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Market timing strategies and excess return in Tehran stock exchange

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Abstract

This study examines the relationship between market timing strategies and excess returns in companies listed in Tehran Stock Exchange. In this study, 50 companies have been selected and tested from among the companies listed in Tehran Stock Exchange for the five-year period from 2009 to 2014. The results show that market timing based on E/P has a positive and significant correlation with market excess return and with increase in E/P, excess return increases. Moreover, market timing based on bear market situation has a significant negative relationship with excess return, and with increase in forecasting bear market, the excess return increases. The hybrid model proposed shows that strategy of market situation is more than EP strategy.

Market-timing strategies, excess return, the model of predicting market conditions

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Introduction

Any investor looks to find a strategy to win over the market and get excess return. Many investment strategies are known with market timing. Some investors believe the best strategy is the simple strategy - buy and hold - but some believe that market-timing strategies should be used to earn excess return. The main purpose of market timing is to determine the right time to enter and exit the market that is done by calculating the risk and costs. Market timing can be carried out with various strategies. One of these strategies is earning-to-price ratio. The difference between earnings and price encourages people to invest (Shen, 2003). Short-term indicators such as T-bills can also be used to determine the right time to invest. In this study, E/P ratio and forecast bear market have been used. Our aim was to investigate whether PE model, as a fundamental model, does timing better or timing model based on market fluctuation. To this end, we have looked into both models and tested a third proposed model that is a combination of the two models.

We examined these models by creating excess return in companies listed in Tehran Stock Exchange to determine the possibility of forecasting and timing of market. Similar to previous studies, the following hypotheses were formed and tested:

H 1: Market-timing strategy based on E/P model has a significant relationship with excess return.

H 2: Market-timing strategy based on predictive model of bear market situation (MS) has a significant relationship with excess return.

H 3: The combined market timing strategies (E/P and MS models) has a significant relationship with excess return.

This paper proceeds as follows: In the next section, we describe some related studies on market timing strategies. This section shows the role of market timer in various financial markets. Then, the data pertaining to results of market timing strategies, PE Model and MS Model and stock excess returns are gathered and presented. Then, the basic grounds of the examinations and inferences are presented. Consequently, the results are explicated and the conclusions are drawn.

Literature review

Mitchell and Burns (1938) were among the first researchers who used leading economic indicators for market timing. Several years later, researchers of financial markets investigated the timing research strategies. With parametric and nonparametric tests, Henriksson and Merton (1981) assessed the ability of managers to measure market timing.

They compared predicted returns with reality but failed to show evidence that predicting models have the necessary power to predict the time. They did not confirm the hypothesis that the managers have the ability of timing market. Market timing has multi-functions in financial markets. Another application of the theory of market timing is that managers can schedule issuing share based on market conditions.

When company's stock is reported more than real, they make decisions to finance through issuing equity. The most useful criteria to express the value of the stock market is the weighted average ratio of market value to book value for external financing. In the weighted average, weights equal to the sum of external financing through equity and debt (Baker and Wurgler, 2002).

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According to this theory, companies try to release their stocks when the ratio of market value to book value of the companies in the market is determined more than the reality (Titman and Wessels, 1998). From the traditional view, market timing is an investment strategy that switches between maintaining ordinary shares or cash with the aim of to better performance in the capital market. In fact, the goal is that in good periods, it is fully invested on stocks and in bad times on other assets such as cash.

However, in fully efficient markets attempt to make extraordinary gains through securities selection or market timing will not be too dramatic (Lam and Li, 2003). Sharp (1975) examined likely gains regarding market timing and concluded that market timing in the long term creates only 4% more efficiency. Gao (2015) showed that for understanding the best market-timing strategy, its time and distribution should be done according to investment policy and the balance of opportunities and market failure. In a study on market timing to exploit arbitrage opportunities, Shizas and Tomakos (2015) showed that rotation strategy has statistically had high efficiency.

Kasperzik (2014) showed that successful managers choose and purchase good stocks during the boom and during the recession, they perform market timing. Resnick and Shoesmith (2002) show that the switching strategy out of stock into T-bill before a bear (bull) realizes 2 percent excess from a buy and hold strategy in S&P 500.Kim and Sun (2013) showed in Korean fund market, managers active in stock fund on average have positive market timing ability in predicting long-term horizons.

These results suggest that the Korean stock market managers use timing to improve their performance in active managing of equity funds.

In a study entitled testing the effect of market timing theory on capital structure, Estiavan (2012) showed that the ratio of book value to market value on the stock market has a negative impact on leverage. In a study "Entitled evaluation of financing decisions, market timing and actual investment, Fama and French model," Butler et al. (2011) showed that there is a negative relationship between external financing and stock returns. Brooks Katsaris (2004) used switch off between stasis and the bubble bursts and showed that the three-regime model has a significant power to explain S & P500 index returns. In a study entitled, "Comparing and evaluating market timing strategies, "Brooks et al. (2005) used speculative bubble model, the difference between E-P and bond yields, and prediction model based on the difference between long-term and short-term bear markets. Their results showed that all methods except one have superiority to the buy-and-hold method. Shen (2002) based on E/P ratio in S & P500 index has examined the data from 1970 to 2000. His study shows that strategic orientation has changed regarding efficiency and market volatility.

The strategy based on E/P is more used. In studies of other researchers (Campbell and Shiller (1998), Lander, Orphanides, and Douvogiannis (1997) and Pesaran and Timmermann (1995)), the relationship between P/E and securities return was approved, and their evidence showed that there is a negative relationship between them. The evidence shows that, by changing interest rates, the entry and exit to the stock market could be timed.

Research Methodology

Data

The study population consisted of all companies listed on the Tehran Stock Exchange in the period from Saturday, March 21, 2009 to Saturday, March 22, 2014, and 50 companies were selected.

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Excess return information of an asset or asset risk is equal to the return on assets and return minus the risk-free asset over a period of study in that period. The difference between the market rate of return and excess return rate of risk-free rate of return is calculated. Risk-free rate of return based on bank deposit interest rate is calculated according to the Central Bank information. PE ratio is measured by the earnings per share (EPS) for the price of stock.

Models specification

First, using Im, K. S., Pesaran, M. H., & Shin, Y. (2003), we tested the stationerity of the variables. Then normal distribution of variables, heterogeneity of variances, the significance of the entire model, and significance of each coefficients of the final model are found. Jacque, C. M., & Bera, A. K. (1980) statistic is used to study the normal distribution of the dependent variable. White test was used to assess heterogeneity of variance. The method of ordinary least squares (OLS) models is used to test the hypotheses.

Model 1: Market-timing model with PE ratio

This model is based on the relationship between the PE and excess return and defined as follows:

$$\mathrm{ER_{it}} = \beta_0 + \beta_1 \mathrm{EP_{it}} + \mathrm{U_t} \quad (1)$$

In this model:

$\mathrm{ER_{it}} = \text{Excess Return}$

$\mathrm{EP_{it}} = \text{Price to Earnings ratio or } \frac{\mathrm{E}}{\mathrm{P}}$

$\mathrm{U_t} = \text{erorr}$

If it can be claimed that $\frac{E}{P}$ and excess return are significantly associated when the regression coefficient β_1 is zero.

Model 2: The model predicts the market situation (MS)

This model shows the relationship between excess return and MS.

$$\mathrm{ER}_{it} = \beta_0 + +\beta_1 \mathrm{MS}_{it} + U_t \quad (2)$$

Where:

$\mathrm{ER_{it}} = \text{Excess Return}$

$\mathrm{MS_{it}} = \text{The Model Predicts the Market Situation}$

$\mathrm{U_t} = \text{erorr}$

This model is measured like Resnick and Shoesmith (2002).

$$\Pr(R_{t+1} = 1) = F(a_0 + a_1\, SPREAD) + U_t$$

Pr shows the likelihood of growth and decline of the market. In the event that for a period of at least six months market is decreasing, or negative average return in six months, $R_{t+1} = 1$ and zero otherwise. As the variable R_t gets values of zero and one, for the prediction of bear market, probit regression method is used and its computational formula is as follows. Spread is the difference between interest rate and stock (index of Tehran Stock Exchange in the month t. This model says if in the period of six months market trend were bearish (decline) and the stock dropped more than 50 percent, sales strategy must be done.

Model 3: The relationship between excess return and combined PE and MS model

In order to test the research hypotheses, the following regression model is used. This model shows the relationship between excess return and PE and MS model.

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$$\mathrm{ER}_{it} = \beta_0 + \beta_1 \mathrm{EP}_{it} + \beta_2 \mathrm{MS}_{it} + U_t \quad (3)$$

Where:

$\mathrm{ER_{it}}$ = Excess Return
$\mathrm{EP_{it}}$ = Price to Earnings ratio
$\mathrm{MS_{it}}$ = The Model Predicts the Market Situation
$\mathrm{U_t}$ = erorr

Results and Discussion

Data description

Central and distributive indices variables are shown in Table 1. Average excess return value is -0.480, E/P ratio is 0.11, and predicting market situation is 0.30. Standard deviation of excess returns, E/P ratio, and predicting market situation are 0.13, 0.22, and 0.05. From among the variables, predicting market situation has the lowest and E/P has the highest dispersion.

variable	mean	median	SD	Skewness	Elongation
ER	-0.054	-0.030	0.130	-6.900	55.800
EP Model	0.110	0.150	0.220	-3.700	19.100
MS Model	0.300	0.290	0.050	0.680	1.000

Table 1 Descriptive statistics

Stationerity of the variables

Calculations show that the values of Im, Pesaran, and Shin statistic(2004) is -7.9 and significance level is 0.000. Given that significance level is less than 0.05, it is concluded that with 95 percent of confidence, variables have been reliable during the study period and the possibility of creation of spurious regression is rejected. T test values for each variable are shown in Table 2 separately. Given that the level of significance is less than 0.05 for all variables, with 95% confidence all the variables are significant.

Variable	t-statistic	p-value
ER	-5.068	0
EP Model	-3.603	0.006
MS Model	-5.93	0

Table 2 Descriptive statistics

Jarque–Bera test results for tests for normal distribution of the dependent variable (excess return) are presented in Table 3. Since the significance level for this variable is more than 0.05, the hypothesis of normality of the dependent variable is confirmed. One of the important issues that we deal with in data analysis is the issue of heteroscedasticity of variance.

Heteroscedasticity of variance means that in regression model estimation values of error terms have unequal variances. The regression model would be appropriate if the variances of the error are the same. Thus, to investigate this, white test will be used. If significance level of white test exceeds 0.05, with 95% confidence the error variances are identical and ordinary least squares regression can be used.

variable	statistics	p-value
ER	243.9	0.056

Table 3 Jarque–Bera test results

Heteroscedasticity of variance for the research models are provided in Table 4. It is seen that the significance of this statistic of this test is more than 0.05, so the assumption of homogeneity of variance of error is accepted.

Hypothesis	Statistics	White statistics	p-value
H1	F-Statistics	0.041	0.83
	Obs*R-square	0.042	0.83
H2	F-Statistics	0.029	0.86
	Obs*R-square	0.03	0.86
H3	F-Statistics	0.037	0.84
	Obs*R-square	0.038	0.84

Table 4 White statistic results

The first hypothesis test results are presented in Table 5 panel A. It can be argued that $\frac{E}{P}$ and excess return are significantly associated if regression coefficient of β_1 is zero. Fisher test of the significance of the entire regression is 0.004 suggesting that with 95 percent of confidence regression model is significant. Durbin-Watson statistic is 1.998 indicating a lack of correlation between variables. Regression coefficient of β1 is 0.109 and its significance level is 0.04 representing the significance of the relationship between these two variables. Due to positive regression coefficient and a significance level, with 95% level of confidence the first hypothesis is confirmed.

Panel. PE Model				
variable	coefficient	standard deviation	t-statistic	p-value
β_0	-0.067	0.01	-6.747	0
β_1	0.109	0.038	2.874	0.004
β_2	-	-	-	-
Durbin–Watson	1.998			
Coefficient of determination	0.189			
F- statistic	8.258			
p-value	0.004			
panel B. MS Model				
β_0	0.046	0.046	.01.007	0.315
β_1	-0.335	0.149	-2.25	0.025
β_2	-	-	-	-
Durbin–Watson	2.094			
Coefficient of determination	0.149			
F- statistic	5.061			
p-value	0.025			
panel C.MIXED Model				
β_0	-0.016	0.055	-0.294	0.769
β_1	0.088	0.044	1.998	0.047
β_2	-0.16	0.172	-0.932	0.035
Durbin–Watson	2.027			
Coefficient of determination	0.199			
F- statistic	4.561			
p-value	0.011			

Table 5

variables	ER	
	correlation coefficient	P-Value
EP model	0.374	0
MS model	0.142-	0.033

Table 6 The results of the correlation coefficient among EP - MS models and excess return

Moreover, the correlation coefficient between variables E/P and excess return at level of significance 0.000 is 0.374 showing that with increasing E/P, excess return increases and vice versa. The results of this hypothesis are consistent with the results of Poe Shen (2002).
The second hypothesis test results are presented in Table 5 panel B. Fisher test showing the significance of the entire regression is 0.025 suggesting that with 95 percent of confidence regression model is significant. Durbin-Watson statistic is 2.094 indicating a lack of correlation between variables. Regression coefficient between predicting bear market situation and excess return is -0.335 and t-test significance level is less than 0.05 representing the significant relationship between these two variables. Due to the negative regression coefficient and a significance level, with 95% level of confidence the second hypothesis is confirmed. These findings indicate that there is a significant negative relationship between forecasting bear market and excess return.

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The coefficient of determination of this model is 0.149 showing the fact that 14.9 percent of the changes in excess return as the dependent variable can be explained using the independent variable forecasting bear market.

Due to the negative correlation between predicting bear market conditions and excess return, with 95% confidence, it could be argued that there is a significant negative relationship between forecasting bear market and excess return. The results of the research are consistent results by Butler et al. (2011) and Resnick, B. G., & Shoesmith, G. L. (2002) .

The third hypothesis test results are presented in Table 5 panel C. The third hypothesis includes combined market timing strategy based on two variables E/P and forecasting bear market. Durbin-Watson statistic is 2.027 that indicate a lack of correlation between variables. Regression coefficient between E/P and excess return is 0.088, and regression coefficient between forecasting bear market situation and excess return is -0.160 and for both, the significance level of t test is less than 0.05. Fisher test significance level is 0.011 and with 95% confidence regression model is significant. Therefore, due to significance levels of regression coefficients and Fisher test, hypothesis three is confirmed with 95 percent showing that combined strategy of market timing has a significant relationship with the excess return.

In table 6, the coefficient of determination is 0.199 which signifies that the 19.9% of the changes of the dependent variable excess return can be explained using independent variable forecasting bear market. Given that the index of predicting bear market is more than E/P, it can be concluded that for the enterprises examined in this research, forecasting bear market affects excess return more than E/P.

Conclusion

The results show that timing strategies can generate excess returns. The results indicate that both EP and MS models can explain negative excess returns, but MS sensitivity factor is larger than the EP and has more effect on negative excess returns. This study has been able to develop the timing aspect. First, there is a positive correlation between EP and excess return. Second, there is a significant negative correlation between excess return and MS model. Third, the combined model can explain negative excess returns and sensitivity of MS model is more than EP. We suggest investors do market timing based on our hybrid model and identify the opportunities to leave the market and stop negative excess returns.

Reference

Aksu. H (2003). "The effect of size, book- to-market ratio and prior distress information on the market reaction to troubled debt restructuring announcements", Graduate School of Business, Koc University.

Baker, M. and Wurgler, J. (2002).Market Timing and Capital Structure, Journal of Finance, Vol. 57, pp. 1-32.

Brooks, Ch., Katsaris, A., Persand, G (2005). A Comparison and Evaluation of Market Timing Strategies, Timing is Everything.

Butler, A. Cornaggia,J. Grullon, G. and Weston, J (2011),"Corporate financing, managerial market timing ,and real investment", Journal of Financial Economics, pp. 666.

Gao, J., Li, D., Cui, X., & Wang, S. (2015). Time cardinality constrained mean–variance dynamic portfolio selection and market timing: A stochastic control approach. Automatica, 54, 91-99.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682

Im, K. S., Pesaran, M. H., & Shin, Y. (2003). Testing for unit roots in heterogeneous panels. Journal of econometrics, 115(1), 53-74.

Jarque, C. M., & Bera, A. K. (1980). Efficient tests for normality, homoscedasticity and serial independence of regression residuals. Economics letters, 6(3), 255-25

KACPERCZYK, M,. NIEUWERBURGH, S,. VELDKAMP, L (2014). Time-Varying Fund Manager Skill, THE JOURNAL OF FINANCE. Kim SungSin, Sohn Pando, 2013, Market Timing Performance in the Korean Fund Market: Evidence from Portfolio Holdings.

Resnick, B. G., & Shoesmith, G. L. (2002). Using the yield curve to time the stock market. Financial Analysts Journal, 58(3), 82-90.

Titman S. and Wessels R. (1988). Determination of Capital Structure Choice, Journal of Finance, March. pp. 1-20.

ISSN-Print: 2007-1582- ISSN-On line: 2007-3682