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PREDICTING STOCK RETURNS USING FUNDAMENTAL INFORMATION AND MULTIVARIATE STATISTICAL MODELLING: AN EMPIRICAL STUDY ON ISTANBUL STOCK EXCHANGE

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Abstract:

This paper performs a financial analysis that combines a set of fundamental information into a summary measure which predicts the return of stocks by using logit analysis. The findings suggest that the predictive power of financial ratios is very high and more important than the fundamental information, but the variables (ratios) of logit models are not stable from one period to another. Also it is found that there is a statistically significant correlation between the observed and predicted ranking. We conclude that developing a more general model for prediction might solve the problem about unstable variables, but the general model has very limited ability of ranking the stocks according to their performance.

Keywords: Financial statement analysis, logit model, prediction of stock performance.
Anahtar Sözcükler: Mali tablolar analizi, logit modeli, hisse senedi performans tahmini.

Özet:

Temel Analiz Bilgilerinden Yararlanarak Hisse Senedi Getirilerinin Tahmin Edilmesi: İMKB Üzerine Ampirik BirÇalışma

Bu çalışmada logit yöntemine dayanan bir finansal analizi yapılmış firmalar ile ilgili temel bilgiler özet bir gösterge haline getirilerek hisse senetlerinin getirileri tahmin edilmeye çalışılmıştır. Elde edilen sonuçlar, finansal oranların öngörü güçlerinin oldukça yüksek ve diğer temel bilgilerden daha önemli olduğunu, ancak logit modelin değişkenlerinin (oranların) dönemler boyunca değişkenlik gösterdiğini açıklamıştır. Bu çalışmada ayrıca, gözlenen ve öngörülen başarılı firmaların sıralamaları arasında istatistiksel olarak önemli düzeyde korelasyon olduğu belirlenmiştir. Sonuç olarak, daha genel bir model kurarak oranlarda dönemler boyunca izlenen değişkenliği ortadan kaldırmak mümkün olsa da böyle modellerin, hisse senetlerini performanslarına göre sıralamada fazla başarılı olamadıkları görülmüştür.

I. INTRODUCTION

While many factors are considered in making projections of the key variables that determine security prices, the starting point is typically an analysis of financial statements. Financial analysis has been used to convey useful information about the overall performance of the firm and in the detection and prediction of financial performance. Two main uses of financial ratios identified are to forecast future financial variables and for predictive purposes such as credit rating and analysis, risk assessment, equity analysis, and corporate failure. Although the financial analysts seem to rank the shares traded at the stock exchanges by considering various indicators, the univariate characteristic of this approach -the use of only one independent variable- produces a restrictive effect on its serviceability. The univariate approach yields contradictory results and it does not have the capacity to evaluate all the features of a company and the relations between these features. The capacity of univariate models to predict and rank the financial performances is lower than those of the multivariate models that makes the use of multivariate models more attractive for this purpose. Using the multivariate approach that considers several variables simultaneously increases the prediction ability of financial statement analysis.

Numerous studies have examined the predictive power of fundamental information. Majority of studies include the equity markets of USA and other developed markets (Ou and Penman, 1989a), Greig (1992), Stober (1992), Setiono and Strong (1998) There are fewer studies on predicting stock returns using multivariate modelling in emerging stock markets. Aktaş and Karan

(1999) developed a logit model in order to predict the performance of İstanbul Stock Market (ISE) companies by using fundamental information. This study is the advanced version of the previous one aiming at developing multivariate models to classify the shares traded at the İstanbul Stock Market (ISE) according to their annual returns. We used two approaches to improve a model for prediction. The first approach for developing the model is the logit technique, which is an earnings predictor (Pr) that is associated with future returns. The use of this model that is successful in such classifications would make it possible for the shares traded at the ISE to be ranked within objective criteria. This study extends the search for predictive power of logit model by using spearman rank correlation in order to find out to which extent the observed and predicted ranking is associated.

The approach taken in this work assumes that market price serves as a benchmark against which to evaluate the information in accounting measures. We hypothesise that, investors to assess the persistence of financial ratios use the fundamental signals identified in this study.

II. PREVIOUS STUDIES

Previous studies on accounting research have been focused on to discover value-relevant accounting numbers in order to enhance financial statement analysis. In most of the studies market price is accepted as a basic factor to determine firms' values, since a statistically significant relationship is found between accounting attributes and stock prices of firms. The research of Ou and Penman (1989a) suggests that public available financial statement numbers can predict next year's abnormal stock returns in US markets. Their prediction model is developed using logit where the independent variables are basic financial ratios. Ou and Penman have derived a summary measure, labelled Pr, from financial statements that predicts future stock returns. Their strategy involves taking long position in companies with a high forecast probability of future earnings increase and short positions in companies with a low probability of future earnings increase. The strategy of Ou and Penman earned cumulative market adjusted returns of 14,53 percent over a two year holding period and 20,83 percent over three years. Size-adjusted, the returns are 9,08 percent and 11,85 percent.

Greig (1992), has researched if differences in firm size might explain the Pr effect of Ou and Penman. He used individual firm-year observations, coming from regression subsequent buy and hold twelve months mean adjusted returns against current and lagged values of Pr and current equity market value. Size

enters the regression with a significant, negative coefficient, and jointly turns significant coefficients on Pr into insignificant. Stober (1992), says that the Ou and Penman Pr strategy continues to earn abnormal returns up to six years following the portfolio formation date and argues that this persistence suggests an omitted risk factor. Ball (1992), reviewing the Ou and Penman effect. reaches the same conclusion.

Holthausen and Larcker (1992) estimate stock return directly, instead of predicting via earnings. Their trading strategy is to buy stocks predicted to have positive abnormal returns, to sell stocks predicted to have negative abnormal returns. and hold these positions over a twelve months period. The profits of trading strategy are 7,3 percent for market adjusted returns and 7,9 percent for size adjusted returns.

Bernard and Thomas (1997) examine six accounting based stock price anomalies, including the Ou/Penman and Holthausen/Larcker trading strategies. Using different periods, they confirm that both strategies earn positive market adjusted return. with the Ou/Penman strategy just beating the Holthausen/ Larcker strategy. To test whether these results reflect mispricing or the effect of omitted risk factor, they examine abnormal returns to the trading strategies around subsequent earnings announcements, and the consistency of positive abnormal returns for different subperiods. On both counts they conclude that the apparent profits to the Ou/Penman and Holthausen/Larcker trading strategies more likely reflect compensation for risk.

Setiono and Strong (1998), evaluate the hypothesis that financial statement information can be effectively used in predicting abnormal stock returns in the UK. Pr trading and Prob trading approaches were utilized to test the hypothesis. Results revealed that investors may use summary measure of financial statement information to earn abnormal returns but they may not be useful in predicting future stock returns.

While there have been extensive studies predicting stock returns using fundamental information and multivariate models in many parts of the world, there are very limited number of similar research studies in Turkey. Aktaş and Karan (1999) have analysed the financial content of financial statements of firms that are registered on the Istanbul Stock Exchange (ISE) whose equity are actively traded. They have developed a multivariate model to predict the stocks that will have best and poorest yearly performance 12, 9, 6 and 3 months prior to the end of the year. The results have indicated that it is possible to develop a model with significant predictive and discriminating power. This study also

purports to present some empirical results of a study of financial ratios and qualitative variables as predictors of yearly performance of common stocks.

Karan and Karacaer (2000) research the relationship between profits of main sections of income statement and market value of stocks. The findings suggested that both profits and losses effect market values of stocks in opposite direction with different marginal effect. Another model that is developed by using the differences of main sections of income statement suggests that cost of goods sold, extraordinary expenses and incomes have no effect on market values of stock. On the other hand operations income and taxes have positive and financial income has negative permanent effect on market values of common stocks. In general the results of this study indicate that investors split accounting earnings into components and evaluate the value-relevance of income statement items when creating cash flow expectations for firms.

Even though the subject of this study has not been a research topic attracting the attention of the Turkish scholars, there are a great deal of studies evaluating corporate risk in Turkey by using the same methodology as the one used in this research. The first study about company risk was conducted in 1981 .(Göktan, 1981), using multiple discriminant analysis based on an unmatched sampling method. Aiming at constituting the best model for Turkey through this method, 19 financial ratios based on 14 unsuccessful and 35 successful enterprises' balance of sheets during 1976-1980 have been adopted. The accuracy of predictions are between 85.29%-92.9%.

The second study for financial failure has been conducted by using Multiple Regression Models (Ağaoğlu, 1989). In this research which includes only banking sector, 36 successful and 15 unsuccessful banks have been examined. Classification of successful and unsuccessful enterprises has been obtained to be 94.45% and 93.33%, respectively

Following these studies, a research (Aktaş, 1993a) sampling 35 successful and 25 unsuccessful enterprises was conducted in 1991. This research utilized the publication entitled a "Balance Sheets of 300 Joint-Stock Companies in Recent 5 Years Subject to Capital Market Regulation" published by Capital Market Board. In this research, 23 financial ratios have been used as independent variables for financial failure. Different from the previous studies, Linear and Quadratic Discriminant Analyses, 0-1 Linear Multiple Regression Model, Logit and Probit have been used for developing model. In this study where models have been developed for predicting financial failure extending previous 1, 2 and 3 years, logit has been chosen as the most successful

statistical technique. In this research, probit has demonstrated as much successful result as the logit model, and the other three techniques have exhibited a similar performance close to these two models. The accuracy of the models predicting the financial failure 2 and 3 years earlier have been recorded to be 87.9% and 90.7% respectively. In addition, validity and consistency analysis of financial ratios has been carried out and findings supporting the applicability of models have been obtained. Aktaş (1993a) and Ganamukkala and Karan (1996) has reported related research.

III. DATA

The data of this study has been obtained from Finnet Data Company. The sample period covers all listed stocks of Istanbul Stock Exchange for the period 1995-1998. The data from financial statements used in the analysis consist of the basic financial ratios for the years of 1995-1997 and the first three-quarter of 1998 (3, 6 and 9 months). About 41 different financial ratios has been obtained from financial tables of companies. Ratios used in this study are basic types and based on liquidity, turnover, debt management, profitability and market performance.

The annual returns of the ISE companies for the years of 1995-1998 also calculated for the purpose of classification. The annual returns of stocks are defined as;

$$R_a = [(P_t - P_{t-1}) / P_{t-1}]-1$$

Where P_t *is the stock price for period t,* P_{t-1} *is the stock price for period t-1 and* R_a *is the return on the stock for period t.*

In addition of using financial ratios (quantitative data), some fundamental information (qualitative data) is used which involves public released news about companies in the sample. Qualitative variables include;

- Dividend announcements, (Dividend)
- News about primary issues of common stocks and stock splits decisions (Capital)
- News about current level of production of the companies (Production)
- News about investment decision of the companies (Investment)

Since previous research on market efficiency suggest that news about dividend, capital production and investment have some influence on market values of common stocks, these data are also included in this study.

IV. METHODOLOGY

The previous study by Aktaş ve Karan (1999) suggested that the stocks that have the highest and lowest returns could be predicted by using the previous and a certain single period's (12, 9, 6 or 3 month before) financial statements for ISE companies. In this study, the former study is partially revised and then a more general logit model is developed in order to predict the best and the poor performed stocks by using the previous and multi period's (12, 9, 6 and 3 months together) financial statements. Another statistical technique used in this study is spearman rank correlation which is a non-parametric analysis trying to find out the correlation between two ranking groups. It is applied to see the ranking correlation of the logit model and actual data sorting. Such a comparison is necessary to find out to which extent the model can be beneficial to the portfolio selection. If there is a statistically significant correlation between the observed and predicted ranking it means that the developed models are of economic significance.

In this study, the annual returns of ISE companies is taken as the basis for the ranking criterion, and an attempt is made to develop a model that distinguishes between the 30 shares that have the highest annual returns and 30 shares that have the lowest annual returns.

In the second stage, independent variables are selected in order to be used in the model development and the values of these variables have been calculated one at a time for each company. It has been decided to make use of financial ratios rather than mere accounting data to see the prediction power of quantitative financial factors. For this purpose 41 financial ratios were included in the analyses. The reason for the choice of financial ratios is to overcome the effects of inflation on a large scale and have control over important variables, such as the size of the company, difference in sector and difference in risk. It is known that it doesn't suffice to predict annual return using not only financial ratios, but also qualitative variables, such as company news, should be added to the model. So, four qualitative variables, such as investment, dividend, capital and production news about companies were added to analyses. As a result, 45 independent variables were utilized to develop models discriminating the successful firms from the unsuccessful ones.

At the end of the first two stages, the values of the dependent and independent variables were obtained, and in the third stage, the data table ready for analysis was checked for the last time and the ultimate form of the table was made. In this stage, decision was made on whether there was any outlier between the measured values.

Fourthly, models have been obtained through the use of logit. It is observed that logit has been more preferable model used for the financial failure forecast studies recently. The fundamental reason for this is that it has theoretical advantages as compared to Multiple Discriminant Analysis and Multiple Regression Models. Logit is specifically developed to deal with the binary-valued, dependent variable case. While discriminant analysis assumes two completely different populations, logit assumes a discrete event takes place after the combined effect of certain economic variables reaches some threshold level (Feder, Gershon and Just, 1977: 26). After calculating parameters of linear Multiple Discriminant Analysis and Multiple Regression Model that are linear probability functions, it is possible that estimated value of a dependent variable may go beyond the limit of 0-1 probability. This problem is settled only by using a cumulative probability (density) function. The above mentioned problem is not valid for logit model since it is based on a cumulative probability function (Maddala, 1988: 16-32).

The success of the Multiple Regression Model, Multiple Discriminant Analysis, Logit and Probit all of which are the multivariate statistical techniques used in ranking depends on the distinction between the difference in two or more compared groups. The job of the analyst gets easy when the difference is like the oppositeness of black and white. It gets difficult when it has gray tones (see Figure 1). For example, the difference between the stocks above and the stocks below the ISE index annual return is more abstract than the difference between the companies that went bankrupt and that didn't go bankrupt, and the gray area in this definition is larger than that of the bankruptcy. Therefore, the gray area varies according to the selected definition, and the success of the model increases or decreases depending on the size of the gray area. While the size of the gray area is a significant factor in the selection of the definition, there is another factor, namely the appropriateness of the definition for the purpose. For example, when the financial analysts develop models to predict the performance of shares, they are expected to base the definition of financial failure on a definition that is also used here, such as returns below the average.

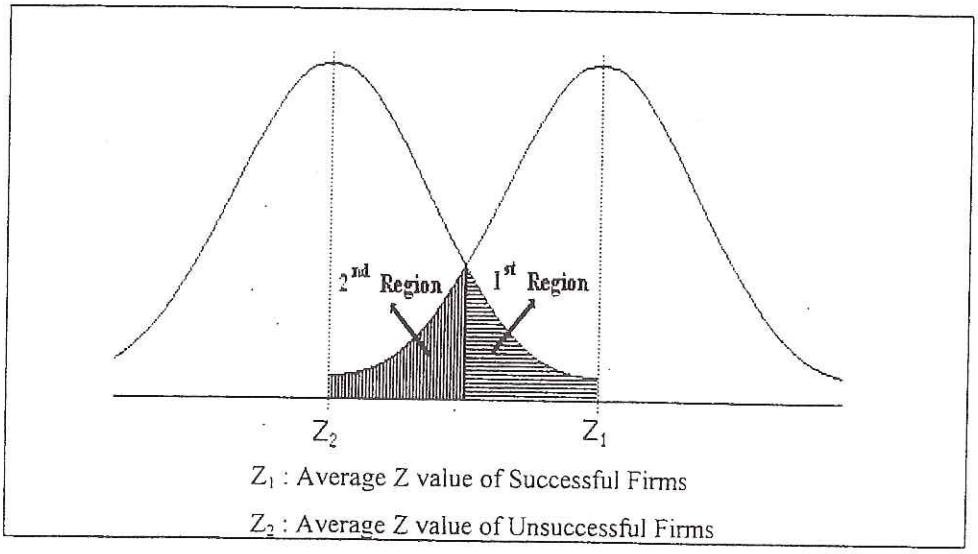

Figure 1: Gray Area and Discrimination Power

Logit model is more practical in theory than Multiple Regression Model and Multiple Discriminant Analysis since the assumptions on which it is based are more realistic. In other words, its underlying assumptions are more suitable for the studies of classifying companies. Thus, both of the models can not bring normal distribution constraints regarding the distribution of financial ratios that are used as independent variables. The financial ratios used as independent variables in the studies of company classification are uncertain for providing this vital assumption for Multiple Discriminant Analysis and Multiple Regression Models. In most studies, the financial ratios have indicated positively skewed distribution (Aktaş, 1991). In addition, logit model makes it possible to calculate the last probability of financial performance without knowing priori probabilities of financial performance.

Generally logit has some superiority over to Multiple Discriminant Analysis. The logit models don't entail the equality assumption of deviation matrixes and abolishes the deficiency of constant variance problem arising from the dependent variable in Multiple Discriminant Analysis which does not take any value except 1 and 0 (Ohlson, 1980: 110-113; Mensah, 1984: 380-395; Noreen, 1988: 121).

The crucial limitation of the subject model is that it is sensitive to the number of observations. By virtue of finding data in financial performance

prediction, inadequacy in samples gives rise to problem in assumptions tests regarding logit models (Davidson and Mackinnon, 1984: 241-262).

Some researches are made some ranking based on the scores obtained through the attachment of subjective weight to several variables. This approach can be criticised because of the subjectivity it displayed in the handling of the selection of variables, the attachment of weight to the variables and the ranking according to the scores obtained. Hence, this study pursues a systematic approach in which several criteria are made uses of, and aims at ranking the shares traded at the ISE within objective and varied criteria.

V. PREDICTION POWER OF LOGIT ANALYSIS

Like the previous study, two different analyses –the one covering only quantitative variables and the other one including both quantitative and qualitative variables mentioned before– were performed in this study. But only 6 different periods are included as shown in Table 2. Totally 12 models have been developed to test the significance of financial statements on discrimination of the 30 shares that have the highest annual returns from 30 shares that have the lowest annual returns. In the first three periods of this table, the dependent variable, average return which can take only 0 or 1 with respect to overall ranking of the stocks traded in ISE, is one year ahead of financial statements. For example, the financial statements, which are used to forecast 1996 stock performance, belong to the year of 1995, as is the case in the first raw of Table 2. On the other hand, for the quarterly periods of this table, the dependent variable is 9, 6 or 3 months ahead of the financial statements respectively. For instance, in row 4, whereas the financial statements belong to the first quarter of 1998, the value of the dependent variable is determined for the end of 1998. The periods examined were as follows:

Table 1: Examination Periods

Column No	YEAR	PUBLICATION OR COVERAGE TIME (MONTH)
1	95	12
2	96	12
3	97	12
4	98	9
5	98	6
6	98	3

As seen, while three different years were investigated to draw conclusions about the usefulness of annual financial statements in constructing efficient portfolios, also to test the sufficiency of quarterly financial statements in portfolio selection, three quarterly periods of 1998 were taken under examination. After the test of the model with quantitative variables, aforementioned qualified variables were added to analyses and the same methodology was replicated with this new data set.

As a result, the accuracy of the models is not changing in terms of the year and period. There is not any significant improvement in the forecasting capacity of the financial statements along the covered time horizon. The accuracy of the models are not changing in terms of the type of firms, that is, there is not any significant discrimination bias against two groups. Models are showing the similar performance for both of the groups. Also, no significant improvement was observed in performance of the models when aforementioned qualitative variables were added to the analyses. Only, a small improvement was obtained for the periods of 1996-12 and 1998-3. Again, average accuracy rate is satisfactory to take into account financial statements in making investment decisions (Table 2).

Table 2: The Classification Performance of Variables

Model Period	Quantitative Financial Statement Variables			Qualitative and Qualitative Financial Statement Variables		
Year-Month	Classification Power for UF(%)	Classification Power for SF (%)	General Classification Power (%)	Classification Power for UF(%)	Classification Power for SF (%)	General Classification Power (%)
95-12	93,33	83.33	88,33	93.33	83.33	88,33
96-12	90	93,33	91,67	90	93,33	91,67
97-12	89,29	89,66	89,47	89,29	89,66	89,47
98-3	96,55	89,66	93,10	96,55	89,66	93,10
98-6	93,33	96,55	94,92	96,67	96,55	96,61
98-9	93,33	86,21	89,83	93,33	86,21	89,83

Average accuracy rate is satisfactory to take into account financial indicators in making investment decisions. Since there is a high degree of multicollinearity among the independent variables, the models were found to have a limited number of independent variables. So, it was possible to decrease the dimension of the model and to simplify its usage.

The important variables in the models in terms of period and year are outlined in Table 3. This table is giving us a picture about the importance of variables in terms of both period and year under investigation. The conclusion drawn from this table is the model with both quantitative and qualitative

variables is very similar to the model with quantative variables. The differences are of minor importance. So, it can be stated that the inclusion of qualitative data to the analysis is not bringing any significant improvement to the prediction power of the existing models.

Table 3: The Variables of Prediction Model

Model Period Year-Month	Model with Only Quantitative Variables	Model with Quantitative and Qualitative Variables
1995-12	• Asset Growth Rate. • Equity Profitability Growth Rate • Net Profit Margin. • Non Operation Income Growth Rate. • Non Operational Income / Operational Income. • Operational Profit Margin.	• Asset Growth Rate. • Equity Profitability Growth Rate • Non Operation Income Growth Rate. • Non Operational Income / Operational Income, Net Profit Margin. • Operational Profit Margin.
1996-12	• Current Ratio • Growth Rate. • (Total Sales – Domestic Sales) / Total Sales	• Current Ratio Growth Rate. • (Total Sales – Domestic Sales) / Total Sales
1997-12	• Asset Growth Rate. • Debt- Equity Ratio. • Interest Coverage Ratio. • Market Value – Book Value	• Asset Growth Rate. • Debt- Equity Ratio. • Interest Coverage Ratio. • Market Value – Book Value
1998-3	• Equity Profitability Ratio • Interest Coverage Ratio, Market • Net Working Capital – Net Sales Ratio. • Price – Earning Ratio. • Value – Book Value.	• Equity Profitability Ratio • Interest Coverage Ratio. • Market Value – Book Value. • Net Working Capital – Net Sales Ratio. • Price – Earning Ratio.
1998-6	• Interest Coverage Ratio. • Market Value – Book Value, . • Net Working Capital – Net Sales Ratio • Non Operational Income Growth Rate.	• Dividend • Interest Coverage Ratio. • Market Value – Book Value, . • Net Working Capital – Net Sales Ratio. • Non Operational Income Growth Rate
1998-9	• Interest Coverage Ratio. • Market Value – Book Value	• Dividend • Interest Coverage Ratio. • Market Value – Book Value.

As a result, general correct prediction percentage of the models does not differ a lot, whether the examined period is 3, 6, 9, or 12 months. This shows that the financial panorama of the firms does not go through much change throughout the year.

The fact that models involving small number of financial ratios are obtained for each examined period, shows both the serviceability of this type of analyses and the high correlation between financial ratios.

VI. RESULTS OF RANK CORRELATION ANALYSIS

In the final stage of the study, the following spearman rank correlations were performed to find out to which extent the observed and predicted ranking are associated. If there is a statistically significant correlation between these two groups of items, it will be possible to say that the methodology used in this study can be beneficial for selecting a portfolio better than a random one.

Table 4 : The Correlation between Observed and Predicted Ranking for Sample Firms

Ranking Scores of Models Period (Year-Month)	Observed Ranking Scores for the Date		
	31.12. 1996	31.12.1997	31.12.1998
95-12	0.6230****	0.1540	-0.0050
96-12	-	0.5281****	-0.0030
97-12	-	-	0.7742****
98-3	-	-	0.7460****
98-9	-	-	0.8003****
98-12	-	-	0.4591****

* Significant at the level of .1 *** Significant at the level of .01
** Significant at the level of .05 **** Significant at the level of .001

As it is seen from Table 4, the correlations between the observed and predicted ranking values of sample firms, which includes 60 firms made up of the 30 firms that have the highest annual returns and 30 firms that have the lowest annual returns in overall ranking of ISE firms, are sufficiently high to say that both financial statements have statistically significant explanation power in predicting the next year returns of ISE stocks. Also, the methodology used here to find a ranking tool can be useful in practice for the interested people. However, this table is also demonstrating that the prediction power of financial statements detoriate for time horizons longer than one year. The main

drawback of the analyses included in the above table is the usage of the sample firms for the correlation analyses. Because of this, the correlations are expected to be higher than the real picture. Therefore, the same kind of analyses should be carried out for all ISE shares to test the hypotheses put above. Table 6 is prepared with this aim.

Table 5: The Correlation between Observed and Predicted Rankings for All Shares in ISE

Ranking Scores of Models Period (Year-Month)	Observed Ranking Scores for the Date		
	31.12. 1996	**31.12.1997**	**31.12.1998**
95-12	0.4605****	0.1838**	-0.0910
96-12	-	0.1902**	0.1280*
97-12	-	-	0.0925
98-3	-	-	0.2859****
98-9	-	-	0.2423****
98-12	-	-	0.3025****

* Significant at the level of .1 *** Significant at the level of .01
** Significant at the level of .05 **** Significant at the level of .001

Again, with only one exception, statistically significant correlations are reached for one-year-forecast period. As a result of these analyses, we can conclude that financial statements have sufficient explanation power in predicting the stock returns at least for one year before. This finding is showing the importance of fundamental analysis and the possibility of applying such a methodology used here in constructing a portfolio to earn more than expected.

VII: GENERAL PREDICTION MODEL

The major weakness of logit analyses that have been developed before, is the ratios that are changing from one period to another. In order to overcome this weakness a general logit model has been improved to predict the performance of the stocks in 1998. This model was planned for forecasting the returns of stocks in 1998 by using financial statements of 1997- 12 months, and also quarterly financial statements of 1998 (3, 6 and 9 months) together. The general model given below showed a classification power of 91,23% that is better than expected. This model indicates that Equity Profitability Ratios and Market Value – Book Value Ratio are significant ratios for prediction of 1998 returns.

$$Y = -4,4379 + 11,0233\ EQ\ P_6 - 14,1985\ EQ\ P_{12} + 4,3679\ MBV_9$$

EQP_6 =Equity Profitability Ratio of Semiannual Financial Statement
EQP_{12} =Equity Profitability Ratio of 1997 Yearly Financial Statement
MBV_9=Market Value – Book Value Ratio of Financial Statement in third quarter

Even though, the performance of the model was found to be better than expected, the logit probabilities of this model demonstrated very weak sperman rank correlation with actual returns (r=0,0608). It means that the general model can be used only for discriminating the groups but not ranking the stocks.

VIII. CONCLUSION

This study was conducted to evaluate the hypothesis that financial information can be effectively used in predicting stock returns in Turkey. On the basis of a financial statement analysis we have derived a logit model from financial ratios and fundamental information that predict future stock returns. It is indicated that the stocks that have the highest and lowest returns could be predicted by using the previous and a certain single period's (12, 9, 6 or 3 month before) financial statements for ISE companies. The findings suggest that the predictive power of financial ratios is more important than the fundamental information such as news about production, dividend, investment and capital of company. The accuracy of prediction models are between 88,33%-96,61%.

The Spearman rank correlation analysis that evaluates the association between the ranking of actual and predicted groups indicated that there is a statistically significant correlation between the observed and predicted ranking. However the ranking ability of logit model is more powerful for 3, 6 and 9 month's prediction periods.

The major weakness of logit analysis that has been developed before, are the ratios that are changing from one period to another. In order to overcome this problem a general model for prediction has been developed to predict the performance of the stocks in 1998. This model uses four consecutive sets of financial statements together (1997(12), 1998(3, 6 and 9 months)) before end of 1998 also has a classification power of 91,23%. But, the sperman rank correlation indicated insignificant correlation between the actual and predicted groups. These findings suggest that the general model can be used only for discriminating the groups but not ranking the stocks.

We conclude that it is possible to predict the performance of stock by using the financial statement information, but the variables (ratios) of logit models are not stable from one period to another. Developing a more general model for prediction might solve this problem. But the major drawback of the general model is its inability of ranking the stocks according to their performance.

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