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Financial Ratio (Altman Z score) with Statistic Modelling

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ABSTRACT

This study aims to see how the dissemination of data and analysis results based on multiple regression and descriptive analysis. The data used in this study is the company's financial ratios by using altman z score model. This study tries to multiply the research by creating different analysis models and the biased nature of the study.
Keywords : Altman Z Score, Financial Ratios, Statistic Model

I. INTRODUCTION

In the analysis of financial data, an analysis of historical data is required to look at possible trends. Then we can analyze what is going on behind the trend figures. The company's historical data should also be compared to industry historical data to see if a company's trend is relatively better against industry trends. In the times series analysis, structural changes that will affect the financial numbers must be considered. Structural changes that will affect a company's financial trends include: Government Regulation, Competition Changes, Technological Changes, Acquisitions and Mergers. There are three approaches in time series analysis: first Economic Approach, second Statistical Approach, third Visual Approach . In this study that will be used is a statistical approach.

II. LITERATURE REVIEW

If we look again at the approach in time series analysis can be described as follows:

1.TIME SERIES INDEX - This technique can use the index numbers can also the figures contained in the financial statements prepared and presented in a series of time series for example 5 or 10 years. If this report is converted into an index number then it becomes a serial index report. All financial statements that are compared in series are convened to index. To determine this index then determine the base year. This base year is chosen according to certain criteria for example chosen year of establishment as a base year or a certain year which can serve as an important moment to make it easier and faster to compare with other year index.

2. TREND ANALYSIS - Analysis of this trend aims to determine the tendency or tendency of a company's financial condition in the future either tendency up, down, or fixed. This analysis technique is usually used to analyze financial statements covering at least 3 periods or more. This analysis is intended to determine the progress of the company through a range of past travel time and project the situation of that period to the next. Based on the historical data, try to see the tendency that may appear in the future.

This trend analysis is useful to assess past corporate "trend" situation and can predict future "trend" of the company based on the trend line that has happened.
To perform an indexed index trend analysis (for certain things can be used in technical trend) this can be done through:

1. Statistical methods by calculating the trend line from the financial statements of several periods.
2. Using index numbers.
The steps to perform this indexed index analysis are as follows:
A. Determine the base year. This base year is determined by looking at the meaning of a year can be the year of establishment, year of change, or

reorganization, and other historical years. The accounts of the base year financial statements are recorded as index of 100.
B. Calculates the index number of other years using the postal figures of the base year
financial statements as denominators.
C. Predict possible trends based on the direction and historical trends of financial statement post analyzed.
D. Make decisions about what to do to anticipate that trend.

III. FINANCIAL DATA ANALYSIS

Sales data reflect four different factors:
1. Trend
Trend is the movement of time series in the long term, can be up or down trend. It takes a long time (15 or 20 years) to see the trend pattern. Such trends may be affected by population changes, technological changes, etc.
2. Cycle
The cycle is a business fluctuation in the shorter term (about 2-10 years). There has been no satisfactory explanation for the occurrence of cyclical fluctuations. The length and magnitude of fluctuations also vary greatly from company to company and from industry to industry.
3. Seasonal
Seasonal is a fluctuation that occurs within the scope of one year. There are several causes of seasonal fluctuations, such as certain events (Eid, New Year), due to weather (rainy season, drought).
4. Irregularities
Such fluctuations are due to factors that appear irregular, in the short term. For example a company's warehouse is on fire, consequently the company's profits in that period are affected.

IV. RESEARCH METHODS

Research Data

Data used in this study is a company listed on the Stock Exchange for the financial reporting year ending 2014. Here tersampit data company financial statements that have been in the analysis.

Company	Altman Ratio				
	WC/TA	RE/TA	EBIT/TA	S/TA	BVE/BVL
PT Aneka tambang	9.3	-7.7	1.6	9.1	3.726
PT Bank CIMB Niaga	10.5	-12.4	-2.3	21	2.5
PT Bank mandiri	24.6	-29	-2	21.3	1.968
PT Garuda indonesia	9.1	-40.2	-0.7	81.5	0.522
PT Telekominikasi indonesia	30.6	-14.4	-4.9	2.2	3.482
PT United tractors	2.2	31.6	22	58	2.758
PT Adhi karya	-11.5	27.6	24.4	51.4	2.266
PTJasa otoparts	-4.1	-5.8	7.7	31.6	1.222
PT Asuransi jasa indonesia	-5.7	21.1	14.3	28.9	1.153
PT Bakrieland development	25.2	0	7.9	25.9	0.717
PT Bank DKI	-5.7	0	16.3	49.9	1.517
PT Bank ICB Bumiputera	1.7	11.4	14.1	48	1.347
PT Bank BNI	8.2	-15.6	0.3	87.7	5.444
PT Bukit asam	74.7	54.6	27.9	74.6	3.72
PT Elnusa	43.1	-0.4	3.4	40	0.925
PT Jamsostek	48.7	38.4	-9.2	65.4	0.705
PT Jasa marga	40.7	0.6	1.8	49.2	7.497
PT Kawasan berikat nusantara	16.1	3.6	11.6	21.4	0.856
PT Krakatau steel	-6.1	0	9.4	22.6	2.123
PT Perusahaan gas negara	-7.2	18.6	20.8	52.2	2.413
PT Timag	-5.3	31	4.9	26.9	1.362
PT Bakrie Telekom	-28.8	-203.2	-51	14.7	0.111
PT Bumi resources	2.5	-433.1	-6	29.3	1.949
PT Indocare citrapacifik	26.1	-57.4	-23.5	54.2	0.855
PT Panorama transportasi	39.2	-111.8	-77.8	10.5	0.168
PT Recapital advisors	-5.4	-105.2	-5.8	38.9	0.028

Technique Analisys Data

Linier regression

In general regression analysis is an analysis conducted to determine the effect of association between two variables namely variable X (independent) and variable Y (dependent) (Fuad Mas "ud, 2004). In this study multiple linear regression analysis is used to determine whether there is

influence (X1), (X2) to (Y). The relationship is measured by the equation model (Ghozali, 2006)

Descriptive statistic

Descriptive statistics are statistics used to analyze data by describing or delineating collected data as they are without making conclusions that apply to the public or generalizations. Included in descriptive statistics include calculation of mean, median and mode, the calculation of the spread of data through the calculation of average and standard deviation and presentation of data through the frequency table and histogram graph.

V. RESULT AND DISCUSSION

Table 1 : Result for regression analysis

Dependent Variable: WC_TA				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.584439	10.79433	0.054143	0.9573
BVE_BVL	3.600037	2.803313	1.284208	0.2131
EBIT_TA	-0.385907	0.246369	-1.566381	0.1322
RE_TA	0.074075	0.053057	1.396127	0.1773
S_TA	0.190669	0.217254	0.877635	0.3901
R-squared	0.200763	Mean dependent var		12.79615
Adjusted R-squared	0.048527	S.D. dependent var		23.16270
S.E. of regression	22.59370	Akaike info criterion		9.244261
Sum squared resid	10719.99	Schwarz criterion		9.486203
Log likelihood	-115.1754	Hannan-Quinn criter.		9.313931
F-statistic	1.318763	Durbin-Watson stat		1.640169
Prob(F-statistic)	0.295513			

Source : Proceed by author

In Descriptive Statistics: There is a Numerical Size. This numerical dimension is divided into two, ie the data centering measure, including the mean, median, mode, and size of the data spread, including ranges, variance, and standard deviations. Here's the result of the numeric size display, as presented in table 1:

Table 1 : Result for descriptive statistic analisys

	BVE_BVL	EBIT_TA	RE_TA	S_TA	WC_TA
Mean	1.974385	0.200000	-30.68077	39.09231	12.79615
Median	1.439500	2.600000	-0.200000	35.25000	8.650000
Maximum	7.497000	27.90000	54.60000	87.70000	74.70000
Minimum	0.028000	-77.80000	-433.1000	2.200000	-28.80000
Std. Dev.	1.717734	22.57308	98.49242	22.62991	23.16270
Skewness	1.551071	-1.972063	-2.949594	0.451355	0.750777
Kurtosis	5.502408	7.326578	12.07937	2.424819	3.274751
Jarque-Bera	17.20910	37.13170	127.0050	1.241196	2.524333
Probability	0.000183	0.000000	0.000000	0.537623	0.283040
Sum	51.33400	5.200000	-797.7000	1016.400	332.7000
Sum Sq. Dev.	73.76528	12738.60	242518.9	12802.82	13412.77
Observations	26	26	26	26	26

Source : Proceed by author

In descriptive statistics exist

A) Centering Size

The size of the concentration or the size of the location are some of the measures that state where the data distribution is centered. (Howell, 1982). The size of the concentration is a single value that can represent a data set and its characteristics (indicates the center of the data value).

Types of Centering Size include:

1. Average (Mean)

Average is a very frequently used centering measure. The advantage of calculating the average is that the number can be used as a representation or representative of the observed data. The average is sensitive in the presence of extreme values or outliers.

2. Median or Middle Score

The median is a centralized measure of value that occupies the middle position after the data is sorted

3. Mode

Mode is the most common value of a set of data. Mode can not be used as a description of the data (Howell, 1982)

B) Data Dispersion Size (Dispersion)

The size of the spread is a measure of either parameters or statistics to find out how large the data deviation. Through the size of the spread can be known how far the data spread from the point of concentration.

Types of Size Distribution include:

1. Range (Range) (= R)

The range (Range) is denoted as R, denoting the size showing the difference between the maximum and minimum values. The range is good enough to measure the spread of symmetric data and the data values are

spread evenly. This size becomes irrelevant if the maximum and minimum data values are extreme

2. Variance (Variance) (= S2 or σ2)

The variance (variance) denoted as S2 or σ2 is a measure of data distribution that measures the mean of the square of the distance of all observation points of the mean value.

3. Standard deviation (= s or)

The standard deviation is denoted as s or σ, indicating the mean deviation of the data from its average price. Standard deviation of second rank root of variance.

The histogram graph shows a symmetrical curve forming a bell. As well as the median and the approximate mode of average. This indicates that the data is normally distributed.

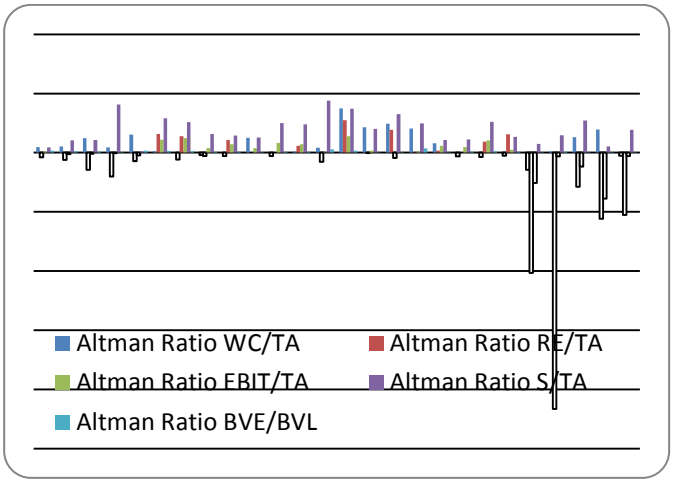

Figure 1 : Histogram data
Source : Proceed by author

VI. CONCLUSION

From the studies that have been done, the results of the Data Center concentration as presented in the Mean, Median or Middle Score values, Modes (Howell, 1982) and Data Dispersion Sizes as presented in the Range (= R), Variance (= S2 or σ2), Standard deviation (= s or) and the results presented in Figure 1 The histogram graph shows a symmetrical curve forming a bell. As well as the median and the approximate mode of average. This indicates that the data is normally distributed.

VII. REFERENCES

[1]. Drapper, Norman (1992), Analisis Regresi Terapan, Edisi Kedua, PT. Grame- dia, Pustaka Utama, Jakarta

[2]. Johnson, Wichren., (1992), Applied Multivariate Statistical Analysis, Third Edition, Prentice Hall, New Jersey

[3]. Hanafi, Mamduh M. dan Abdul Halim. 2005. Analisis Laporan Keuangan. Edisi Kedua. Yogyakarta: UPP-AMP YKPN.

[4]. Montgomery, Douglass C., (1998), Pengantar Pengendalian Kualitas Statistik, Edisi Kelima, Gadjah Mada University Press, Yogjakarta

[5]. Morrison, Donald F., (1990), Multivariate Statistical Methods, Third Edition, Mc Graw-Hill, New York

[6]. http://annisaarumartaarfan.blogspot.com/2013/10/ analisis-times-series-dan forecasting.html

[7]. www.bei.go.id