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Salience Theory and Pricing Stock of Corporates in Tehran Stock Exchange

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ABSTRACT

How the investors react to the received information plays a crucial role in determining the return of stock exchange market. Supply and demand based upon incorrect decisions lead to the price deviation of inherent values. This paper aims to study the impact of salience phenomenon on disproportionate pricing and investor overreaction in the corporates in Tehran stock exchange. Research methodology is correlative. Statistical sample involves 120 corporates accepted by Tehran stock exchange during 2012-2016. To test the hypotheses, a regression analysis method has been selected. Research findings have indicated that there exists a promising phenomenon in Tehran stock exchange causing the investors overreaction followed by the disproportionate pricing and also, the results have shown that the impact of salience is different on strong and weak information environments.

1 Introduction

Investor behavior, decision making, monetary resources allocation, pricing and evaluation are likely to affect the corporates returns. Ambiguous conditions and psychological human errors result in some investors mistakes in creating the expectations and as a consequence, investors behave in a weird manner while investing in financial markets. Accordingly, economic theories are mainly proposed given that individuals behave rationally and available information is used in investment process. The hypothesis is the basis of market return theory but the studies have shown that there exists evidence to confirm that the rational behavior is not really inclusive. Pricing models often apply rational expectations equilibrium (REE) framework suggesting that not only individuals behave rationally but also their attitudes and beliefs are correct [1]. If market is indifferent to new information and shows no desired reactions, market will definitely be of no returns; in other words, there is no analyst to assess and investigate the effect of new information on pricing in the market. During 90s, econometrics analyses of price time series, cash earnings and returns have developed few models in relation to individual psychology in financial markets. Accordingly, researchers encountered lots of exceptions in the desired markets and concluded that psychological phenomena play a significant role in determining the behavior in financial markets [2]. With respect to the deficiency of economic models based on risk to explain the investors decision making, behavioral models have been developed for this purpose.

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Model presented by Barberis et al. [2] on investor predictions suggests that investors have inappropriate reactions to news due to uncertainty circumstances, time and cognitive resources limitations, and inacess to accounting information. Investors have cognitive processing power and limited attention so that limited attention affects the transactions and market prices systematically. Bordalo, Gennaioli and Shleifer [3] presented a new approach of under risk selection called salience theory and stated that every individual pays attention to the efficiency that has the most distinct salience as compared to the average value. In selection process, individuals weigh the salient efficiencies more than their actual value. Structuralizing such an evaluation or probabilities based on salience will result in intuitive vision in decision making theory like Allais paradoxes and preferences inversion. Limited processing power and attention of investors will lead to systematic mistakes affecting the market prices. Lots of researchers believe that information is gradually released in market and affect the stock price with delay. It has been attributed to recognition limitations of investors and their trivial ability in processing a huge amount of information; in other words, the investor concentration on a specific subject may prevent them from considering other information sources. With regard to huge amount of information in capital market and investor recognition limitations, it is preferred to process the accessible information and according to the available data analyses, the transactions are done. Considering the subject discussed in the article, the impact of salience behavioral theory on the investors reaction and disproportionate stock pricing is addressed.

2 Literature Review

When individuals or investment institutions decide to invest, the first subject the face is the selection of suitable portfolio. Research theories provide useful information and financial statements which are important for the users with regard to the financial performance and status assessments to make economic decisions and investments Therefore, the audited financial statements are only accessible reliable information source [4]. Based on the approved information processing with behavioral impact, the people behavior varies and is accompanied with a psychological aspect. According to behavioral stability, a concept is formed in the mind, which cannot be changed easily even if there are environmental or computational variations. For instance, if the concept of earnings is shaped in the mind of an investor, the investor will not change his first interpretation even if its computation procedure is altered under the effect of accounting standards. Although the income recognition is changed at the sales time till the goods completion and the result of computational earnings is changed, the investor only pays attention to the earnings values and cannot consider these changes correctly; namely, there is a behavioral stability. Regarding theory of support, the individual ability in using information is limited. Few people are able to process several variables at the same time. Others are able to process only two or three variables in the mind. As the subject gets more complicated and the number of variables increases, less people can process and understand the information. Accounting is complex and people remove all related variables and use one variable as support which is in mind or familiar in order to make decisions while encountering the complexity.

One of the applications which has been defined for the accounting is the presentation of suitable and useful information for the investors to determine the value of stocks and contribute them in making the knowingly investment decisions[5], but there is a lot of information but attention is limited. There-

fore, individuals simplify decisions and judgments through applying few rules and processing accessible pieces of information. Accountants and psychologists claimed that individuals involving investors and professional financial experts may focus on few important stimulants [6]. It is regarded as an economical cognitive method to make good decisions but not optimum. Evidence indicates that stock prices react to the inaudible information that is released publicly in a specific period [7-8]. Salient information and data with less processing by the investors are mainly used and eventually, they are reflected in final stock price completely [9]. In the model presented by Barberis et al. [2], it was proved that positive sequent returns cause the reaction of investors to stability of information process; the extent to which the investor estimates the former process depends on the process salience [10]. Hong and Stein [11] in a model proved that investor groups are heterogeneous and each group makes decisions on the basis of accessible information; thus, for each group analysis, a part of whole information is sufficient and it is normal to achieve various results. Ariely [12] investigated the recent economic crises in the capitalist world in a study entitled "end of rationality" and reported that rational theories are not able to explain the decisions accurately.

Therefore, considering behavioral aspects are necessary and salience theory can clarify the features and abnormalities of under risk selection but the theory has not been directly examined.

In this paper, two issues are regarded. First, the salience phenomenon leads to overreaction of investors to new information followed by inappropriate stock pricing.

2.1 The Model of Choice under Risk

A choice problem is described by:

i) a set of states of the world S, where each state $s \in S$ occurs with objective and known probability π_s such that $\sum_{s\in S} \pi_s = 1$

and ii) a choice set $\{L_1, L_2\}$ where the Li are risky prospects that yield monetary payoffs in each states. For convenience, we refer to L, as lotteries.

The decision maker uses a value function v to evaluate lottery payoffs relative to the reference point of zero. Through most of the paper, we illustrate the mechanism generating risk preferences in our model by assuming a linear value function v (when we focus on mixed lotteries, we consider a piecewise linear value function featuring loss aversion, as in Prospect Theory) . Absent distortions in decision weights, the local thinke r evaluates L_i as:

$$V(L_i) = \sum_{s\in S} \pi_s v(x_s^i) \tag{1}$$

The local thinker (LT) departs from Equation (1) by overweighting the lottery's most salient states in S. Salience distortions work in two steps. First, a salience ranking among the states in S is established for each lottery L_i. Second, based on this salience ranking, the probability is 1.

Definition 1 The salience of states for lottery L_i, i = 1,2 , is a continuous and bounded function σ (x_s^i, x_s^{-i}) that satisfies three conditions by Bordalo et al. [29]:

1) Ordering. If for states' s, $\tilde{s} \in S$ we have that $[x_s^{min}, x_s^{max}]$ is a subset of $[x_{\tilde{s}}^{min}, x_{\tilde{s}}^{max}]$, then

$$\sigma(x_s^i, x_s^{-i}) < \sigma(x_{\tilde{s}}^i, x_{\tilde{s}}^{-i})$$

2) Diminishing sensitivity. If $x_s^i > 0$ for j=1,2 , then for any ε >‧,

$$\sigma(x_s^i + \varepsilon, x_s^{-i} + \varepsilon) < \sigma(x_s^i, x_s^{-i})$$

3) Reflection. For any two states $s, \tilde{s} \in S$ such that x_s^i,$x_{\tilde{s}}^i$>0 for i= 1,2, we have

$$\sigma(x_s^i, x_s^{-i}) < \sigma(x_{\tilde{s}}^i, x_{\tilde{s}}^{-i}) \text{ if and only if } \sigma(-x_s^i, -x_s^{-i}) < \sigma(-x_{\tilde{s}}^i, -x_{\tilde{s}}^{-i})$$

2.2 Salience-Based Probability Weighting

To measure the salience of the payoff x_{is} of lottery i in states, Ref. [3] propose the function:

$$\sigma(,x_s^{-i}x_s^i) = \frac{|x_s^i - x_s^{-i}|}{|x_s^i| + |x_s^{-i}| + \theta} \quad (2)$$

where $\theta > 0$. According to the ordering property, the salience of a state for L, increases in the distance between its payoff, and the payoff of the alternative lottery. In (2), this is captured by the numerator $|x_s^i - x_s^{-i}|$. Diminishing sensitivity implies that salience decreases as a state's average (absolute) payoff gets farther from zero, as captured by the denominator term $|x_s^i| + |x_s^{-i}|$ in (2). Finally, according to reflection, salience is in shaped by the magnitude rather than the sign of payoffs: a state is salient not only when the lotteries bring different gains, but also they sharply bring different losses. In (2), reflection takes the strong from $\sigma(x_s^i, x_s^{-i}) = \sigma(-x_{\tilde{s}}^i, -x_{\tilde{s}}^{-i})$. These properties are illustrated in Figure 1 below.

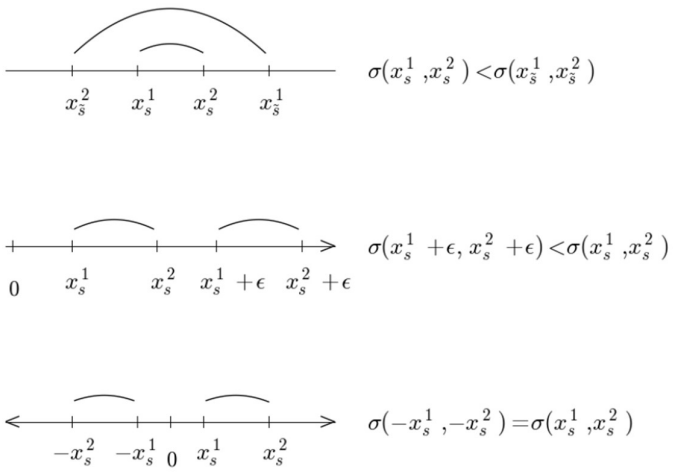

Fig. 1: Properties of a salience function, by Bordalo et al. [3]

Andreassen and Kraus [13] conducted in vitro tests to highlight the relative information salience impact on business behavior and time tendencies predictions. They concluded that investors only use the processes affecting the future stock price predictions. In addition, if the information salience used by

the investors increases, their overreaction is formed against recent changes. Hong and Stein [11] in the experimental test observed that inappropriate reactions may be created due to an interaction between dealers working based on sequence strategy and those paying attention to news.

Dealers who act based on the sequence strategy use a piece of information involving recent price trends whereas fundamental news and information are ignored. Those whose transactions are relied on news consider fundamental news and information significantly and do not pay sufficient attention to prices. Hereby, various investor groups are more likely to be exposed to inappropriate reactions. Chan et al. [14] referred to salience intuition and information access and proposed that pricing methods are regarded as a function of accounting and financial information given to the actual and potential investors in the form of statements. Financial information may be of more salience as compared to the others and meanwhile, analysts have more access to them. An article published by Odean et al. [15] entitled "all the things that shine: impact of attention and news on purchase behavior of real people and institutional investors" addresses a simple question: how do investors select the purchased stocks? They found that real investors are final buyers when there is considerable attention to a specific stock. Large brokerage institutions with a little commission buy stocks which have unusually high transaction volume two times more than sales volume. As well, they concluded that investors who are stimulated by attracting their attention are the final stock buyers of corporates when news on those corporates has been released. Hurst et al. [16] studied the estimate of recent trends based on salience information by investors and identified the winning stocks and return ones based on increasing and decreasing rates of return variations with respect to momentum strategy, respectively. Winning and losing stocks are used as salience criteria and momentum portfolios are created by Jegadeesh and Titman [17] while confirming more price continuity of stocks with increasing return variations as compared to those with decreasing ones; on the other hand, they investigated the salience momentum-based investment strategy and reported that investors buy the winning stocks and sell the losing ones.

Cosemans and Frehen [18] addressed the outcomes of salience theory. In their developed model, investors highly weighed the past return salience while forming the expectations on future return. Consequently, investors are attracted by stocks with high salience but these stocks are valued more than their actual value with low return. Salience impact is significant among stocks with arbitrage limitations in high sensitive periods.Fadaei Nejad and kamelniya [19] in a study on market reaction to tangible and intangible information in Tehran stock exchange investigated the investor response to intangible information. Results indicated that future return is not related to financial performance of corporates whereas future return is reversely related to intangible past return. Thus, the main reason of B/M coefficient phenomenon is meta-reaction of investors toward intangible information.Bazzaz zadeh et al. [20] studied market reaction to intangible information and adjusting role of institutional investors. Results showed that a one year period with different delay intervals, there was a negative significant relationship between intangible annual return and future monthly ones.

In fact, market has considerably reacted to intangible information in most cases and with new news release, expectations have been adjusted. Also, evidence might be indicative of overreaction of investors in corporates with more institutional investors.

3 Proposed Research Methodology

This research is an applied correlative one from perspective of purpose and nature. Results can be useful for a wide range of investors and analysts. Three main hypotheses that are considered in this paper are as follows:

H_1: Investors overreact to return information salience.

H_2: Salience phenomenon leads to inappropriate stock pricing.

H_3: Salience impact on disproportionate stock pricing in corporate with strong information environ

In this paper, multivariate regression method was used to test the hypotheses. Sample consisted of the corporates accepted in Tehran stock exchange during 2012-2016 with the features as follows:

Their fiscal year ends in March. During the research period, their fiscal year has not been changed. Corporates should not be a member of financial intermediation and investment institutions and banks. Corporate stocks should be transacted in Tehran stock exchange without any pause from 2012-2016. Considering the limitations, number of qualified corporates was given 120 corporates. To compute the research variables, the required data were extracted from Tadbir Pardaz database. To perform the calculations and prepare the data as well as the analyses, Excel and Eviews software have been used.

3.1 Salience Measurement

$Salience_{i,t}$: Weighted mean of return on equity in a 20 day period [-30, -11] before the industry profit and return announcements.

Salience of the return x_{is} is measured at the selection i and situation s based on the developed function BGS (2012) as follows:

$$\sigma(x_{is}, \bar{x}_s) = \frac{|x_{is}-\bar{x}_s|}{|x_{is}|+|\bar{x}_s|} \qquad \sigma \in (0, 1] \tag{3}$$

In the selection process based on the above-mentioned function, individuals weigh the salient returns more than their actual value:

$$\tilde{\pi}_{is} = \pi_s . w_{is} \tag{4}$$

w_{is}: Probable weight

Here, $\sigma \in (0, 1]$ indicates the ignorance degree of nonsalient earnings from investors. If $\sigma = 1$, ω_{is} weight or value equals 1 for s. In return, if $\sigma < 1$, investors overweigh the salient earnings for the sake of expense the nonsalient ones.

3.2 Measurement of MISV and Disproportionate Pricing

MISV: To determine the existence of MISV in Tehran stock exchange, Rhodeskropf model and three variables including shareholders equity book value, net profit and leverage ratio at the end of March have been applied to predict the equity market value of corporates at the end of next period in September.

First, the below regression was estimated:

$$M_{i,t} = \beta_{0jt} + \beta_{1jt} \times B_{i,t-1} + \beta_{2jt} \times NI^{+}_{i,t-1} + \beta_{3jt} \times I_{(<0)} NI^{+}_{i,t-1} + \beta_{4jt} \times LEV_{i,t-1} + \varepsilon_{i,t} \tag{5}$$

i: the corporate
J: the corporate's industry
M: the corporate market value logarithm
B: the equity book value logarithm
$NI^{+}_{i,t-1}$: Net profit absolute value logarithm
$I_{(\prec 0)}$: Virtual variable equals 1 when net profit is negative; otherwise, it equals zero.
LEV: leverage ratio as one substracted by total equity divided by total corporate assets
Difference between M and the value given by the above regression equation is the incorrect valuation or MISV showing the overreaction in market.

$BHAR^{Cahart}$: abnormality in equity pricing (the index of purchase return)
Specifically, there are differences between purchase return and corporate preservation as well as corporate size, book to market value ratio (B/M) and movement in a three day period after the profit announcement [2,0] during the transaction days as compared to the profit announcement day.

$$BHAR_i^{Carhart}[t_1, t_2] = \prod_{t=t_1}^{t_2}(1 + R_{it}) - \prod_{t=t_1}^{t_2}(1 + R_{pt}) \quad (6)$$

R_{it}: equity i return at t time
R_{pt}: portfolio size using Carhart model at t time

Carhart [21] developed a four-variable model by adding one new variable called acceleration factor. The model equation is used to compute the expected return of predicted portfolio or assets as follows:

$$R_{pt} - R_{ft} = \beta_p\left(R_{mt} - R_{ft}\right) + h_p(SMB_t) + s_p(HML_t) + p_p(WML_t) + \varepsilon_p \quad (7)$$

R_{ft}: return rate without risk
β: portfolio or asset systematic risk
R_m: market portfolio return at t time
SMB: mean return of small corporates substracted by large ones
HML: mean return of high book value corporates substracted by low ones
WML: mean difference of winning and losing equity portfolios

3.3 Interventive Variable Measurement- Internal Information Quality

IIQ_{it}: According to Aghaei et al. [22], internal information quality indices include:

AES: earnings announcement speed- difference between days of fiscal year end and corporate earnings announcement divided by 365 and multiplied by -1

MAF: management earnings prediction accuracy- absolute value of management earnings prediction error which is estimated as below:

$$FE = \frac{At - Ft}{Ft} \times 100 \quad (8)$$

At: actual corporate earnings at the time t

Ft: predicted corporate earnings at the time t

After specifying the components, the corporates with high internal information quality have earnings announcement speed and management earnings prediction accuracy higher than mean; on the other hand, the corporates with low internal information quality have earnings announcement speed and management earnings prediction accuracy lower than mean.

3.4 Control Variables Measurement

Size: corporate size is computed as a normal logarithm of corporate market value at the end of year.

$B/M_{i,t}$: book to market value ratio is measured as equity book value divided by equity market value at the end of year.

Liq: liquidity is the average of daily return value to transaction volume in a year.

ReL: Audit delay is computed as a normal logarithm of number of days between the end of fiscal year and auditory report presentation date in the year t.

I/O: institutional ownership percent at the end of year is measured by the sum of equity with the authority of banks, insurance companies, holdings, investment firms, retirement institutions, capital supply firms, and government organizations and institutions divided by total released equity based on the definition presented by Rubin [23] and Cueto [24]; the variable has been used with the same definition in the studies done by Kumar [25] Earnhart et al. [26].

Lev: financial leverage-total debt to total assets ratio at the end of year

ROE: return on equity-net profit after the tax deduction to book value of return on equity ratio

SUE^{Rank}: unexpected earnings- earnings difference between actual equity and predicted one to equity price

Mom: return momentum- daily accumulated return for every equity in five days before earnings announcement.

4 Research Findings

Before testing the research hypotheses, the variables are summarized in Table's 1 and 2.

Table 1 and 2 is about the main indicators of centralization and dispersion. The mean represents the equilibrium point and the distribution center and is a good indicator of the centrality of the data, for overreaction return and inappropriate stock valuations, they are 0.33 and 0.28 respectively. Median is another central indicator that shows the state of the society and shows that half of the data are less than this and half more than this amount also, the homogeneity of the mean and median value indicates that this variable is normal, which is equal to 0.32 and 0.27 for overreaction return variables and

inappropriate stock valuation. Dispersion indicators are a criterion for determining the dispersion of data from one another or their dispersion relative to the average. Standard deviation is one of the most important dispersion indices that is equal to 0.16 and 0.27 for overreaction return variables and inappropriate stock valuations.

Table 1: Descriptive Statistics of Corporate Variables

	Overreactive return	**Disproportionate pricing**	**salience**	**Salience in strong information environment**	**Salience in weak information environment**	**Strong information environment**	**Weak information environment**	**Size**
	MISV	BHAR	SAL	HIIQ*SAL	EIIQ*SAL	HIIQ	EIIQ	SIZE
Mean	0.330923	0.283716	0.52261	0.262102	0.284399	0.500000	0.496667	6.20170
Medium	0.323150	0.270000	0.52010	0.317000	0.000000	0.500000	0.000000	6.12000
Maximum	0.730000	1.075200	0.65470	0.654700	22.94850	1.000000	1.000000	8.19000
Minimum	0.000000	-0.567933	0.41220	0.000000	-0.673700	0.000000	0.000000	4.93000
SD	0.155857	0.274025	0.02304	0.262251	1.432223	0.500417	0.500406	0.59792
Skewedness	0.083837	0.219775	1.73800	0.010057	11.10757	0.000000	0.013334	0.96752
Elongation	2.563941	3.212336	12.5502	1.020688	149.2809	1.000000	1.000178	3.99576
Jack-Bra	5.456542	5.957288	2582.22	97.95206	547290.5	100.0000	100.0000	118.399
Sig.	0.065332	0.050862	0.00000	0.000000	0.000000	0.000000	0.000000	0.00000
Observations	600	600	600	600	600	600	600	600

Table 2: Descriptive Statistics of Corporate Variables

	M/B ratio	**Momentum**	**Liquidity**	**Audit delay**	**Institutional ownership percent**	**Financial leverage**	**ROE**	**Unexpected earnings**
	M/B	**MOM**	**Liq**	**ReL**	**I/O**	**Lev**	**ROE**	**SUE**
Mean	0.453267	0.284483	0.007250	-0.46760	0.376417	0.594867	0.030850	-0.036450
Medium	0.400000	0.110000	0.000000	-0.34000	0.370000	0.590000	0.230000	-0.010000
Maximum	3.690000	4.050000	0.470000	-0.08000	0.870000	2.320000	3.680000	3.540000
Minimum	0.000000	-0.290000	-0.090000	-0.99000	0.000000	0.010000	-72.7000	-1.770000
SD	0.305159	0.528815	0.031100	0.243205	0.203865	0.244383	3.078645	0.240326
Skewedness	2.843604	2.613697	8.512216	-0.21153	-0.004704	1.290072	-22.1461	3.722941
Elongation	24.23196	12.42558	104.7069	1.704485	2.400641	10.71476	521.1882	91.83077
Jack-Bra	12078.52	2904.181	265852.9	46.43357	8.983008	1654.365	6762021.	198658.7
Sig.	0.000000	0.000000	0.000000	0.000000	0.011204	0.000000	0.000000	0.000000
Observations	600	600	600	600	600	600	600	600

Table 3: Unit Root Test Results

variables		Levine, Lane, and Chu test statistics	Significance level	**Result**
Overreaction return	MISV	-39.5026	0.0000	I(0)
Stock Inappropriate valuation	BHAR ^{Carhart}	-20.8598	0.0000	I(0)
salience	SAL	-63.6911	0.0000	I(0)
Salience* high internal information quality	SAL*HIIQ	-54.7095	0.0000	I(0)
Salience* low internal information quality	SAL*EIIQ	-790.265	0.0000	I(0)
high internal information quality	HIIQ	-4.17443	0.0000	I(0)
low internal information quality	EIIQ	-4.17443	0.0000	I(0)
Corporate size	SIZE	-48.6265	0.0000	I(0)
Book value to market ratio	B/M	-31.5095	0.0000	I(0)
Momentum	MOM	-27.3199	0.0000	I(0)
liquidity	Iiq	-354.639	0.0000	I(0)
Audit Delay	ReL	-40.7726	0.0000	I(0)
Institutional ownership percent	I/O	-7.43004	0.0000	I(0)
Financial leverage	Lev	-18.1831	0.0000	I(0)
Return on equity	ROE	-25.1072	0.0000	I(0)
Unexpected earnings	SUE ^{Rank}	-55.5757	0.0000	I(0)

As can be seen, the level of significance of the unit root test in all variables is less than 0.05 and shows that they are zero (I_0) and at the level of Stationary. This means that the mean and variance of variables over time and covariance of variables were constant between 2012 -2016.Hausman and F-Limer test results have been presented in Table 4.

Table 4: Hausman and F-Limer Test Results

	F-Limer test	Sig.	Result	Hausman test	Sig.	Result
H_1	2.426877	0.0000	Panel	23.820599	0.0081	Constant
H_2	1.530630	0.0010	Panel	59.495940	0.0000	Constant
H_3	2.589244	0.0000	Panel	44.350361	0.0001	Constant
H_4	1.664146	0.0001	Panel	75.833005	0.0000	Constant

As can be seen, the Chow test shows that the observations with a probability of testing of more than 5%, or, in other words, their test statistic are less than table statistics, is used in conjunction and for observations that have a probability of testing less than 5%, panel data will be used to estimate the pattern. According to the results, for the model of the first, second, third hypotheses, the panel data method has been used. The method of its panel data can be used using two patterns of "random effects" and "fixed effects", which are used to select them, using the Hausman test. For observations that have a probability of testing less than 5%, they have a fixed effect pattern and for observations that are more than 5% probable, a random effect pattern is used for estimation. According to the first, second and third hypotheses, the probability of the chi-square test is less than 5%. Therefore, the constant effects are used to estimate and analyze the model of the first, second and third hypotheses.
To review H_1, the following regression expression is used. (Table 5)

$$\mathrm{MISV}_{it} = \alpha_0 + \alpha_1 Sal_{it} + \alpha_2 Size_{it} + \alpha_3 (\frac{B}{M})_{it} + \alpha_4 Mom_{it} + \alpha_5 Liq_{it} + \alpha_6 Rel_{it} + \alpha_7 (\frac{I}{O})_{it} + \alpha_8 LEV_{it} + \alpha_9 ROE_{it} + \alpha_{10} SUE_{it} + \varepsilon_{it} \quad (9)$$

Table 5: H_1 Results Using Data Panel Method

Variables	Variables	coefficients	SD	t-statistic	Sig. level	Impact	Sig. result
Width from source	a_0	-1.467310	0.272466	-5.385305	0.0000	-	Significant
Salience	SAL	0.470937	0.219166	2.148772	0.0322	+	Significant
Corporate size	SIZE	0.251440	0.036277	6.931073	0.0000	+	Significant
M/B ratio	M/B	-0.098679	0.022342	-4.416699	0.0000	-	Significant
Momentum	MOM	-0.006990	0.009004	-0.776273	0.4380	-	Insignificant
Liquidity	Liq	-0.032661	0.164587	-0.198444	0.8428	-	Insignificant
Audit delay	ReL	-0.021659	0.024059	-0.900238	0.3685	-	Insignificant
Institutional owner-ship percent	I/O	-0.088130	0.113457	-0.776768	0.4377	-	Insignificant
Financial leverage	Lev	0.106314	0.037883	2.806336	0.0052	+	Significant
Return on equity	ROE	0.001904	0.001653	1.152148	0.2498	+	Insignificant
Unexpected earnings	SUE ^{Rank}	0.014907	0.022327	0.667665	0.5047	+	Insignificant
Coefficient of deter-mination		0.626081		F-statistic	6.100429		
Adjusted coefficient of determination		0.523452		Sig. level	0.000000		
Durbin-Watson				2.158902			

Estimate results indicated that t probable statistic is less than 5% for the constant coefficient and such variables as salience, corporate size, market to book value ratio and financial leverage concerning overreaction return information; thus, the above relationship is statistically significant and the estimated coefficient is positive and significant for salience. For momentum, liquidity, audit delay, institutional ownership percent, return on equity and unexpected earnings, the t statistic is more than 5%. Therefore, the estimated coefficient is not significant. The adjusted determination of coefficient indicates the explanatory power of independent variables that are able to explain 52% variations related to dependent ones. F statistic probability shows the whole model is statistically significant. Considering the hypothesis and the positive and significant coefficient of salience, the investors overreact to the return information salience.

$$\mathrm{BHAR}^{\mathrm{Carhart}} = \alpha_0 + \alpha_1 Sal_{it} + \alpha_2 Size_{it} + \alpha_3 (\frac{B}{M})_{it} + \alpha_4 Mom_{it} + \alpha_5 Liq_{it} + \alpha_6 Rel_{it} + \alpha_7 (\frac{I}{O})_{it} + \alpha_8 LEV_{it} + \alpha_9 ROE_{it} + \alpha_{10} SUE_{it} + \varepsilon_{it} \quad (10)$$

To test H_2, the following regression model is used (see Table 6).
Estimate results indicated that t statistic probability is less than 5% for the constant coefficient and such variables as salience, corporate size, market to book value ratio, momentum, liquidity and audit delay concerning disproportionate pricing; thus, the above relationship is statistically significant and

the estimated coefficient is positive and significant for salience concerning disproportionate pricing. For financial leverage, institutional ownership percent, return on equity and unexpected earnings, the t statistic is more than 5%. Therefore, the estimated coefficient is not significant. The adjusted determination of coefficient indicates the explanatory power of independent variables that are able to explain 41% variations related to dependent ones. F statistic probability shows the whole model is statistically significant. Considering the hypothesis and the positive significant coefficient of salience, salience phenomenon leads to disproportionate pricing.

To test H_3, the following regression model is used (see Table 7).

Table 6: Results of H_2 Using Data Panel Method

Variables	Variables	coefficients	SD	t-statistic	Sig. level	Impact	Sig. result
Width from source	a_0	1.404933	0.535205	2.625039	0.0089	+	Significant
Salience	SAL	1.405723	0.430508	3.265269	0.0012	+	Significant
Corporate size	SIZE	-0.282636	0.071259	-3.966297	0.0001	-	Significant
M/B ratio	M/B	-0.513463	0.043887	-11.69962	0.0000	-	Significant
Momentum	MOM	0.165218	0.017688	9.340938	0.0000	+	Significant
Liquidity	Liq	1.630379	0.323298	5.042962	0.0000	+	Significant
Audit delay	ReL	-0.194758	0.047259	-4.121109	0.0000	-	Significant
Institutional ownership percent	I/O	0.087435	0.222864	0.392325	0.6950	+	Insignificant
Financial leverage	Lev	-0.090108	0.074415	-1.210895	0.2265	-	Insignificant
Return on equity	ROE	-0.000375	0.003246	-0.115533	0.9081	-	Insignificant
Unexpected earnings	SUE ^{Rank}	-0.013914	0.043857	-0.317266	0.7512	-	Insignificant
Coefficient of determination		0.533271		F-statistic	4.162852		
Adjusted coefficient of determination		0.405169		Sig. level	0.000000		
Durbin-Watson				2.389281			

$$\begin{aligned} \mathrm{BHAR}^{\mathrm{Carhart}} = {} & \alpha_0 + \alpha_1 Sal_{it} + \alpha_2 Sal_{it} \times HIIQ_{it} + \alpha_3 Sal_{it} \times EIIQ_{it} + \alpha_4 HIIQ_{it} + \alpha_5 EIIQ_{it} \\ & + \alpha_6 Size_{it} + \alpha_7 (\frac{B}{M})_{it} + \alpha_8 Mom_{it} + \alpha_9 Liq_{it} + \alpha_{10} Rel_{it} + \alpha_{11} (\frac{I}{O})_{it} \\ & + \alpha_{12} LEV_{it} + \alpha_{13} ROE_{it} + \alpha_{14} SUE_{it} + \varepsilon_{it} \end{aligned} \quad (11)$$

Estimate results indicated that t statistic probability is less than 5% for the constant coefficient and such variables as salience, salience in relation to strong information environment, salience in relation to weak information environment, corporate size, market to book value ratio, momentum, liquidity and audit delay concerning disproportionate pricing; thus, the above relationship is statistically significant and the estimated coefficient is positive, negative and significant for salience in relation to

strong and weak information environments concerning disproportionate pricing, respectively. For financial leverage, salience in relation to strong information environment, institutional ownership percent, return on equity and unexpected earnings, the t statistic is more than 5%. Therefore, the estimated coefficient is not significant. The adjusted determination of coefficient indicates the explanatory power of independent variables that are able to explain 43% variations related to dependent ones. F statistic probability shows the whole model is statistically significant. Considering the hypothesis and the positive and negative significant coefficients of salience in relation to strong and weak information environments, salience impact on disproportionate pricing in to strong information environment is different from the weak one.

Table 7: Results of H_3 Using Data Panel Method

Variables	Variables	coefficients	SD	t-statistic	Sig. level	Impact	Sig. result
Width from source	a_0	1.364233	0.535436	2.547890	0.0112	+	Significant
Salience	SAL	1.745224	0.428993	4.068188	0.0001	+	Significant
Salience* high internal information quality	SAL*HIIQ	0.936250	0.229105	4.086547	0.0001	+	Significant
Salience* low internal information quality	SAL*EIIQ	-0.017516	0.007351	-2.382961	0.0176	-	Significant
high internal information quality	HIIQ	0.178170	0.119981	1.484983	0.1382	+	Insignificant
low internal information quality	EIIQ	-0.280812	0.100987	-2.780661	0.0056	-	Significant
Corporate size	SIZE	0.936250	0.229105	4.086547	0.0001	+	Significant
M/B ratio	M/B	-0.017516	0.007351	-2.382961	0.0176	-	Significant
Momentum	MOM	0.178170	0.119981	1.484983	0.1382	+	Insignificant
Liquidity	Liq	-0.280812	0.100987	-2.780661	0.0056	-	Significant
Audit delay	ReL	-0.257255	0.070289	-3.659931	0.0003	-	Significant
Institutional ownership percent	I/O	-0.508380	0.043084	-11.79985	0.0000	-	Insignificant
Financial leverage	Lev	0.184714	0.018955	9.744628	0.0000	+	Insignificant
Return on equity	ROE	1.529206	0.317983	4.809084	0.0000	+	Insignificant
Unexpected earnings	SUE ^{Rank}	-0.196347	0.046353	-4.235871	0.0000	-	Insignificant
Coefficient of determination		0.555671		F-statistic	4.381746		
Adjusted coefficient of determination		0.428856		Sig. level	0.000000		
Durbin-Watson				2.400309			

5 Conclusions

In recent decade, a set of evidence, return and securities valuation in neoclassic approach have encountered a challenge. In standard portfolio selection process, determining risk tolerance, investor constraints and financial goals enables to specify the optimum assets amount based upon standard mean-variance optimization pattern. Though conducting this process is impossible by human beings

since human being is exposed to behavioral biases. A challenging issue leading to doubts in the efficient market theory is that investors have no suitable and timely reaction to new information. Limited attention and processing power of investors form systematic mistakes affecting the market prices and price deviation from inherent values while eliminating the market efficiency. Human judgments can be of intuitive or mental innovative shortcuts which are not able to be explained by common principles of probabilities theory. According to expected profitability theory, return profitability is weighted by its occurrence probability and individuals are indifferent to the selections with same expected profitability. In recent decades, sociologists have identified important aspects of expected profitability theory violation and expressed as risk-based selection theory [27]. Salience theory presented a unified explanation for under risk selection abnormalities and features; in fact, people overweigh the salient return more than its actual probability [28]. In current research, role of internal information quality has been analyzed while studying the salience phenomenon using return information in active investors' behavior in Tehran stock exchange. Research results have shown that there is salience phenomenon in Tehran stock exchange leading to investors' overreaction followed by disproportionate equity pricing; the salience impact varies on strong and weak information environments. Evidence is in accordance with those reported by Andreassen et al., Chan et al., Odean et al., Hurst et al., [13-16] and Fadaei Nejad et al., [19] but they are contrary to the findings of Bazzaz zadeh et al. [20].

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