

The Effect of Predicting Stock Interest on the Rate of Stock Transaction and the Number of Purchasers in Tehran Stock Exchange

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ABSTRACT

Interest rate is one of the most important criteria in evaluating the companies on behalf of the investors. In the present study using model estimation method based on panel data and time series information from 2001 to 2009 and cross sectional data of 140 companies accepted in Tehran stock exchange, we investigate a model of logarithmic function. The results of the study shows that increase of predicted interest increases transaction rate and it has positive relationship with the number of buyers.

KEY WORDS: Tehran stock exchange, time series, predicted interest, transaction rate.

INTRODUCTION

Regarding the expansion and importance of capital markets in forming small capitals, identifying the behavior of investors in the market has an increasing importance. Accountancy interest is the main product of committed accountancy. Not any number more than the interest of each stock has not attracted the attention of investors. Probably in sick exchange analysis, the relationship between accountancy interest and the price of commercial papers is among the most important ones. The significance of this issue is revealed in the attention and focus that price ratio gives to interest. Interest rating is among the most important criteria in evaluating the companies by investors. Company interest notices gives needed information to market role players through a public informative source to evaluate the companies. The main purpose of this study is to investigate the relationship between predicted interest on purchasers and stock investors' decision making. So regarding the significance of this subject it was decided to consider this subject and investigate the effects of interest on predicted interest [1].

LITERATURE REVIEW

In a research titled "market reaction to announce interest making of each stock in Tehran stock exchange", it was found that interest making of each stock has informative content and it is effective on the rate of transactions.

Al-Luhaib and Al-Ghoneim (2007) found that that P/E ratio effects stock price index and transaction rate [2].

San-Hong and Fang Zhou (2010) showed that P/E, stock price trend, EPS and stock return have the highest effect on stock price index and transaction rate [3].

Zhou (1995) study hypothesizing information symmetry among investors showed that in time limit close to announcement of each stock interest, stock price changed meaningfully and because of increase of price change variance, transaction rate was influenced in the same way. So because of information symmetry in the market, income announcement of each stock leads to tangible effect in price change to significant changes in transaction rate [4].

Venugopal Setty *et al* (2010) stated that when stock is cashed, transaction rate and the number of transactions go up [5].

Duct and Ghost (1999) in a study showed that effective factors on the rate of companies' transactions include stock interest, quick growth of price and interest, investment goals like saving, transaction interest making, investment management and long-term growth [6].

Kimoto and Tameka (1990) investigations showed that three factors including stock interest, future expectations and financial stability among investors are very important and influence on companies transaction rate [7].

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RESEARCH METHOD

The present study uses model estimation method based on panel data which is a combination of time series information (2001-2009) and cross sectional data of 140 companies accepted in Tehran stock exchange. The model which is estimated in this research is a logarithmic function. In these kinds of functions, absolute change of explanatory variables causes percentage changes in dependent variable. Predicted logarithm of the interest in the beginning of the period, Predicted logarithm of the interest at the end of the period, logarithm of buyer's number, and logarithm of transaction rate have been included as the main variables. The needed data, statistics and information in this research have been extracted from 9-year period financial bills of companies in Tehran stock exchange, annual reports of Tehran stock exchange and Tadbirpardaz and Rahavard-e-Novin software's. After collecting the needed data and information related to the mentioned period (2001-2009), the models were estimated and evaluated using econometrics models. Eviws6 software was used.

Estimation and analysis of the first model results

First model: (investigation of predicted interest effect at the beginning of the period on transaction rate)

Inhajm_{it}= $\beta_0 + \beta_1 \ln 1_{it} + \beta_2 \ln h_{aj} m_{it-1} + \omega_{it}$

 $\ln hajm_{it}$: stock transaction rate logarithm of I company in t year

InS1it: predicted interest logarithm at the beginning of the period in I company in t year

 $\ln hajm_{it-1}$: transaction rate logarithm of I company in t year (t-1)

 ω_{it} : Showing unobservable factors which are both different during the time and in all of the companies

F Lamer test

In the first model since p-Value in 95% confidence level equals (0.000) and P is smaller than 0.05, so the H_0 stating that model is pulling is rejected and opposite hypothesis is accepted. So for each of studied sections (accepted companies in Tehran stock exchange) a distinct β_0 should be considered. So panel method can be used to estimate the model

Table1- F lamer test fo	or the first model
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P-Value	Statistic	Test	
0.000	3.6290	F Lamer	

Horseman test

Based on Horseman test for the first model regarding that for $\alpha = 0.05$ the Houseman statistic is 466.537 and P Value is less than 0.05, the null hypothesis is rejected. It shows that accidental effect method is not compatible and fixed effect method should be used.

Table 2- Houseman test results for the fi	irst model
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(probe)	(df)	(χ^2) Hosseman statistics
0/0000	2	466.537

The following is the result of estimation:

 $\ln hajm_{it} = 5.858 + 0.204 \ln s \mathbf{1}_{it} + 0.6978 \ln hajm_{it-1}$ Table 3 shows estimation results.

P-Value	Statistics t	R	Fixed effect model	
0.000	10.417	5.858	С	
0.000	3.475	0.204	inS1 _{it}	
0.000	0.000 31.258 0.6978			
0.5033			\mathbb{R}^2	
0.5024			\overline{R}^2	
2.3182			D.W	
565.018			F	

Based on fixed defect model it is observed that the predicted interest in the beginning of the period has positive relationship with transaction rate and one percent increase in the predicted interest of beginning of the period increases transaction rate 20 percent. Transaction rate in t-1 year has positive effect on transaction rate in t year and 1 percent increase in transaction rate in t-1 year, nearly increases 70 percent of transaction in t year.

 R^2 equals 0.50 showing that models' independent variables are able to explain 50 percent of dependent variable change. In this case lower value of correlation coefficient is due to huge fluctuations of financial market indices which caused high scattering of data (variance) and lower value of correlation coefficient and R^2 . Adjusted R^2 equals 0.50 which means proper explanatory ability of the model. F Fischer statistics equals 565.018 (P-Value< 0.05) which shows validity of total regression value. D.W statistic is 2.318 which show lack of self-correlation.

Estimation and analysis of the second model results Second model: (investigation of predicted interest at the end of the period on transaction rate)

Inhajm_{it}= $\beta_0 + \beta_1 \ln s 2_{it} + \beta_2 \ln hajm_{it-1} + \theta_{it}$

 $\frac{1}{lnhajm_{it}} = \beta_0 + \beta_1 lns1_{it} + \beta_2 lns2_{it} + lnkharidaran_{it} + lnhajm(-1)_{it}$ Inhajm_{it}= $\beta_0 + \beta_1 lns1_{it} + \beta_2 lnhajm_{it-1} + \omega_{it}$

 $In hajm_{it}$: stock transaction rate logarithm of I company in t year

InS2_{it}: predicted interest logarithm at the beginning of the period in I company in t year

 $\ln hajm_{it-1}$: transaction rate logarithm of I company in t year (t-1)

 θit : Showing unobservable factors which are both different during the time and in all of the companies

F Lamer test

In the second model since p-Value in 95% confidence level equals (0.000) and P is smaller than 0.05, so the H_0 stating that the model is pulling is rejected and opposite hypothesis is accepted. So for each of studied sections (accepted companies in Tehran stock exchange) a distinct β_0 should be considered. So panel method can be used to estimate the model.

Table 4- F famer test for the second mode	Table 4- I	lamer	test for	the	second	model
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I - Value	Statistic	Test
0.000	3.675	F

Horseman test

Based on Horseman test results for the second model, regarding that for α =0.05 Houseman statistic is500.3241and P-Value<0.05, so the null hypothesis is rejected. Rejection of H₀ shows that accidental effect method is not compatible and fixed effect method should be used.

Table 5- Horseman te	st for the	second mode	1
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(probe)	(df)	(χ ²)Hauseman statistic
0/0000	2	472.77

The following is estimation of the result

 $\text{Inhajm}_{it} = 5.707 + 0.275 \text{lns2}_{it} + 0.686 \text{ lnhajm}_{it-1}$

Table 6 shows result estimation.

Table 6- Fixed effect model test	t for the second model
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P-Value	T statistics	R	Fixed effect model	
0.000	10.384	5.707	С	
0.000	4.6625	0.2756	InS2 _{it}	
0.000	0.000 30.598 0.6861			
0.508			R^2	
0.507			\overline{R}^2	
2.304			D.W	
576.5648			Fischer F	

Based on fixed effect model it is observed that the predicted interest in the beginning of the period has positive relationship with transaction rate and one percent increase in the predicted interest of beginning of the period increases transaction rate 27 percent. Transaction rate in t-1 year has positive effect on transaction rate in t year and 1 percent increase in transaction rate in t-1 year, nearly increases 69 percent of transaction in t year.

 R^2 equals 0.508 showing that models' independent variables are able to explain 58 percent of dependent variable change. In this case lower value of correlation coefficient is due to huge fluctuations of financial market indices which caused high scattering of data (variance) and lower value of correlation coefficient and R^2 . Adjusted R^2 equals 0.50 which means proper explanatory ability of the model. F Fischer statistics equals

576.5648 (P-Value< 0.05) which shows validity of total regression value. D.W statistics is 2.304 which show the lack of self-correlation.

Estimation and analysis of the third model results

Third model: (investigation of predicted interest at the end of the period on the number of buyers)

Inkharidaran_{it}= $\beta_0 + \beta_1 \ln s \mathbf{1}_{it} + \beta_2 \ln k \ln a ridaran_{it-1} + \gamma_{it}$

In $hajm_{it}$: stock transaction rate logarithm of I company in t year

InS1it: predicted interest logarithm at the beginning of the period in I company in t year

In $hajmkharidaran_{it-1}$: buyers number logarithm of I company in t year (t-1)

yit: Showing unobservable factors which are both different during the time and in all of the companies

F Lamer test

In the second model since p-Value in 95% confidence level equals (0.000) and P is smaller than 0.05, so the H_0 stating that the model is pulling is rejected and opposite hypothesis is accepted. So for each of studied sections (accepted companies in Tehran stock exchange) a distinct β_0 should be considered. So panel method can be used to estimate the model.

r	Table 7- Lamer F test for the third model

P-Value	Statistic	Test
0.000 3.252		F Lamer

Horseman test

Based on Horseman test results for the second model, regarding that for Horseman statistic and-Value<0.05, so the null hypothesis is rejected. Rejection of H₀ shows that accidental effect method is not compatible and fixed effect method should be used.

Table 8 - Horseman test	t for the third model
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(probe)	(df)	(χ ²) Houseman statistic
0/0000	2	397.96

The following is the result of estimation:

Inkharidaran_{it}= 0.9689 + 0.0428lns $1_{it} + 0.7967$ lnkharidaran_{it-1} Table 9 shows the results of estimation.

P-Value	t	R	Fixed effect model
0.0001	3.989	0.9689	С
0.2214	1.223	0.0428	inS1 _{it}
0.000	41.97	0.7967	_{in} kharidaran _{it-1}
0.617			R^2
0.616			\overline{R}^2
2.074			D.W
	898.478		F Fisher

Table 9- Fixed effect test for the third model

Based on fixed effect model it is observed that the predicted interest in the beginning of the period has positive relationship with number of buyers but it is not statistically meaningful. The number of buyers in t-1 year has positive relationship with the number of buyers in t year. 1 percent increase in the number of buyers in t-1 year increases the number of the buyers in in t year for 79 percent.

 R^2 equals 0.508 showing that models' independent variables are able to explain 62 percent of dependent variable change. In this case lower value of correlation coefficient is due to huge fluctuations of financial market indices which caused high scattering of data (variance) and lower value of correlation coefficient and R^2 . Adjusted R^2 equals 0.061 which means proper explanatory ability of the model. F Fischer statistics equals 898.478 (P-Value< 0.05) which shows validity of total regression value. D.W statistics is 2.074 which show the lack of self-correlation.

Estimation and analysis of the fourth model results

Fourth model: (investigation of predicted interest at the end of the period on the number of buyers)

InS2_{it}: predicted interest logarithm at the end of the period in I company in t year

Inkharidaranit: buyers number logarithm of I company in t year

In *kharidaran*_{it-1}: buyers number logarithm of I company in I year (t-1)

Eit: Showing unobservable factors which are both different during the time and in all of the companies. F Lamer test

In the second model since p-Value in 95% confidence level equals (0.000) and P is smaller than 0.05, so the H_0 stating that the model is pulling is rejected and opposite hypothesis is accepted. So for each of studied sections (accepted companies in Tehran stock exchange) a distinct β_0 should be considered. So panel method can be used to estimate the model. **D** 1

F lamer test for the fourth model			
P-Value	Statistic	Test type	
0.000	3 293	F Lamer	

Horseman test

Based on Horseman test results for the second model, regarding that for Horseman statistic and-Value<0.05, so the null hypothesis is rejected. Rejection of H₀ shows that accidental effect method is not compatible and fixed effect method should be used.

Table 11- Houseman test for the fourth model

(probe)	(df)	(χ^2) Horseman statistics
0/0000	2	404.096

The following is the result estimation:

In kharidaran_{it}= 0.806+ 0.0725 ins $2_{it}+ 0.7935$ lnkharidaran_{it-1}

Table 12 shows the results of the estimation.

Table 12- Fixed effect model for the fourt	th model
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P-Value	T statistic	R	Fixed effect model
0.000	3.417	0.806	С
0.0386	2.07	0.0725	inS2 _{it}
0.000	41.7122	0.7935	inkharidaran _{it-1}
0.6186			R^2
0.61795			\overline{R}^2
2.07			D.W
905.9947			F Fischer

Based on fixed effect model it is observed that the predicted interest in the end of the period has positive relationship with number of buyers and this coefficient is meaningful in 90% probability level so that with 1 percent increase in predicted interest at the end of the period, 6% is increased to the number of buyers. The number of buyers in t-1 year has positive relationship with the number of buyers in t year. 1 percent increase in the number of buyers in t-1 year increases the number of the buyers in in t year for 79 percent.

 R^2 equals 0.062 showing that models' independent variables are able to explain 62 percent of dependent variable change. In this case lower value of correlation coefficient is due to huge fluctuations of financial market indices which caused high scattering of data (variance) and lower value of correlation coefficient and R^2 . Adjusted R^2 equals 0.062 which means proper explanatory ability of the model. F Fischer statistics equals 905.9947 (P-Value< 0.05) which shows validity of total regression value. D.W statistics is 2.07 which show the lack of self-correlation.

CONCLUSION

Interest rate is one of the most important criteria to evaluate the companies by investors [8]. The present study considered the relationship between stock interest on transaction rate and the number of buyers in Tehran stock exchange. The results of the study showed that predicted interest of the beginning of the period had positive relation with transaction rate so that one percent increase in predicted interest at the beginning of the period increased 19 percent of transaction rate. Also predicted interest at the end of the period had positive relation with transaction rate so that one percent increase of predicted interest at the end of the period increased transaction rate for 25 percent.

Investigating the third model it was found that beginning of the period predicted interest had positive relationship with the number of the purchasers and increase of 1 percent of rate in t-1 year increased 79 percent of the number of the purchasers in t year. End of the period predicted interest had positive relationship with the number of the buyers and one percent increase in the end of the period predicted interest increased the number of buyers for 6 percent.

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