J. Appl. Environ. Biol. Sci., 4(2s)74-79, 2014

ISSN: 2090-4274
Journal of Applied Environmental and Biological Sciences
www.textroad.com

The Relationship between Profit Forecasting Accuracy with Corporate Critical Index, Corporate Smoothness, Corporate Activities' Continuity and Type of Auditor's Opinion

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Received: January 28, 2014
Accepted: April 13, 2014

ABSTRACT

Aim of this research is study of relationship between profit forecasting accuracy with corporate critical index, corporate smoothness, corporate activities' continuity and type of auditor's opinion. Hence data relevant to listed companies in stock exchange was collected by referring to audited financial statement of the companies listed in stock exchange. The results showed that for a unit increase or change in critical index variable, corporate profit forecasting accuracy will increase 0.245 or will positively change. In addition, regression coefficient of type of auditor's opinion is negative (Beta = -0.208). Then, forecasting accuracy will decrease. Final forward regression model results showed that four variables affect forecasting accuracy in the model in total. These variables can explain 19.6% of changes in profit forecasting accuracy.

KEYWORDS: Profit Forecasting- Critical Index- Auditor's Opinion

1. INTRODUCTION

Many factors affect stock prices including rate of sales, profits, earnings per share, etc. The impact of these factors on stock prices varies. For example, the ratio of profit to sales has greater impact on stock prices [1].
In addition to accurate information published in real market, additional information are also released, which arises from forecasts made by analysts, brokers, investors and managers. Research shows that profit forecast is one of the most important factors in evaluation of stocks [2]. Moreover, the stock price significantly reacts to management profit forecast [3, 4, 5].

Usually, there is a difference between profits forecasted by management of listed companies and real corporate profits. One reason behind this fact is that management of listed companies does not exactly forecast corporate profits, which is due to role of forecasted profits in corporate ordinary shares pricing [6]. Namazi and Shamsedini [7] examined the effect of nine variables on profit accuracy forecasted by the management whose companies were listed in stock exchange. The accuracy of forecasts was measured using forecast error, absolute forecast error, forecasting error square and natural logarithm of forecast error. The results showed that there was a significant relationship between profit growth, asset growth, sales growth, forecasted profits in the past, financial leverage, and stock price profit forecast accuracy. However, there was no relationship between profit and corporate size with profit forecast accuracy. Multiple regression model results also showed that there is a relationship between financial leverage and growth with profit forecast accuracy.

Sabet [8] examined the impact of five factors including corporate size, financial crisis, growth rate, outsourcing financing, and price control in industry in orientation of corporate managers toward profit forecasts. Findings of the former research showed that average corporate profits were forecasted optimistically. Outsourcing financing is effective in profit forecast based on research hypothesis. He concluded that smaller firms do more pessimistic forecasts than larger firms. In addition, more pessimistic profits are forecasted (released) with increased financial crisis. Nevertheless, the researcher observed no significant relationship between corporate growth rate and price control in industry with orientation toward profit forecasting.

Ghasemi [9] examined managers' profit forecast accuracy with profit forecast based on Box - Jecknins method. Obtained evidence from 48 companies listed in Tehran Stock Exchange in 2003-2004 showed that management forecast accuracy is much higher than Time Series Box Jenckins Model [H]. Bahramian [10] evaluated accuracy of earnings per share forecasting within companies whose dividends were publicly offered in Tehran Stock Exchange as well as the companies, which offered increased capital stock account in Tehran Stock Exchange. In this research, 81 companies were evaluated in 2000-2002. The results showed that profit forecast error has a direct relationship with forecasting period and total exchange volatility index. However, no significant relationship was observed between the former and firm size, firm lifetime, degree of financial leverage, auditor's opinion and industrial category.

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2. MATERIALS AND METHODS

In this research, library method was used for data collection at first. In the library section, research theoretical principals were extracted from specialized Persian and Latin books and magazines. Data relevant to listed companies in stock exchange was collected by referring to audited financial statement of the companies listed in stock exchange. The reasons behind selecting corporations from Tehran Stock Exchange are as follows.

1. Accessing financial information of the companies listed in stock exchange is easier, especially because a part information is available through databases on CD-ROMs.

2. Since financial information of the companies listed in Tehran Stock Exchange is under investigation, it seems that information contained in the companies' financial statement has greater quality.

3. Since observing financial accounting rules, regulations and standards in preparing financial statements of the companies listed in stock exchange is indispensable, it seems that information contained in financial reports of these enterprises are more homogeneous and comparable.

In the present study, a specific relation was not used to determine statistical sample, sample size and sampling. However, systematic elimination method was used in order to eliminate and moderate the effect of uncontrollable phenomena. All the companies were classified in 28 different industries in order to accurately examine detailed data on companies listed in Tehran Stock Exchange. The following conditions were applied by the researcher for the purpose of non-randomness and higher reliance of the selected sample. In order to have comparable items, the companies whose fiscal year end was not 29th or 30th of March were eliminated. Then, banks, financial institutions and financial investment companies (due to different nature of their activities from other business units) were eliminated. This is because these companies proportional to their activities had higher debt ratios compared to other companies, although this excess debt does not reflect the higher risk.

Research Variables and Model

Dependent Variable: Profit forecast help the investors to improve their decision-making process and reduce the risk of their decisions. Independent variables: The independent variables in this study are as follows: Financial crisis (financial distress) is financial crisis of companies' bankruptcy. Bankruptcy: Lack of liquidity of a company to continue activities operating paying obligations on deadline. Business unit failure could be due to practical cessation or bankruptcy. Bankruptcy is measured with different models. Profit smoothing: It is a conscious action made by management using specific tools in accounting to reduce volatility of profits. In this study, Eikel index was used to determine the companies' profit smoothing. Eikel index is equal to: (Eikel index = ratio of variation coefficient of changes in profit to coefficient of changes in sales).

Type of auditor's opinion:

In audited financial statements, the overall objective of auditing lies in obtaining reasonable assurance about whether financial statements as a whole set is free from an important distortion caused by fraud or mistake or not. Achieving this goal enable the auditor to comment whether financial statements were prepared at all significant aspects in accordance with accounting and auditing standards or not. It can also enable the auditor to prepare and submit a report on financial statements according to his findings. Type of auditors' opinion depends on the financial statements; whether financial statements as a whole set is free from an important distortion caused by fraud or mistake or not fraud or mistake. Then, he proceeds to comments within a framework of three types of opinions including acceptable, conditional and castaway based on his findings. If it was during totally acceptable financial period, score 1 was given; otherwise score 0 was given.

Table 1. Study variables and variables properties

Variable type	Variable name	Symbol	Source
Dependent variable	Profit forecast accuracy	MFERR	Independent auditor's report and statutory auditor and board report to the Extraordinary General Assembly
Independent variables	Financial crisis (financial distress)	Z"	Profit and Loss Statement and Balance Sheet
	Profit smoothing	(CVΔI / CVΔS)	Profit and Loss Statement
	Type of auditor's opinion	OPINION	Independent auditor's report and statutory auditor
	Hypothesis of activities' continuity	GC	Explanatory Notes – Corporate Activities History

3. RESULTS

Hypothesis of activities' continuity:

In preparing financial statements, it is assumed that monitored entity's activities in foreseeable future usually continues up to one year after fiscal end period; unless the contrary was stated. Therefore, assets and liabilities are identified and recorded based on ability of audited entity in recovering the assets as well as liquidation of liabilities in the normal course of business activities. If it was not assumed that audited entity's activities might not continue, the entity may not be able to recover its assets to the registered values. Therefore, it

is necessary to make changes in amount of payments for debts on deadline. In this study, companies that had ambiguity in terms of activities' continuity, covered by Article 141 of Iranian Commercial Code, and the companies with continuous activities were scored 1; on the other hand, the companies were scored 0 in case of activities' discontinuity.

The control variables:

Control variables in this study are as follows: Financial leverage is obtained by the amount of long-term debt divided by mean total assets in that period. Corporate size: is the factor that determines corporate profits. Corporate size is calculated by logarithm of total assets of each firm in that year. Profitability Index is the ratio of corporate net profit to corporate mean total assets for that period. In this research, the required information and data were collected in two stages. In the first stage, library method (referring to theses in *www.IRANDOC.ir*, and Persian in *www.SID.ir* and English in *www.RDIS.ir* articles in the websites) was used to develop theoretical principles of the research. In the second stage, financial statements provided to the Stock Exchange and DVD of corporate financial information was used to collect data. Thus, field survey is the method used for data collection in this study.

The collected data was prepared using accounting equation and models in the form of columns of data for the purpose of statistical studies. Then, if necessary, the data was encrypted using statistical methods by rejecting outliers. Then, the data was normalized. Then, descriptive statistics such as mean and standard deviation, skewness and kurtosis were studied. Then, research hypothesis were evaluated using parametric t -test.

Since skewness coefficient of forecasting accuracy variable is equal to 0.889, it is roughly consistent with normal distribution in terms of symmetry (0.5). This is slightly skewed to right. In addition, skewness coefficient of dependent variable is equal to 5.553, which is higher than normal distribution. The 75th percentile for corporate profit forecast accuracy variable is equal to 3039.8, which states that 75% of data is less than this value. In addition, the 25th percentile for this variable is equal to -14823, which states that 25% of data is less than this value. Therefore, data for this variable includes a positive and negative range. In other words, 50% of data for difference between corporate taxes ranges from -14823 to 3039.8. For other variables, statistics are presented the same as follows.

Table 2. Study variables and variables properties

Variable type	Variable name	Symbol	Source
Dependent variable	Profit forecast accuracy	MFERR	Independent auditor's report and statutory auditor and board report to the Extraordinary General Assembly
Independent variables	Financial crisis (financial distress)	Z"	Profit and Loss Statement and Balance Sheet
	Profit smoothing	(CVΔI / CVΔS)	Profit and Loss Statement
	Type of auditor's opinion	OPINION	Independent auditor's report and statutory auditor
	Hypothesis of activities' continuity	GC	Explanatory Notes – Corporate Activities History

Table 3. Research variables' descriptive statistics

	Y Profit forecast accuracy	X1 Financial crisis	X2 Auditor's opinion	X3 Activity's continuity	X4 Profit smoothing
N	120	120	120	120	120
Mean	-5466.1165	0.18	0.	35.59	0.32
Medium	-2194.5	0	0	38	0
SD	29558.51565	0.382	0.444	13.255	0.470
Variance	873705847.203	0.146	0.197	175.706	0.221
Skewness	0.889	1.732	1.069	-0.273	0.757
Kurtosis	5.553	1.018	-0.873	-0.915	-1.452
Range	215626.6	1	1	55	1
Minimum	-95155.6	0	0	5	0
Maximum	120471	1	1	60	1

Table 4. Model summary

Durbin-Watson	Standard estimation error	Standard error	R square	R	Model
1.696	28707.64421	0.57	0.88	0.297[a]	1

Table 5. Results of test of significance of regression model for the overall hypothesis ANOVA[b]

Model	SS	DF	MS	F	Sig.
Regression	9196179668.364	4	2299044917.91	2.79	0.30[a]
Remaining	94774816148.816	115	824128836.077		
Total	103970995817.18	119			

1. Forecasters: (continuous), X4 profit smoothing, X1 critical index, X3 activities' continuity, X2 auditor's opinion
2. Dependent variable: Y. forecast accuracy

As table of results of the analysis of variance shows, obtained F-value (F=2.79) is significant and smaller than 5% in 5% level of error (sig=0.03). In this case, H0 is rejected with a level of confidence more than 95% and

H1 is accepted. Thus, the hypothesis of a linear regression model, the research hypothesis, is accepted. These results indicate that independent variables have high explanatory power and can explain the changes and the variance of dependent variable properly. In other words, the regression model is an appropriate model.

Testing significance of the coefficients: The results showed that for a unit increase or change in critical index variable, corporate profit forecasting accuracy will increase 0.245 or will positively change. In addition, regression coefficient of type of auditor's opinion is negative (Beta = -0.208). Then, forecasting accuracy will decrease. For every unit change in type of auditor's opinion, forecasting accuracy will decrease up to -0.208 unit. Examining coefficients of the remaining variables in the table shows that smoothness of companies increases forecasting accuracy in negative direction while corporate activities' continuity increases profit forecasting accuracy in the positive direction.

Table 6. Impact coefficients

Model	Non-standardized coefficients		Standardized coefficients	T	Sig.	Linearity statistics	
Index	B	Std. Error	Beta			Tolerance	VIF
(constant)	-4919.377	7632.177		-0.645	0.520		
X1. Critical index	19371.129	7183.634	0.245	2.697	0.8	0.958	1.044
X2. Auditor's opinion 1	-13848.867	6062.083	-0.208	-2.285	0.24	0.956	1.046
X3. Activities' continuity	24.293	202.378	0.11	0.120	0.905	0.962	1.039
X4.Corporate smoothness	-2913.401	5675.995	-0.46	-0.513	0.609	0.972	1.029

Y: forecasting accuracy 2. Dependent variable

As it can be observed in table of statistical summary table, the model presents two stages. This shows that these two variables have the greatest effect on the dependent variable. Then, these two remain in the model. Examining results of regression model using forward method shows that four variables remained in the model as effective variables among seven variables entered into the model. These can be observed in four rows in the table.

Table 7. Model summary in second stage

Model	R	R^2	Adjusted R^2	Standard estimation error	Durbin-Watson
1	0.218[a]	0.48	0.40	28967.07914	1.665
2	0.368b	0.135	0.120	27720.74638	
3	0.411[c]	0.169	0.147	27296.4416	
4	0.443[d]	0.196	0.168	26955.69897	

Table 8. ANOVA results of study

Model	SS	Df	MS	F	Sig
Regression	4958178314.99	1	4958178314.99	5.909	0.17a
Remaining 1	99012817502.191	118	839091673.747		
Total	103970995817.18	119			
Regression	140635415855.863	2	7031770792.932	9.151	0.0b
Remaining 2	89907454231.317	117	768439779.755		
Total	103970995817.18	119			
Regression	17539891822.232	3	5846630607.411	7.847	0.0c
Remaining 3	86431103994.948	116	745095724.094		
Total	103970995817.18	119			
Regression 4	20410879491.847	4	5102719872.962	7.023	0.0d
Remaining	83560116325.333	115	726609707.177		
Total	103970995717.18	119			

Analysis of variance showed that level of significance of all four models obtained by forward regression method is less than 5% (sig = 0.0001). Then, hypothesis of linearity of regression model is confirmed.

Test of model coefficients:

Variables' regression coefficients results show that critical index with regression coefficient=0.218 is the first variable entered into the model. Examining coefficients of other variables in table of coefficients showed an increase in the coefficients. Then, when critical index coefficient variable entered into the second model, profitability index increased to 0.327. In addition, the opposite also happened. When type of auditor's opinion entered into the third model, profitability index decreased from -0.315 to -0.301. These results showed that the coefficient (slope of the line) of a variable changes with increasing other independent variables. In other words, the role of a variable in the regression model depends on other independent variables in the model.

Examining regression coefficients of variables in the final model showed that critical index and corporate size variables respectively increased profit forecasting accuracy 0.391 and 0.172 units. On the other hand, profitability index variable with regression coefficient of -0.341 and type of auditor's opinion with regression coefficient of -0.183 respectively decreased forecasting accuracy -0.341 and -0.183.

Results of table 9 showed that if level of significance of a variable is less than 5%, that variable is selected and entered into the basic model. As it can be seen in the obtained models, after corporate critical index as the first variable entered into the model, profitability index variable and type of auditor's opinion on the first row of the

table should be entered into the model since level of significance was less than 5%. However, profitability index entered into the model as the second variable while type of auditor's opinion entered into the model as the third variable. This is because profitability index coefficient was higher than coefficient of type of auditor's opinion. Therefore, given that level of significance of the remaining variables was higher than 5%, these variables did not have a significant impact on the model. Thus, no other variable entered into the model. This issue can be well observed in in beta column. In other words, if any variable enter into the model, it has little effect on the model. Moreover, column t and sig express that if any variable enter into the model, following conditions should be observed: t>2 and sig<5%. If those conditions were observed, that variable would be selected as the effective variable. According to these columns, since none of the variables met the requirements to enter into the model, those variables would not enter into the model in the next steps.

Table 9. Coefficients in second model

Model	Non-standardized coefficients		Standardized coefficients	T	Sig.	Linearity statistics	
	B	Standard error	Beta			Tolerance	VIF
(Constant) 1	-8426.599	2911.301		-2.894	0.5		
X1. Critical index	16917.043	6959.34	0.218	2.431	0.17	1	1
2 (constant)	-792.178	3561.022		-0.222	0.824		
X1. Critical index	-25294.116	7090.612	0.327	3.567	0.1	0.882	1.134
C3.profitability index	-87508.394	25421.782	-0.315	-3.442	0.1	0.882	1.134
(constant) 3	1734.558	3696.49		0.469	0.640		
X1. Critical index	27340.135	7046.04	0.353	3.88	0.0	0.866	1.154
C3 profitability index	-83497.801	25101.432	-0.301	-3.326	0.1	0.877	1.14
X2. Auditor's opinion	-12382.012	5732.387	-0.186	-2.16	0.33	0.966	1.035
(constant) 4	-33957.413	18323.123		-1.853	0.66		
X1. Critical index	30321.351	7117.885	0.391	4.26	0.0	0.828	1.208
C3. Profitability index	-94580.196	25407.35	-0.341	-3.723	0.0	0.835	1.197
X2. Auditor's opinion	-13185.335	5661.694	-0.183	-2.152	0.33	0.966	1.035
C1. Corporate size	6673.631	3357.354	0.172	1.988	0.49	0.931	1.074

Y: forecasting accuracy a. dependent variable

4. DISCUSSION AND CONCLUSION

In other words, variables of corporate critical index, corporate smoothness, corporate activities' continuity and type of auditor's opinion can explain 8.8% of total changes in corporate profit forecasting accuracy while other changes are explained by other factors and accidental events. These are excluded from the model. Standard estimation error measures level of scattering of those points around the regression line in a two-dimensional space. This shows that if this index increases, more points are scattered around the regression line. This represents forecasting power of the regression equation, which is obtained as 28707.644 in this hypothesis. In addition, Durbin-statistics is equal to 1.696, which is appropriate (a figure between 1.5 and 2.5 is acceptable). Then, the data is appropriately independent.

First row of model 1 shows that corporate critical index variable as the most important factor that forecasts accuracy of the profit is the first variable that entered into the model. Determination coefficient (level of variability in the dependent variable that explains the regression). When only critical index variable is in the model, it is equal to 0.048, which shows that this variable alone can forecast 4.8% of changes in profit forecasting accuracy.

The variable that entered into the model from the second row is profitability index variable, which entered into the model after critical index. The former is the most important factor affecting profit forecasting accuracy. Examining determination coefficient of model 2 shows that profitability index and critical index variables together explain 13.5% of changes in profit forecasting accuracy. Another variable that entered into the model from the third row is type of auditor's opinion. Examining model's determination coefficient suggested that adding type of auditor's opinion into the model increases value of the coefficient to 16.9%. In other words, auditor's opinion improves value of determination coefficient up to 3.4%. As it can be observed in last row of the model, when corporate size entered into the model, no other variable was added to the model. This is because R^2 value did not change much with other variables. Thus, these variables were excluded from the model and were not included in the table. Final forward regression model results showed that four variables affect forecasting accuracy in the model in total. These variables can explain 19.6% of changes in profit forecasting accuracy.

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