groups of growth, value, and middle portfolios were used instead of total exchange index (and total market returns) and the portfolio returns were used instead of the total market returns. Then each portfolio was studied (like the total market) with and without taking into account the effect of market trend whose overall results are summarized as follows:

Table 2: Relationship between individual and institutional trading and value portfolio returns

<table>
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<th>Institutional trading</th>
<th>Return</th>
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<tbody>
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<tr>
<td>Institutional Trading</td>
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<td>-</td>
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<tr>
<td>Return</td>
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Table 3: Relationship between individual and institutional trading and middle portfolio returns

<table>
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<th>Institutional trading</th>
<th>Return</th>
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<td>Return</td>
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Table 4: Relationship between individual and institutional trading and growth portfolio returns

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<th>Dependent variable</th>
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<th>Institutional trading</th>
<th>Return</th>
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<td>Institutional Trading</td>
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<tr>
<td>Return</td>
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The inclusion of the market trend into the model has no significant impact on all of the above results, suggesting that institutional and individual do not show different behaviors in negative and positive markets.

References