A test of investors' herding behavior in Tehran exchange
Javad Moradi\textsuperscript{20} and HamidReza Abbasi\textsuperscript{21}

Abstract
The presence of participants' herding behavior in Tehran exchange has been examined and surveyed in this research. Primary evidences indicated that to determine shares values, participants in the capital market use less than quantitative methods and their decisions more based on rumors and following a limited number of investors in the capital market without especial cause. In addition, past studies show that new information about fundamental values explain just a little observed price fluctuations in the market. It has been recommended in these studies though long period changes in securities prices relating to base values changes, but due to psychological change of market or events, short term fluctuations come into existence without any effects on commercial perspective or economical conditions. We, therefore, examined the hypothesis of herding behavior among all selected firms based on the firms yield variance from the market yield at daily and monthly intervals in the whole market distribution in Tehran exchange during 2005 to 2009. The results of research indicate that there is no herding behavior in Tehran exchange.

Key words: Herding behavior, shares yield deviations, Tehran exchange, Capital assets pricing model (CAPM).

1. Introduction
Since industries efflorescence, creation of occupation and going out of crises and economic undesired situations require provision of desired conditions to invest in share markets, so recognizing and detecting present inadequacies and solving existent problems in order to avoid such downfalls which threatens shares market is essential and necessitous. Standard financial theories are based on two basic theories, namely investors being logical and efficient market hypothesis (EMH). Due to some malformations such as realization of higher yields from shares expectations of small firms, losing, having a high coefficient P/E or possessing market value ratio to low office value and also calendar malformations like yield unexpected changes in especial times of year or severe fluctuations of price and appearing bubble and downfall of prices, these theories, were challenged in the late 1980s [11]. In fact, by appearing above mentioned malformations, standard financial models were replaced by behavioral financial theories. Herding behavior is also attempting to suggest outlined irregularities in standard financial models as one of the considered subjects in behavioral financial domain. In other words, herding behavior is trying to explain investors’ behaviors which are sometimes not rational and sensational towards queues of shares buying and selling in the pursuit of following individuals whom by their opinions decide to bargain because of using information. At the time of examining this kind of behaviors belonging to investors, one should take into

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account that these markets are emerging ones. Researches which have tried to detect herding behavior in capital market, assert that herding behavior is more apparent in emerging markets [4]. Rooted observations in human societies show that individuals dealing continuously with each other think the same way [24]. In order to examine the theories relating to interest-based market fluctuations which attribute price variations to illogical and non-principled thoughts and behaviors one should be aware of roots and similar thoughts to it. Conversely, we should point out this issue that the distinction of intentional and unintentional herding behavior is also of interest. Basically, intentional herding behavior occurs when investors ignore their information and analysis and follow the group because they imagine the group which always makes the best decision. While unintentional group behaviors indicate that participants in the capital market make the same decisions in regard to the same information and this results in capital market efficiency [3]. One of the most important reasons which resulting in the outbreak of herding behavior among investors is the subject of informational asymmetry in the shares market is that by itself it makes the imagination of more useful information by other investors. Such imagination tempts the investors to ignore their personal information and viewpoints and suppose the accuracy of other participants’ decisions in the market and imitate them [16]. The purpose of this present research is to survey the presence of individual investors’ herding behavior in Iran’s shares market. Since Iran's shares market possess a short history compared with developed countries, and also is in the starting point of its development and efflorescence, studying the existing problems in this market prohibits the occurrence of problems which have been made in the developed countries’ shares markets having more precedence. Since the subject of the investigated issue is to survey investors’ herding behaviors in shares market, this research may be effective in reforming of officials decisions to accurate orientation of shares market. On the other hand, macro policy of a country comes with privatization and reducing government's charges and it is expected from the main volume of investments transferring to the shares market, thus its present weaknesses must be removed to encourage the investors to engage in this sector to invest. Therefore, the right realization of existing weaknesses in the market may plat reforming treatments in the market.

2. The Literature and research background
Herding behavior is a common subject between sciences such as psychology, sociology and economics so that researchers and theorists in these sciences have studied and investigated it from a special perspective. Societal psychologists like Gustave le Bon (1895), Muzafer Sherif (1935-1936), Leon Festinger (1945), and Albert Bandoura (1965) are the first societal psychologists who surveyed and studied the reasons of herding behavior in human societies and its positive and negative results from the viewpoint of psychology and social sciences [20]. Regardless of being rational or not, many researchers believe that herding behavior is the production of information asymmetry in the market. Different groups of investors gain various information with diverse quality and the difference between each group traits and the rate of their accessibility to information makes each group have its especial investment behavior [26]. In the scope of economics, Thorstein Veblen (1899) was the first economist who studied and scrutinized the herding behavior in the model of sudden changes in consumers’ behaviors like temporary fashions and fads of consumers [25].
Bickchandani, Hirshleifer, & Wiltch (1992) suggest that the main reason of emergence
and formation of herding behavior in the shares market is due to the informational
cascades. In their opinion, the observation of others’ behavior transfers information to the
individual and thus those who lack necessary information or do not believe in their own
individual information begin to imitate and follow them by supposing that others’
analysis and information is more accurate and complete than their own information [2].

By performing separate investigations, Froot, Scharfstein, & Stein (1992) and Hirshleifer,
Subrahmanyam, & Titman (1994) came to the conclusion that the cause of investors’
herding behavior in the shares market is their utilization of common information sources
[10 & 13]. They claim that investors have access to common information sources and by
them, analyze in a standard way, which results in making similar decisions in the market.
Unlike other researchers, they consider the same and monotonous analyzers and investors
behaviors in the shares market as a desired phenomenon which indicates information
clearness or information efficiency. Scharefstein and Stein (1990) ascribe that the
concern and fear of losing reputation and credit by doing individual movements and
being separate from the group are the main causes of investors' herding behaviors in the
shares market. In their opinion, the investors who aren’t sure of their abilities in
analyzing information and making right decisions prefer to follow more experienced
investors and analyzers' decisions a result of their fear of losing their credit and
reputation [21].

In addition to the above mentioned studies and researches that examine and study the
reason and results of investors' herding behavior, there are other researches that measure
group behavior phenomenon in the shares market by presenting models. Regarding the
sort of used information, the mentioned models may be divided into two groups: the first
group includes models which by using private information of investors and the changes
relating to them, begin to measure group behavior. Lakonishok, Shleifer, & Vishny(1992)
measured herding behavior amongst investments managers by presenting a model which
titled "LSV" [17]. One objection to the model is that it is not measuring the severity of
the posed herding behavior. To resolve this problem, Wermers (1995) presented a model
titled as "Portfolio Change Measure (PCM). By considering occurred changes in the
weight of every one of existing shares in the portfolio of herding behavior severity he
measured herding behavior severity occurring among investment managers [28].

Like other scientific models, this model is subject to criticisms, one being the lack of
herding behavior distinction between institutional investors and real ones. Nofsinger
(1996) could remove this deficiency by presenting a criterion titled as "Signed Herding
Measure (SHM) [19]. The second group includes the models, which attempts to identify
and analyze investors’ herding behavior in the market by documenting whole market
information and using measurement economics methods, and regardless of private
information of investors and happened changes in their portfolio. Researchers consider
herding behavior as a non- quantitative parameter in this approach which is measurable
and identifiable from the relationships between quantitative variables. Since the whole
market information is used in this approach, gained results may be readily generalized to
the whole market including institutional or real investors. Christie & Huang (1995)
performed the first empirical study with econometrics approach to identify investors' herding behavior in capital market. By presenting regression model known as CH and
through cross sectional standard deviation yield, they began to measure investors' herding behavior in different market conditions. They claimed in their model that if the market is in the natural condition and investors and activators of market make decisions based on their own individual analysis and information, one may expect high dispersal for shares yields on the market. Conversely, when there are a lot of fluctuations in the conditions, individuals will tend to overleap from their individual beliefs and follow the whole market performance [6]. By presenting a model, Chang, Cheng & Khorna (2000) (CCK) used the cross sectional absolute deviation method (CSAD) to measure investors' herding group from the average yields [4]. Using CSAD from the average 11 on the shares market of USA, England, Germany, Japan, Indonesia, Tyland, South Korea and Hong Kong, Chiang and Cheng (2008) found some evidence of herding behavior. They concluded that herding behavior becomes apparent at time of crisis [5]. Hwang& Salmon (2001-2004) built a new approach name "herding obedience of Beta" to measure herding behavior. It is possible to distinguish between intentional and unintentional herding behavior in the mentioned approach by using temporary changes of sensitivity factors or betas instead of yield temporary changes, in addition to recognize and analyze herding behavior. Basic supposition in the current approach is that Beta coefficient of variations essentially results from investors' behavioral bias on the capital market such as herding behavior in the obedience to especial factors [14 & 15]. Demirera. et al(2010) used models CH, CCK and HS to perform the investors herding behavior test on Tyland shares market. They examined the daily data of 689 shares of Tylandian firm from 1995 to 2006 and similar to Christie and Huang (1995) observed no herding behavior the obedience to the market. They also found some evidence of herding behavior on Tyland shares market like Chang et al (2000) and Hwang & Salmon (2004) [8]. If the reason of emergence of herding behavior by investors is to maximize desirability, then there are three viewpoints relating to it [7]:1- The viewpoint which attributes herding behavior to psychological structure of individuals in accordance with the society [9]. 2- The viewpoint stating that there are individuals in the market who possess secret information and make decisions by considering this information and other investors, therefore, would gain higher yield through following them [1]. 3- The viewpoint which regards agency relations as the factor of out-breaking of herding behavior and suggesting that managers reduce their intended risk by following others due to employment reasons, gaining reputation and maintaining well reputation.[21]. By examining and surveying the relationship between the outbreak of herding behavior and well reputation rate, Villatoro (1990) suggests the more managers have well reputation, the more they rely on their individual information and conversely, the less known managers divulge more herding behavior from themselves [27]. In a research as titled with" Who herd?", Bern Hardta et.al(2006) examined financial analyzers' behaviors on the market. They surveyed the financial analyzers’ forecasts by using questionnaires. The results showed that in spite of the financial analyzers prepossessions, they don’t have herding behaviors [1]. Herding behavior may generally be expected to happened on the financial markets for three groups of market activators:1-individual investment. 2-investment managers. 3-great investment institutions such as retirement funds and general insurances. Many investigations have been made in relation to herding behavior which implemented
various methods, but most of these investigations have been from correlation type and there is utilization of shares yield dispersal method about the average for herding behavior test in the late years. In his research entitled "Analysis of investors herding behavior in Tehran exchange by using state space", Gol Arzi (2009) has surveyed investors' herding behavior in Tehran exchange. His research has been based upon a research method relying on the calculation of cross sectional standard deviation of Beta coefficients and by utilizing Callman Filter Model and state space. Research results suggest that investors in Tehran exchange obey the market factor and consider the whole market performance more instead of regarding radical variables affecting price. It is also suggested in this research that investors don't obey size and value factors and make their decisions based upon radical variables [11]. Shahriary (2007) has surveyed the existence of mass behavior of participants in Tehran exchange by using shares yield variances from the whole market in Tehran exchange from 2001 to 2005. The findings of this research indicate that there is no herding behavior in the richness period in Tehran exchange, but some evidence of being mass has been observed through using the yield daily data. In other words, the firms’ shares yield deviation from market yield mean while the periods in which price index changes and cash yield are positive, it is infinite and more than the time when index changes are negative. The main reason of this phenomenon may be attributed to the similar and same determination of the market factors. The mentioned research results are consistent with CH claim (1995), in addition, the researchers in this research didn’t observe herding behavior instead of daily data by implementing monthly and weekly data which indicate the quality of this phenomenon being temporary in Tehran exchange [23]. In a research entitled "Survey of herding behavior in the selected industry of Tehran exchange during 2008-2001", Hajian Nejad (2009) has examined and studied herding behavior in the selected industry. In this research, he has started to test herding behavior in different industries by using Christie& Huang's Model. By implementing CH Model on the portfolios from various industries, he found that the investors in Tehran exchange have performed in a logical way in critical market conditions, and that cross sectional standard deviation yield is increased in accordance with capital assets pricing model in critical market conditions [12].

3. Introduction of research pattern

The proposed methods are used to test herding behavior by Christie& Huang (1995) and Chang et al. (2000). The mentioned researchers implemented two CSSD's and cross sectional absolute deviation of shares yield for shares yield dispersal. This criterion may suggest firms’ shares yield dispersal about the average market. One of the interpretations which are posed in regard to the variability of shares yield attributes shares price changes to the influence of shares investors group that is mentioned as the formation of irrational behavior. It is necessary to explain that using CSSD is due to the fact that shares prices do have fluctuation even during a day. In these models, the prices are considered just at the end of the day and in fact, continuous shares prices fluctuations in determining standard deviation are ignored.

The main idea of this research method is based on the hypothesis that when there is herding behavior on the market, shares yields of various firms don’t vary from the whole market yields. Because individuals ignore their personal beliefs in the process of making decisions and doing just in terms of same decisions of other investors. On the other hand,
from the viewpoint of rational capital assets pricing model, herding behavior describes an irrational reaction of investors to a special case instead of their decision making being logical. Based upon capital assets pricing model, since every company has a different coefficient compared to average market, it is expectable that there should be more disperse towards average market yield. In other words, herding behavior and capital assets pricing model are supposed to be two sides of a coin. It has been proved by performing investigations on Tehran exchange that Iran's shares market is deficient. But it is needed to mention that efficiency or deficiency of market has no influence on the formation of herding behavior and this behavior may possibly happen according to the market conditions in a rational or irrational way and its likelihood in the developed market is less than emerging ones.

Christie and Huang (1995) believe that the possibility of out breaking herding behavior is more in periods when prices have the highest variations, and this is mainly because people progress to reach a consensus with market in order to maximize their yields or reduce their investment losses more and more [6]. Concerning individuals' behavior in groups, the empirical evidences in social psychology describe that persons obey group decisions even when they find the group to be a making mistake. The groups, in fact, are known by individuals who suppress their personal beliefs on financial markets and obey the groups based upon group activities even when it disagrees with their anticipations. This kind of behavior, therefore, suggests that investors are attracted to reach a consensus with whole market, and because of this behavior, yield deviation of every share from market yield wouldn’t be much [6].

The first model is consistent with the methodology used by Christie and Huang (1990), meaning that has been focused on massy price concepts through surveying shares yields to manifest herding behavior. Christie and Huang (1995) have posed a model to measure the potential effect of herding behavior on market prices, implying that herding behavior may make itself obvious in yield data. The most important effect of herding behavior on the market has been stated as its influence upon CSSD of yields and this deviation determines the mean yield closeness of every share to the average. When yields move in accordance with the market, the deviations level is reduced and the more yields move away from the market yield, the more deviations level is increased. The aim is formation of herding behavior when the probability of herding behavior formation is much more. So it is possible by using CSSD equation of shares yields to test herding behavior in periods when the market has the maximum of price variations. Since this probability that individuals ignore their personal beliefs in order to reach a consensus with market becomes more during unusual fluctuations periods of the market, the possibility of formation of herding behavior during these periods is increased. The hypothesis is that the existence of herding behavior during abundant changes periods of market causes lower meaningful deviations than the average level. Pricing rational models of assets also have made anticipations concerning deviations behavior during market stress. Since the sensitivity of every share is different toward market yield pricing rational model anticipates that great market fluctuations will result in increase of deviations level during market stress.
3.1.1. Definition of shares yield deviations

Shares yield deviations or CSSD has been intended as a criterion to measure herding behavior which is calculated as following:

Equation (1)

\[ CSSD_t = \sqrt{\frac{1}{N-1} \sum_{i=1}^{N} (R_{i,t} - R_{m,t})^2} \]

CSSD<sub>t</sub>: market cross sectional standard deviation on the day t;

\( R_{i,t} \): share yield of firm i on the day t;

\( R_{m,t} \): average N yield, in portfolio of whole market on the day t;

N: the number of present firms of the selected portfolio which have been bargained on the day t.

This standard deviation shows the average yield closeness of every share to the market yield. Christie and Huang have anticipated that when there is herding behavior, the deviations level is low.

3.1.2. Herding behavior during market stress period

This methodology suggests that herding behavior happens more probably meanwhile when unusual fluctuations occur in the market, namely during periods when very great or very little yields befall in the market portfolio. Therefore, a tendency to harmonized movement with the whole market is observed more within such periods. Investors are usually anxious and do worry in these periods. Christie and Huang named these periods "Market stress periods" for this reason. The difference between anticipations of CAPM Models from herding behavior is very significant during market stress periods and there are great price fluctuations. Since rational models of pricing assets do expect more deviations due to considering the sensitivity of every share being different to the market yield, it is expected in the herding behavior model to yield deviation level of every share from the whole market yield to be reduced. To distinguish between these two, Christie and Huang (1995) examined deviations level (CSSD) in two final extents in order to determine whether shares yield deviations are lower than the mean level during severe market fluctuations or not. In fact, they considered a linear relation between CSSD and market yield that related to slump period and market richness. In other words, they ascribed deviations level as an independent variable to stress period.

Equation (2)

\[ CSSD_t = \alpha + \beta_1 D_{t}^{L} + \beta_2 D_{t}^{U} + \varepsilon_t \]

CSSD<sub>t</sub>: yield deviation of every share is from whole market on the day t.

\( D_{t}^{L} \): notional variable to attract reduced unusual fluctuations of market yield.

\( D_{t}^{U} \): notional variable to attract increased unusual fluctuations of market yield.

\( D_{t}^{L} = 1 \), if market yield is in the down extent of yield normal distribution on the day t, otherwise equals 0.

\( D_{t}^{U} = 1 \), if market yield is in the up extent of yield normal distribution on the day t, otherwise equals 0.

Coefficient \( \alpha \): it suggests mean deviation from market yield and is in the extent where not covered by two notional variables. To calculate notional variables through the
formula $Z_a = \frac{x - \mu}{\sigma}$, variable distribution x which is the very market yield converts into standard normal deviation.

$$x_1 = \mu + \left( \frac{Z_a \times \sigma}{2} \right)$$

$$x_2 = \mu - \left( \frac{Z_a \times \sigma}{2} \right)$$

To determine notional variables $D_{l}^{t}$, $D_{v}^{t}$, values more than $x_1$ value 1, values less than number 0 and to less values than $x_2$ value 1, and more values than it number 0 is allocated, respectively, that numbers 1 suggesting the days on which the market has had unusual yield.

Christie and Huang (1995) considered the highest extent of market yield ($Z_a$ in $a$) one time 1% and another time 5% in the up extent or down of market yield distribution. Christie and Huang (1995) describe if regression estimation is positive for two coefficients $B_l$ and $B_u$, meaning this subject that in periods with severe fluctuations in yield, then standard deviation has increased. This is because a fixed number has added to a value which is about average CSSD in regression equation, and thus anticipation of capital assets pricing model that states standard deviation is increased during market stress periods being true, and therefore the existence of herding behavior wouldn’t be confirmed. But if regression estimation is negative for two coefficients $B_l$ and $B_u$, it describes this matter that standard deviation has been decreased during periods with severe fluctuations. Since in regression equation an amount about CSSD of a fixed number has been deducted from value $a$, the existence of herding behavior would be confirmed.

It is necessary to mention that in all these cases, gained values should be statically meaningful for coefficients. This is of great importance that herding behavior generally does not show investors’ irrational behaviors. This is because in some condition investors are ignorant of the accuracy of their information, which divulges irrational herding behavior [3]. Besides, herding behavior does not necessarily suggest market activists as irrational ones and there is no way in notional informational conditions to avoid loss but to obey other investors. Christie and Huang (1995) used absolute deviation formula in some estimation to calculate yield deviation of firms' shares from market yield which would have been brought next, and of course the past results were also gained.

$$CASD_t = \frac{1}{N} \sum_{i=1}^{N} |R_{i,t} - R_{m,t}|$$

$CASD_t$: crossed-sectional absolute deviation of firms shares yield from market yield on the day $t$

$R_{i,t}$: i firm's eleven shares on the day $t$. 
\( R_{m,t} \): the average eleven N shares in the whole market portfolio on the day t.
N: the number of present firms in the selected portfolio which have been bargained on the day t.

3.2. Khorana, Cheng and Chang's Model (CCK)

The actual idea, in fact, belongs to Chang et al. (2000) that point out the decrease of shares yield deviations from market and has been taken from Christie and Huang (1995). The difference between them is that Chang et al. utilized the expected shares yield and thus \( \beta_1 \) (systematic risk with firms fixed time) and \( \beta_u \) (systematic risk of market portfolio) to determine shares yield deviations from market yield. Their evaluation, of herding behavior relies on rational models of pricing assets. In their opinion, herding behavior, may also happen in every place of yield length, but it appears more during market stress; while Christie and Huang Model (1995) was in the quest of detecting this behavior type during market stress periods. One of the traits of this model is that through it one may survey herding behavior in several markets.

3.2.1. Definition of shares yield deviation

It is also believed in this model that the existence of herding behavior will cause shares yield low deviation from the whole market yield. According to Chang et al. (2000), shares yield standard deviation from market yield by CSAD (cross sectional absolute deviation) of firms shares yield is from the market yield:

\[
CSAD_t = \frac{1}{N} \sum_{i=1}^{N} |R_{i,t} - R_{m,t}|
\]

Equation (3)

\( CASD_t \): cross-sectional absolute of firms shares yield from the market on the day t
\( R_{i,t} \): i firm share yield on the day t
\( R_{m,t} \): the average eleven N shares in the whole market portfolio on the day t
N: the number of present firms in the selected portfolio which have been bargained on the day t.

3.2.2. Herding behavior during the whole market yield distribution

Chang et al. (2000) used a linear regression to detect herding behavior in the whole market yield distribution. Contrary to Christie and Huang, they don’t think of herding behavior as one belonging to the market stress periods. In fact they observed that the rational model of capital assets pricing refers to the linear relation between firms’ shares yield deviations from the market. They believe that in the natural market conditions, when the market fluctuations aren’t unusual, the existence of a linear relation between shares yield deviations, and the market fluctuations (the market yield) is anticipated to utilize independent variables |\( R_{m,t} \)| in regression equation to realize this matter. The reason of utilizing the market yield absolute is to facilitate comparing coefficients of linear expression on ball markets and bear markets. The presence of meaningful, positive value \( y_1 \) indicates the increase of firms’ shares yield deviations from the market yield during the market’s normal conditions.
On the other hand, Chang et al. claim that there is more likelihood of herding behavior during great fluctuations on the market. Therefore they added this relationship \((R_{m,t})^2\) to the regression equation for examination. Using the second grade for \(R_{m,t}\) supposes the variations to be symmetric. So the existence of \(y_2\) is negative and statically meaningful in the examination of describing herding behavior on the market during the market stress periods. Because it indicates a reverse and non-linear relationship being between yield deviations and market yield and meaning that the higher yield would decrease the deviations. They, therefore, present the criterion methodology based upon the second grade relationship between \(R_{m,t}\) and \(C_{ASD_t}\) of the following model:

Equation (4)

\[
CSAD_t = \alpha + \gamma_1 |R_{m,t}| + \gamma_2 R_{m,t}^2 + \varepsilon_t
\]

\(|R_{m,t}|\): the market yield modulus on the day \(t\).
\((R_{m,t})^2\): the market square on the day \(t\).
\(a\): the average shares yield deviations from the market yield, in an inactive market.

Relying on this methodology, the lower or less increase during the market action periods than proportionate extent in the absolute deviation (CASD) is a document based upon herding behavior. Consequently, if there is herding behavior, non-linear coefficient of \(y_2\) is negative and statically being considerable; otherwise, \(y_2\) is positive and statically showing no sign of herding behavior.

3.3 Model of test based on yield monthly data

By adding eleven daily data with monthly data, two investigated models would also be tested. In the opinions of Christie & Huang (1995), and Chang et al. (2000), herding behavior is a phenomenon with a short life. Daily data is used with the hypothesis that herding behavior is a phenomenon with a short life period. In these researchers' opinions, if groups have access to time horizon with the longer period to affect market prices, using the daily data limits herding behavior ability to expose itself in the shares yield deviations from the market yield. For this reason, Christie and Huang (1995) re-examined their model again with the yield monthly data. The results showed that the daily data making the higher level of firms shares yield deviation. Because the shares yield of firms has more opportunity to stray from the market yield. These researchers stated that the results from model estimations at the monthly intervals show that herding behavior is limited to the short period time horizon.

4. Research hypotheses

H1: Herding behavior is seen in Tehran exchange.

The main idea in this hypothesis is based on this reasoning that the existence of herding behavior leads the shares yield in a path that does not stray so much from the whole market yield. The logic of herding behavior describes this matter that individuals ignore their beliefs and make their investment decisions only based on the market group movements.

5. Research variables

The used variables in this research and in both Christie and Huang model (1995) and Chang et al's (2000) are common. The data of this research is classified through basing the reported information by exchange. To have access to the required information to debark the model, software data of Rahavarde Novin and also the reported information by
exchange were used and compared. Among all the accepted firms in Tehran exchange in a time period of 2005 to 2009, 68 firms were selected. In order to survey herding behavior, the firm yield and the market yield were analyzed. The yield data of existing firms in the sample and index of price yield and cash yield include 1207 daily observations and 60 monthly observations. In calculating the yield deviations of every share from the market yield in both models, all the firms' shares are initially and historically corresponded with the market yield on the intended day. The used variables in this research are: the shares yield in a monthly and daily fashion, the daily and monthly market yield and notional variables, and the calculation method of their yields is as follows:

**5.1. Shares yield:** The firms' yield rate is computable both for the past performance and for the anticipation of future. The subject of goal analysis may be the expected yield rate of the firm supervisor for the future. The expected yield rate may also be supposed as a supervisor of the past performance of the firm. This method would also be useful both to survey the firm performance and investing or non-investing on the firm shares. Related data of the shares daily yield which are used in this research taken from the software Rahavard Novin calculates payoff from the below formula:

\[
\text{Yield formula by computing} = \frac{\text{stock right} + \text{stock dividend} + \text{DPS} + (\text{base price} - \text{daily price})}{\text{Percentage of capital increase from taken place} \times (\text{base price} + 1000)}
\]

**5.2. Market yield:** In this research instead of the average share N yield in the portfolio of the whole market on the day t, cash yield index and price is used (TEDPIX). Since the index indicates the given portfolio of all accepted firms in exchange. Regarding significant effect of cash interests on the market yield in this research, we exploit also cash yield index and price in order to the market yield as follows:

\[
R = \left( \frac{TEDPIX_t}{TEDPIX_t^{i, t}} - 1 \right) \times 100
\]

To calculate the monthly market yield, the cash yield index and price on the final day of a month are used.

5-3. Notional variables \((D_t^U\) and \(D_t^L\)) are estimated in Christie and Huang equation using criterions 5% and 1% to define the great market fluctuations, because based upon these two famous researchers’ viewpoint the definition of yield is optional.

**6. Statistical society and sample appointment method**

The statistical society of this research includes all accepted firms in Tehran exchange. The required sample in the research would be gained through filtering of statistical society members based on the following criterions:

1. The acceptance date of the existent firms in the sample must be on March, 2004 or before that time.
2. The investigation is performed for non-financial firms; so the banks and all investing firms and Hедing are deleted from the sample.
3. Those which the bargain on their shares hasn’t been ceased for long times (more than three months).

After the existing firms in the statistical society had been passed through the above filters, a sample was selected consisting of 68 firms.
7. Research Hypothesis Test

To test the research hypothesis based upon Christie and Huang's models (1995) and Chang et al. (2000), the following regressions are estimated, respectively:

\[ CSSD_i = \alpha + \beta_1 D^i + \beta_2 D^u + \epsilon_i \]

\[ CSAD_i = \alpha + \gamma_1 R^2 + \gamma_2 R^2 + \epsilon_i \]

Following the research, the gained results from regression estimation are expressed through the first and second models respectively. Descriptive statistics of every one of these two models have been estimated in Table 1.

<table>
<thead>
<tr>
<th>Description</th>
<th>Monthly</th>
<th>Daily</th>
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<tbody>
<tr>
<td>CSSAD</td>
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<td>1207</td>
</tr>
<tr>
<td>CSSD</td>
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</tr>
<tr>
<td>Standard deviation</td>
<td>4,25992</td>
<td>1,9148715</td>
</tr>
</tbody>
</table>


As mentioned earlier, the following regression is estimated based on Christie and Huang's model (1995):

\[ CSSD_i = \alpha + \beta_1 D^i + \beta_2 D^u + \epsilon_i \]

The gained results from the above regression estimation in both two criterions based on the daily data in table 2 are presented. Based on the daily data in both two criterions 1% and 5%, variables coefficient \( D^u \) and \( D^l \) indicating herding behavior in the unusual market fluctuations respectively are positive and meaningful at a confidence distance of 95%.
Table 2. Regression coefficients \( CSSD_t = \alpha + \beta_L D^L_t + \beta_U D^U_t + \epsilon \) related to monthly and daily data

<table>
<thead>
<tr>
<th>Time intervals</th>
<th>Appointment Coefficient</th>
<th>( \alpha )</th>
<th>( Bu )</th>
<th>( Bl )</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Criterion 1%</td>
<td>0.038</td>
<td>20.063</td>
<td>2.648</td>
<td>3.420</td>
<td>Refusal</td>
</tr>
<tr>
<td>Criterion 5%</td>
<td>0.053</td>
<td>2.042</td>
<td>1.958</td>
<td>3.803</td>
<td>Refusal</td>
</tr>
<tr>
<td>monthly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Criterion 1%</td>
<td>0.0158</td>
<td>10.652</td>
<td>4.041</td>
<td>3.0835</td>
<td>Refusal</td>
</tr>
<tr>
<td>Criterion 5%</td>
<td>0.303</td>
<td>10.505</td>
<td>4.718</td>
<td>7.962</td>
<td>Refusal</td>
</tr>
</tbody>
</table>

The acquired results from the research explain the absence of investors’ herding behavior at monthly and daily intervals of all investigated firms in this research using the research method based on CSSD of shares yield during 2005-2009. The research results describe this point that firms yield have gone away from the market yield during the low or high fluctuations, and yield deviations are abundant. So it could be stated that they present the result in accordance with forecasting of CAPM which is described at the time of market stress, deviations level is increased since the sensitivity of every asset in relation to the market is different, and concludes that herding group is not an important factor in determining exchange yield within periods on which the market is experiencing stress. In other words, no evidence was found indicating investors’ backtracking to outbreak rational behavior in existing firms in the statistical society of this research. The results of this research are consistent with Christie and Huang (1995) in USA, Demirere et al. (2010) in Tyvan, Shariary (2007) and Hajian Nejad (2009) in Iran shares market.


As mentioned earlier, the following regression is estimated for examination of research hypothesis based on Chang et al. model:

\[
CSAD_t = \alpha + \gamma_1 |R_{m,t}| + \gamma_2 R^2_{m,t} + \epsilon_t
\]

The acquired results from the above regression in both criterions based on daily data are presented in table 3.
Table 3: Regression coefficient \( CSAD_i = \alpha + \gamma_1 |R_{m,i}| + \gamma_2 R_{m,i}^2 + \varepsilon_i \) relating to monthly and daily data

<table>
<thead>
<tr>
<th>Time intervals</th>
<th>Appointment coefficient</th>
<th>( \alpha )</th>
<th>( \gamma_1 )</th>
<th>( \gamma_2 )</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>daily</td>
<td>0.685</td>
<td>0.911</td>
<td>1.586</td>
<td>0.034</td>
<td>Refusal</td>
</tr>
<tr>
<td>Monthly</td>
<td>0.490</td>
<td>6.220</td>
<td>0.0249</td>
<td>0.125</td>
<td>Refusal</td>
</tr>
</tbody>
</table>

Utilization of the research method is based on CSAD (cross sectional absolute deviation) of shares yield during 2005-2009. The research results describe this point that firms yield have been gone away from the market yield during the low or high fluctuations and yield deviations are abundant. So it could be stated that they present the result in accordance with forecasting of capital assets pricing model which is described at the time of market stress, deviations level is increased since the sensitivity of every asset in relation to the market is different, and concludes that herding group is not an important factor in determining exchange yield within periods on which the market is experiencing stress. In other words, no evidence was found indicating investors’ backtracking to outbreak rational behavior in existing firms in statistical society of this research. The results of this research are consistent with Chang, Chen Khorna’s findings (2000) in USA, Hong Kong and Japan shares market; Demirer and Kutan (2006) in China shares market and inconsistent with Chang et al. (2000) in South Korea, and Demirera et al. (2010) in Taiwan shares market.

8. Conclusion and recommendations:

No type of herding behavior was found in Tehran exchange regarding the investigated models of this research in tables 2 and 3. The results of this research are consistent with Chang, Chen Khorna’s findings (2000) in USA, Hong Kong and Japan shares market, Demirer and Kutan (2006) in China’s shares market, and inconsistent with Chang et al. (2000) in South Korea and Taiwan’s shares market, and Demirera et al. (2010) in Taiwan shares market. Additionally, the research results may lead to:

1. To develop and increase investors’ knowledge and people in charge to emerge herding behavior and aiming to monitor it.
2. To present guidance to policy makers and executive officials of capital market along with planning and making suitable policies based on realities.
3. To survey the investors’ determination traits in Iran’s capital market and analyze their determination method.

While being contrary to expectations, the absence of herding behavior has been confirmed across the world by most performed investigations. The reason of this is the absence of a complete research model in quantifying herding behavior. Perhaps it could be courageously observed that the used models in this research are the only existing ones.
since they are the base of all presented research models. The existence of such an affair poses a question in mind that herding behavior may probably be in the market but this type of research is not able to confirm it. Thus more activities by researchers in this context seems to be necessary [12]. The existence of long transactional intervals in the process of shares transactions is among the basic limitations of this research for many firms which occasionally have probably been engaged in herding behavior, but they have been omitted from the model because of long intervals. The presence of regulations and prescriptions of market control such as allowed price fluctuation, base volume and etc. to some extent do also bring deviance and bias of research and consequently falling of the results accuracy from the model. Since behavioral financial matters have abundant extensities, the possibility of its spacious and comprehensive study in the case of a collegiate research is not feasible. To survey herding behavior in Iran's capital market more and more, the following issues are presented to students to investigate and study:
- Scrutiny herding behavior effect in out-breaking of bubble and downfall of prices.
- To survey herding behavior effect relating to small and great firms shares.
- Measuring herding behavior effect on fluctuations severity on the market.
- Checking investors’ herding behavior effect on the capital market efficiency.
- To study investors’ herding behavior using CCK and CH models in different industries.
- To survey herding behavior by investors’ firms managers using SH, SHM,PCM and LSV models.

9. Acknowledgements
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References