VALUATION RATIOS

AND STOCK PRICE PREDICTABILITY: COMPARISON BETWEEN SHORT TERM AND LONG TERM HORIZON

(Case Study of Manufacturing Companies at Jakarta Stock Exchange Year 1994-2004)

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"Truly together with difficulty, definitely there is also an ease"

(QS Asy-Syarh [94]: 5)

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ABSTRACT

Using annual data of 44 manufacturing companies for 1995-2004 and quarterly data of 34 manufacturing companies for the year 2004, this paper re-examines the predictability of stock price based on financial ratios. In line with extant literature, we find significance evidence that the Price Earnings Ratios and Dividend Yield have significant relationship with the Abnormal Returns, but they have different characteristics in short term period and long term period. Dividend Yield has more influence on Abnormal Returns in long term period rather than in short term period. But Price Earnings Ratio has more influence on Abnormal Returns in short term period rather than in long term period.

Keywords: abnormal returns, price-earnings ratio, dividend yield, earnings after tax, quarterly net income, beta

ABSTRAK

Dengan menggunakan data tahunan 44 perusahaan manufaktur, tahun 1995-2004 dan data kuartalan 34 perusahaan manufaktur pada tahun 2004, paper ini meneliti ulang kemampuan rasio keuangan dalam memprediksi harga saham. Sejalan dengan penelitian terdahulu, kami menemukan bahwa Price Earnings Ratio dan Dividend Yield mempunyai pengaruh yang signifikan terhadap Abnormal Returns, tetapi masing-masing memiliki karakteristik yang berbeda pada periode jangka panjang dan jangka pendek. Dividend Yield berpengaruh lebih kuat terhadap Abnormal Returns pada periode jangka panjang dibandingkan dengan periode jangka pendek. Tetapi Price Earnings Ratio berpengaruh lebih kuat terhadap Abnormal Returns pada periode jangka pendek dibandingkan dengan periode jangka panjang.

Kata kunci: abnormal returns, price-earnings ratio, dividend yield, earnings after tax, quarterly net income, beta

CHAPTER I

INTRODUCTION

1.1. Study Background

A company needs extra funding to expand its capital to help it grow faster, expand and diversify its products. One of the ways to fulfill the need for extra funding is by issuing stock to the public. To attract the public to invest their money in to a company, it should provide essential information about it condition. A company that wants to attract an investor must give an explanation of its cash flow. The explanation should consist of a profit and loss report, balance sheet, and the other reports composed as financial statements. Financial statements are designed to assist users in identifying key relationships and trends. They also give the information to the company itself about how the business is running. It is argued that these statements provide investors with essential information to evaluate their investment decisions. The investors will see how the future movements in stock prices of a company are likely to be before deciding to invest their money. They would like to know about the predictability of stock prices.

There are some techniques that are used to predict future stock prices. Usually there are two kinds of analysis: fundamental analysis and technical analysis. Predictability (Rapach D. E. and Wohar M. E., 2005) is typically assessed in the context of predictive regression models, where as real stock prices growth or real equity returns over various horizons regressed on a variable thought to potentially explain future movements in

stock prices. A number of econometrics difficulties are inherent in predictive regression (Mankiw and Shapiro, 1986, 1999; Nelson and Kim, 1993; Kirby, 1997), the consensus appears to be that some variables can, in fact, predict future movements in stock prices (Campbell, 1999, 2000). Among these variables are valuation ratios based on measured fundamental value, such as the price – dividend and price – earnings ratios. Campbell and Shiller (1998) found that the price – dividend and price – earnings ratios have very limited ability to predict real stock price growth over the next year, but a strong and significant ability to predict real stock price growth over the next 10 years.

The oft-cited studies of Fama and French (1988) and Campbell and Shiller (1988) found that price – dividend and price – earnings ratio predict future real equity return, and more recently Campbell and Shiller (1998) found that this ratio is usefull in predicting future growth in real stock prices using data spanning in the late nineteenth to late twentieth century. Berkowitz and Georgianni (2001) argued that a linear framework implies predictability at all horizons and no horizons is logically correct, it may be the case in some circumstances that the power to detect predictability in linear framework is greater at long-horizons.

Mean while there are some previous studies that have different results. Berben and Van Dijk (1998) found that local asymptotic power is not increasing in the horizons. Rapach D. E. and Wohar M. E. (2005) explored the potential explanation using Monte Carlo simulations, and the results demonstrated that power does not increase at long-horizons (in fact, it

decreases), so that the pattern in stock price predictability in the data is difficult to explain in a linear framework.

Indonesia has experienced fluctuating economic conditions throughout the late twentieth century until nowadays. In the year 1998, the Indonesian economy was in crisis. The country experienced recession conditions, as the economic condition was very bad at that time. Nowadays Indonesia's economy is developing rapidly. This is signaled by the surplus of state cash reserve and the increase in the value of the Rupiah against the US Dollar. This shows that Indonesia's economy is recovering from the recession conditions, and thus has increased the trust of the public in investing in the firms listed on the stock exchange.

1.2. Problem Identification

The background of the study stated above shows that predicting the future stock price is very essential in investing in stock exchange. The main issue of this research is to find out whether valuation ratio has a relationship to stock price. This will determine whether companies with lower valuation ratio will have a negative or positive relationship with stock price.

1.3. Problem Formulation

Based on the problem identification above, this study is purposed to determine, based on empirical evidence, which factors have a significant influence on stock price. The problems can be formulated into the question below:

- Is there any effect of dividend yield and price earnings ratio on abnormal returns in the long term period?
- Is there any effect of dividend yield and price earnings ratio on abnormal returns in the short term period?
- Is the effect of dividend yield and price earnings ratio on abnormal returns stronger in the long term period rather than in the short term period?

1.4. Research Limitations

Restriction or limitation of research area is proposed to keep research problem focused. The restrictions or limitations of this problem are as follows:

1. The data that is used is Abnormal Returns, Dividend Yield, Price - Earnings Ratio.
2. Earnings After Tax or Quarterly Net Income and Stock Beta as the control variables as the control variables are also used.
3. The data that used is the closing date of companies that are choosen randomly from the manufacturing companies listed on the Jakarta Stock Exchange from 1995 until 2004. The consideration for using those particular companies as samples is that they have the best financial condition compared to other companies on the JSX.
4. The data is taken from Indonesian Capital Market Directory with the time range of between 1995 and 2004.

1.5. Research Objectives

The objective of this study is to replicate previous research done by Rapach D. E. and Wohar M. E., 2005, to prove that the current value of a valuation ratio has a correlation with future stock price changes in Indonesia.

1.6. Research Contribution

It is hoped that this study will benefit the following parties:

1. Academicians

   Hopefully this research will be advantagous to students, lecturers, intellectuals, and others, as a reference or for the purpose of education.

2. Managers

   Hopefully this study will help managers in the decision-making process regarding price policy on the stock issued. Finally that might result in a more precise decision.

3. Investors

   Hopefully this study can frovide investors with more information for better consideration before deciding to choose which firm they will invest their money in, and to give an overview regarding policy in doing transactions on the stock market.

4. Everybody

   Hopefully this research can be used as a reference material and also as an information source in analyzing the same problem as in this study.

1.7. Definition of Terms

1. Abnormal Return

Abnormal Return is the difference between actual returns and expected returns. The expected returns here are market returns. For example if a stock increases by 5%, but the average market only increases by 3%, then the abnormal return would be 2% (5% - 3% = 2%). If the market average performs better than the individual stock then the abnormal return will be negative.

2. Price-Earning Ratio

The P/E ratio, also referred to as the earnings multiplier, is typically calculated as the ratio of the current market price to the firm's earnings. It is an indication of how much the market as a whole is willing to pay per dollar of earnings. The formula of P/E ratio is market price per share divided by earnings per share.

3. Dividend Yield

Dividend yield is A financial ratio that shows how much a company pays out in dividends each year relative to its share price. In the absence of any capital gains, the dividend yield is the return on investment for a stock. Dividend yield is a way to measure how much cash flow you are getting for each dollar invested in an equity position

For example, if two companies both pay annual dividends of $1 per share, but ABC company's stock is trading at $20 while XYZ company's stock is trading at $40, then ABC has a dividend yield of 5% while XYZ is only yielding 2.5%. Thus, assuming all other factors are equivalent, an

investor looking to supplement his/her income would likely prefer ABC's stock over that of XYZ.

4. Earnings after Tax

The amount of profits that a company produces during a specific period, which is usually defined as a quarter (three calendar months) or a year. Earnings typically refer to after-tax net income. Ultimately, a business's earnings are the main determinant of its share price, because earnings and the circumstances relating to them can indicate whether the business will be profitable and successful in the long run.

5. Quarterly Net Income

Basically it is the same as Earnings After Tax but the difference here is that EAT in the annual report and Quarterly Net Income is in the quarterly report. Also, Quarterly Net Income are not deducted by tax yet.

6. Stock Beta

Beta is a measure of a stock's volatility in relation to the market. By definition, the market has a beta of 1.0, and individual stocks are ranked according to how much they deviate from the market. A stock that swings more than the market over time has a beta above 1.0. If a stock moves less than the market, the stock's beta is less than 1.0. High-beta stocks are supposed to be riskier but provide a potential for higher returns; low-beta stocks pose less risk but also lower returns.

7. Short Term Horizon

A period that has time span no more than one year. It can be monthly, quarterly, etc. This research uses quarterly data.

8. Long Term Horizon

A period that has a time span of more than one year. It can be annualy, decade, etc. This research uses yearly data.

CHAPTER II

REVIEW OF RELATED LITERATURE

2.1. Theoretical Review

The stock market is a place where some parties with large funds meet the other parties that need funds, by buying and selling security. Generally, the security that is traded in a stock market is stock, bond, mutual fund and derivative instruments. Each of those instruments gives varied return and risk.

2.1.1. Stock Price

Stock price is what an investor will pay to buy shares of stock in a company. If an investor has bought shares at $ 10 each and then sells the shares at $ 100 each, that investor has clearly made money. Stock prices follow the law of supply and demand. If demand goes up and the supply doesn't match the demand, the price will increase. Over history, investors have on numerous occasions, created demands for an item that have outrageously inflated its price.

Every market analysis attempts to find a consistent indicator of stock prices, generally if the indicator is unknown by other analysts. Such a barometer would be a single economics series such as building permits, money supply figures, consumer price index, employment, retail sales, inventories, or industrial production that would move in advance of the stock cycle and thus forecast changes in stock cycle. Even if the stock cycle concept

itself has any long-term value, there is no evidence that there is any reliable barometer that predicts it. (Teweles, Bradley and Teweles, 1992)

A company with good financial performance will grow in size, in assets, and earn increasingly more money. As the company grows so will the value of an individual share of that company. However, current financial performance is not always a good indicator of future value. For example, a single dramatic event such as an explosion might completely wipe out the value of shares of a small but growing concern. On the other hand, poor financial performance is also not always a good indicator of future value.

There are two theories of stock prices:

1. The Conventional Theory of Stock Prices

   "The basic cause of stock price movement is the anticipation of change in corporate earnings." (Teweles, Bradley and Teweles, 1992:421-423)

   According to conventional theory, the expected result is all changes in fundamental conditions are that they will affect the earnings of corporations, either individually or as a group. These changes in earnings will, in turn, affect dividends. Subscribers to this theory recognize that the stock price is the present value of all anticipated future dividends. Changes in earnings will change the outlook for dividends and therefore justifiably affect prices of stocks. Any conditions that indicate a change will affect stock prices, which will usually move in advance of actual changes in earnings and dividends.

The theory considers dividends as an important factor, but gives them secondary consideration. It is believed that dividends must follow earnings and will change as earnings change.

2. The Confidence Theory of Stock Prices

"The basic factor in the movement of stock prices is the rise and fall of trader and investor confidence in the future of stock prices, earnings and dividends" (Teweles, Bradley and Teweles, 1992:421-423)

This theory is based on the premise that decisions on buying and selling are made on the basis of well developed rules and standards, such as that stocks should sell at certain price earnings ratios or that stocks should carry certain yields as compared to bond yields. When fundamental conditions were favorable, stock prices should move upward in accordance with well-discounted changes in earnings and dividends. When condition turned unfavorable, stock prices would move downward in accordance with scientific discounting of the confidence.

According to the confidence theory, if a sufficient number of traders and investors become optimistic about fundamental conditions or about prospects for an individual company, they will buy stocks. If they become overoptimistic, they will buy stocks until prices reach unwarranted levels, as measured by normal levels of prices, earnings and dividends. On the opposite side, when they become pessimistic, they will sell, regardless of basic

and fundamental conditions. If their pessimism becomes excessive, they will dump stocks on the market until they fall to entirely unrealistic levels as measured by normal standards.

The difficulty of measuring public confidence in the market increases the complexity of stock market analysis. Many traders on technical conditions who attempt to measure confidence by various methods often achieve less than perfect result. Many investors still follow faithfully the conventional theory.

The Random-Walk Theory

The random-walk theory is a special case of the efficient-markets theory of stock prices. In general, the efficient-market theory allows the equilibrium rate of return required by investors to vary over time. The random-walk theory assumes that this required rate of return is constant.

Since the dividend-price ratio is itself a component of the stock return, the random walk-theory says that a lower dividend-price ratio should be associated with slightly more rapid price growth to offset the lower dividend component of return. In the other words, the theory says hat prices should move in a direction that drives the dividend-price ratio away from its historical average, dividend must do more than all the adjustment necessary to bring the ratio back to its historical average.

2.1.2. Factors that Affecting Stock Price

Since there a lot theories regarding stock valuation, the author will give the explanation of some factors that influence the stock price. There are:

1. Earnings

   Earnings have significant information because the surprise of good news (higher earning than the previous forecast) makes the stock price increase drastically and bad news will make the price decrease (Ball and Brown, 1968).

2. Inflation

   There is a positive relationship between stock return and inflation rate in the future and the interest rate (Titman and Warga, 1989). This finding shows that the stock return has predicted the stock price in the future or in the other word the changes in the stock price are the basis of the prediction of changes in inflation and interest rates.

3. Macro Economic

   When the macro economic condition strenghten , the stock market will respond to the real activities negatively (McQueen and Roley, 1993).

4. Liquidity

   There is a non linear negative relationship between stock liquidity that is measured with the *bid-ask spread* and the expected return (Amihud and Mendelson, 1986).

5. Capital Gain Tax

   In Sweden the increase in capital gains tax significantly decreases the price and the tading volume (Umlauf, 1993). The 2 percent tax increase in

1986 in Sweden made many investors move their stock trading to London.

6. Beta

Beta is a measure of a stock's volatility in relation to the market. By definition, the market has a beta of 1.0, and individual stocks are ranked according to how much they deviate from the market. A stock that swings more than the market over time has a beta above 1.0. If a stock moves less than the market, the stock's beta is less than 1.0. High-beta stocks are supposed to be riskier but provide a potential for higher returns, low-beta stocks pose less risk but also lower returns. Beta is measured from the relationship between the rate of return of a stock with the market. This risk comes from some fundamental factors of companies and characteristic factor of the market about the company stock.

7. Size and Book-to-Market Factors

There are market, size and book-to-market-equity (BE/ME) factors in earnings like those in returns (Fama and French, 1995).

8. Financial Ratios

Financial ratios are useful to rearrange information from financial statements into ratios that provide information about five areas of financial performance described as follows:

a. Short-term Solvency

Short-term solvency which is also called *liquidity ratio*, measures the ability of the firm to pay-off the short-term

liabilities by using short-term assets. Liquidity ratio includes current ratio and quick ratio.

b. Activity

Ratios of activity measure how effective the firm's assets are being managed. Activity ratios include total asset turnover, receivable turnover and inventory turnover.

c. Financial Leverage

Financial leverage is related to the extent to which a firm relies on debt financing rather than equity. It determines the probability that the firm will default on its debt contracts. It encompasses debt ratio, debt-to-equity ratio, equity multiplier, and interest coverage.

d. Profitability

A firm is profitable only if its profitability is greater than that which investors can achieve on their own in the capital markets. It does not give us a benchmark form making comparisons. Profitability ratios include profit margin, Return on Assets (ROA), Return on Equity (ROE), and payout ratio.

e. Value

Value ratios measure the value of the firm. The market value of the common equity of a firm is the market price of a share of common stock multiplied by the number of shares outstanding. Market value is a characteristic of the firm that cannot be found

on an accounting statement. The value ratios encompass market price, Sustainable Growth Rate (SGR), and market value ratios.

Not all of the financial ratios affect the stock price. Here are some of financial ratios that affect the stock price:

1. Operating Ratio and Profitability Ratio

   Operating and Profitability ratios clearly stand out as the most important ratios for lodging managers (Singh and Schmidgall, 2002).

2. Liquid Ratio and Cash Flow Ratio

   The empirical findings show that returns of IPO were significantly affected by the eight selected financial ratios, including liquid ratio and cash flow ratio (Cheng, 2006).

3. Price – Dividend and Price Earnings Ratio

   We consider exponential smooth transition autoregressive models of the price-dividend and price earnings ratios and their ability to explain the pattern of stock price predictability in the data (Rapach and Wohar, 2005).

4. Return on Equity (ROE)

   The results for the linear model, using step-wise multiple regression, suggested that ROE is the only important determinant of stock returns.

2.1.3. Efficient Market Hypothesis (EMH)

Fama (1970) made a distinction between three forms of EMH: (a) the weak form, (b) the semi-strong form, and (c) the strong form. The strong form suggests that securities prices reflect all available information, even private information. Seyhun (1986, 1998) provides sufficient evidence that insiders profit from trading on information not already incorporated into prices. Hence the strong form does not hold in a world with an uneven playing field. The semi-strong form of EMH asserts that security prices reflect all publicly available information. There are no undervalued or overvalued securities and thus, trading rules are incapable of producing superior returns. When new information is released, it is fully incorporated into the price rather speedily. The availability of intraday data enabled tests which offer evidence of public information impacting stock prices within minutes (Patell and Wolfson, 1984, Gosnell, Keown and Pinkerton, 1996). The weak form of the hypothesis suggests that past prices or returns reflect future prices or returns. The inconsistent performance of technical analysts suggests this form holds. However, Fama (1991) expanded the concept of the weak form to include predicting future returns with the use of accounting or macroeconomic variables. As discussed below, the evidence of predictability of returns provides an argument against the weak form.

2.2. Review of Previous Research

Rapach D. E. and Wohar M. E. (2005)

Using annual data for 1872-1997, Rapach and Wohar re-examined the predictability of real stock prices based on price-dividend and price earnings ratios. In line with extant literature they found significant evidence of increased long-horizon predictability, that is, the hypothesis that the current value of a valuation ratio is uncorrelated with future stock price changes cannot be rejected at short horizons but can be rejected at longer horizon based on bootstrapped critical values constructed from linear representations of the data.

Campbell and Shiller (2001)

The use of price-earnings ratios and dividend-price ratios as forecasting variables for the stock market is examined using aggregate annual US data 1871 to 2001 and aggregate quarterly data for twelve countries since 1970. They conclude that, overall, the ratios do poorly in forecasting future dividend growth, future earnings growth, or future productivity growth. Rather, the ratios appear to be useful primarily in forecasting future stock price changes, contrary to the simple efficient-market models.

Mark and Sul (2002)

Mark and Sul (2002) identify local asymptotic power advantages at long-horizons in certain regions of admissible parameter space that are confirmed for finite samples in Monte Carlo experiments.

Campbell (2001)

Campbell (2001) finds potential asymptotic power gains at long-horizons and asymptotic power gains at long-horizons for finite samples in Monte Carlo simulations.

Berben and Van Dijk (1998)

Berben and Van Dijk (1998) find that local asymptotic power is not increasing in the horizons.

Campbell and Shiller (1998)

Campbell and Shiller (1998) conclude that, despite the economics difficulties inherent in long-horizons predictive, 'it is striking how well the evidence for [long-horizons] stock market predictability survives the various corrections that have been proposed'.

2.3. Theoretical Framework

Using the previous study methodology, this study examines the effects of price-earnings ratio and dividend yield to the stocks abnormal returns in the short term and long term period by using multiple regressions. Short term period means a period that has a time circle of no more than one year, for instance, monthly. Long term period is a period that has a time circle at least one year or more. Firstly, the writer collected all data of the stocks, consisting of stock Abnormal Returns, Price Earnings Ratio (PER), Dividend

Yield, in the short term and long term period. Earnings and Beta were used as the control variables, because those variables influence the return. Then the PER, Dividend Yield, Earnings and Beta were regressed to Abnormal Returns in the short term period to find the influence of PER and Dividend Yield on Abnormal Returns in the short term period. The same process was carried out for the long term period. Finally, the difference between the effect of PER and Dividend Yield on Abnormal Returns in short term period and in long term period was analyzed.

2.4. Hypothesis Formulation

Based on the explanation above, the writer formed the following hypotheses:

a. Short Term Period

H_{O1}: Price Earning Ratio and Dividend Yield does not influence Abnormal Returns in the short term period.

H_{A1}: Price Earning Ratio and Dividend Yield significantly and positively influence Abnormal Returns in the short term period.

b. Long Term Period

H_{O2}: Price Earning Ratio and Dividend Yield does not influence Abnormal Returns in the long term period.

H_{A2}: Price Earning Ratio and Dividend Yield significantly and positively influence Abnormal Returns in the long term period.

c. All Period

H_{O3}: Price Earning Ratio and Dividend Yield does not have a stronger influence on Abnormal Returns in long term period than in the short term period.

H_{A3}: Price Earning Ratio and Dividend Yield has a stronger influence on Abnormal Returns in long term period than in the short term period.

CHAPTER III

RESEARCH METHOD

3.1. Research Method

According to Sekaran (2000:127) in his book of Research Method for Business, Hypothesis-Testing Research is defined as "The study that engage in Hypotheses testing usually explain the nature of certain relationships, or establish the differences among groups of the interdependence of two or more factors in a situation".

Hypothesis itself, according to Sekaran (2000:108), is defined as:

> A logically conjectured relationship between two or more variables expressed in the form of a testable statement. Relationships are conjectured on the basis of the network of associations established in the theoretical framework formulated for the research study. By testing the hypothesis and confirming the conjectured relationships, it is expected that solutions can be found to correct the problem encountered.

The format of the hypothesis in this thesis is Null (Ho) and Alternate Hypotheses (HA). The null hypotheses state the exact relationships between two variables. In general, a null hypothesis is expressed as no significant differences between two variables. While alternate hypothesis is the opposite of null hypothesis, which indicates that there is a significant differences between the variables.

In this study, null and alternate hypothesis format are chosen as this study is aimed to give empirical evidence on the effects between valuation ratio and stock price and also to find out the difference of those effects over short term and long term period.

3.2. Research Object

Manufacturing companies on the Jakarta Stock Exchange will be used as the object of this research. The reason for using those companies is that there are many of manufacturing companies on the JSX. Hopefully the results of this research will reflect the condition of companies listed on the Jakarta Stock Exchange overall.

3.3. Research Variables

1. Abnormal Returns

   Abnormal Returns is the difference between actual returns and expected returns. The expected returns here are the market returns. For example if a stock increased by 5%, but the average market only increased by 3%, then the Abnormal Returns would be 2% (5% - 3% = 2%). If the market average performs better than the individual stock then the Abnormal Returns will be negative.

   The Formula is = $\frac{P_t - P_{t-1}}{P_{t-1}} - \frac{IHSG_t - IHSG_{t-1}}{IHSG_{t-1}}$

   Where: P_t = Closing stock price on day t

   P_{t-1} = Closing stock price on day t-1

$IHSG_t$ = Stock Price Index on day t

$IHSG_{t-1}$ = Stock Price Index on day t-1

2. Price Earnings Ratio (PER)

The P/E ratio, also referred to as the earnings multiplier, is typically calculated as the ratio of the current market price to the firm's earnings. It is an indication of how much the market as a whole is willing to pay per dollar of earnings.

The formula of P/E ratio is = $\frac{Stock\ Price}{EPS}$

For short term period the stock price is considered to be closing price at the end of the month, and for the long term period the stock price is considered to be the closing price at the end of the year. Also for the short term period EPS used are annualized EPS from the quarterly financial reports.

3. Dividend Yield

Dividend yield is A financial ratio that shows how much a company pays out in dividends each year relative to its share price. In the absence of any capital gains, the dividend yield is the returns on investment for a stock. Dividend yield is a way to measure how much cash flow you are getting for each dollar invested in an equity position

The formula is = $\frac{DividendPerShare}{Stock\ Price}$

4. Stock Beta

Stock Beta is a measure of a stock's volatility in relation to the market. Beta is measured from the relationship between the rate of returns of a stock with the market. In this research we use daily beta that is from secondary data. We take the data from Pusat Pasar Modal UGM.

The beta formula they use is: $BETA_t = \frac{Cov(RETH_t, RETPBN_t)}{VARPASBNST_t}$

And $Cov(RETH_t, RETPBN_t)$ is covariance between stock returns with market returns, wih the formula as follows:

$Cov(RETH_t, RETPBN_t) =$

$$\frac{\sum_{i-a}^{t}(RETH_t - RATARAHST)(RETPBN_t - RATARETPBNST)}{n}$$

While:

$RETH_t$ = Daily returns of the stock on day t

$RATARAHST$ = Average returns of the stock in one year

$RETPBN_t$ = Market returns on day t

$RATARETPBNST$ = Average market returns in one year

And the formula $VARPASBNST_t$ as follow:

$$VARPASBNST_t = \frac{\sum_{i-a}^{t}(RETPBNt - RATRETBNDTt)}{n}$$

While:

$RETPBN_t$ = Market returns from IHSG

$RATRETBNDT_t$ = Average market returns from IHSG in one year

A	= 1st January XXXX
T	= Effective date day on year XXXX
n	= Number of day

For the long term period we use daily beta per December 31st or end of the year of current year and for the short term period we use daily beta per the last day of current month.

5. Earnings After Tax (EAT)

Earning After Tax is the total earnings of a company in the current year after the interest and tax is deducted. It can be positive or negative, regarding the performance of the company itself. For the short term period we use quarterly net income taken from the financial reports.

3.4. Data Gathering

Data was used from ICMD Pojok BEJ UII and from Pusat Pasar Modal UGM, manufacturing companies listed on the Jakarta Stock Exchange (JSX) in the period of 1995 – 2005.

3.5. Population and Sample

Manufacturing companies consistently listed on the Jakarta Stock Exchange from December 31st 1994 until December 31st 2004 make up the population of this research. Forty-four of those companies were randomly selected as the research sample.

3.6. Observation Period

For the long term period research we focused on 1995-2004 yearly company financial statements. And for the short term period we used quarterly company financial statements from the year 2004, merely to data availability, where the time periods pertain the data needed was easily accessible.

3.7. Analysis Method

3.7.1. Classic Assumption Test

- **Autocorrelation**

The term autocorrelation may be defined as

"Correlation between members of a series of observations ordered in time (as in time series data) or space (as in cross-sectional data". (Gujarati,1978:442)

In the regression context, the classical linear regression model assumes that such autocorrelation does not exist in the disturbances. μ_i. symbolically, (Damodar N. Gujarati, 2003: 442)

$$E(\mu_i \mu_j) = 0 \qquad i \neq j$$

There are various ways to examine the residuals. The most used test for detecting serial correlation is that developed by statisticians Durbin and Watson. It is popularly known as the Durbin-Watson *d* statistic, which is defined as:

$$d = \frac{\sum_{t=2}^{t=n}\left(\hat{ut} - \hat{ut-1}\right)^2}{\sum_{t=1}^{t=n}\hat{ut}^2}$$

This is simply the ratio of the sum of squared differences in successive residuals to the Residual Sum of Squares (RSS).

The advantage of the *d* statistic is that it is based on the estimated residuals, which are routinely computed in regression analysis, so based on Damodar N. Gujarati (2003: 467-468)

1. The regression model includes the intercept term.
2. The explanatory variables, the X's, is nonstochastic, or fixed in repeated sampling.
3. The disturbances μ_t are generated by the first-order autoregressive scheme: $\mu_t = \rho\mu_{t-1} + \varepsilon_t$. Therefore, it cannot be used to detect higher-order autoregressive schemes.
4. The error term μ_t is assumed to be normally distributed.
5. The regression model does not include the lagged value (s) of the dependent variable as one of the explanatory variables. Thus, the test is inapplicable in models of the following type:

   $$Y_t = \beta_1 + \beta_2 PER_t + \beta_3 PDR_t + \ldots + \beta_k X_{kt} + \gamma Y_{t-1} + \mu_t$$

   where Y_{t-1} is the one period lagged value of *Y*.
6. There are no missing observations in the data.

The Durbin-Watson test is as follow, assuming that the assumptions underlying the test are fulfilled:

1. Run the OLS regression and obtain the residuals.

2. Compute *d* from

3. For the given sample size and given sample size and given number of explanatory variables, find out the critical d_L *and* d_U values.

4. Then follow the decision rules below.

Null hypothesis	Decision	If
No positive autocorrelation	Reject	$0 < d < d_L$
No positive autocorrelation	No decision	$d_L \leq d \leq d_U$
No negative correlation	Reject	$4- d_L < d < 4$
No negative correlation	No decision	$4- d_U \leq d \leq 4- d_L$
No autocorrelation, positive; or negative	Do not reject	$d_U < d < 4- d_U$

To avoid some of the pitfalls of the Durbin-Watson *d* test of autocorrelation, statistician Breusch and Godfrey have developed a test of autocorrelation that is general in the sense that it allows for (1) nonstochastic regressor, such as the lagged values of the regressand; (2) higher-order autoregressive schemes, such as AR (1), AR (2), etc.; and (3) simple or higher-order moving averages of white noise error terms, such as ε_t in $\mu_t = \rho\mu_{t-1} + \varepsilon_t \qquad -1 < \rho < 1$

The BG test involves the following steps:

1. Estimate $\beta_1 + \beta_2 X_t + \mu_t$ by OLS and obtain the residuals $\hat{u}_t$.

2. Regress $\hat{u}_t$ on the original X_t (if there is more than one *X* variable in the original model) and $\hat{u}_{t-1}$, $\hat{u}_{t-2}$... $\hat{u}_{t-p}$, where the latter are the lagged values of the estimated residuals in step 1.
3. If the sample size is large (technically, infinite), BG have shown that

$$(n-p)R^2 \sim PER_p$$

That is, asymptotically, *n-p* times the R^2 value obtained from the auxiliary regression $\hat{u}_t = \alpha_1 + \alpha_2 X_t + \rho_1 \hat{u}_{t-1} + \rho_2 \hat{u}_{t-2} + ... + \rho_p \hat{u}_{t-p} + \varepsilon_t$ follow the chi-square distribution with *p* df. If in an application, $(n-p)\ R^2$ exceeds the critical chi-square value at the chosen level of significance, we reject the null hypothesis, in which case at least one rho in $\hat{u}_t = \rho_1 \mu_{t-1} + \rho_2 \mu_{t-2} + ... + \rho_p \mu_{t-p} + \varepsilon_t$ is statistically significantly different from zero.

- **Multicollinearity**

One of the assumptions of the classical linear regression model is that there is no multicolinearity among the explanatory variables, the *X*'s. Multicolinearity was used to show that there is a linier correlation between the independent variables in the regression model. If the variables are perfectly correlated, it is called perfect multicollinearity. Multicollinearity was used to show whether there is a high collinearity degree between the independent variables.

Since multicolinearity is essentially a sample phenomenon, arising out of the largely nonexperimental data collected in most social sciences, we do not have one unique method of detecting it or measuring its strength. But based on the Damodar N. Gujarati, there are some rules of thumb:

1. High R^2 but a few significant t ratios.
2. High pair-wise correlations among regressors.

   $$Y_i = \beta_1 + \beta_2 PER_i + \beta_3 DIVYIELD_i + \beta_4 EAT_i + \mu_i$$

   And suppose that

   $$EAT_i = \lambda_2 PER_i + \lambda_3 DIVYIELD_i$$

   Where λ_2 and λ_3 are constants, not both zero. Obviously, EAT is an exact linear combination of PER and DIVYIELD, giving R^2_{423} = 1, the coefficient of determination in the regression of EAT on PER and DIVYIELD.
3. Examination of partial correlations.
4. Auxiliary regressions
5. Eigenvalues and condition index.
6. Tolerance and variance inflation factor.

If this multicollinearity happens we can follow some rules of thumb:

1. A priori information
2. Combining cross-sectional and time series data
3. dropping a variable(s) and specification bias

- **Heteroscedasticity**

A critical assumption of the classical linear regression model is that the disturbances μ_i have all the same variance, σ^2. If this assumption is not satisfied, there is heteroscedasticity. Heterosdasticity does not destroy the unbiased ness and consistency properties of OLS estimators, but these estimators are no longer minimum variance or efficient.

In the presence of heterosdasticity, the variances of OLS estimators are not provided by the usual OLS formulas. But if we persist in using the usual OLS formulas, the *t* and *F* tests based on them can be highly misleading, resulting in erroneous conclusions.

Based on Damodar N. Gujarati (2003: 403-415) there are several tests which can be done to detect the heterosdasticity:

1. Park test

   The suggested was

   $$\sigma^2{}_i = \sigma^2 X^{\beta}{}_i e^{vi}$$

   Or

   $$\ln \sigma^2{}_i = \ln\sigma^2 + \beta \ln X^{\beta}{}_i + v_i$$

   where v_i is the stochastic disturbance term.

   Since $\sigma^2{}_i$ is generally not known, park suggests using $\hat{u}^2{}_i$ as a proxi and running the following regression:

   $$\ln \hat{u}^2{}_i = \ln \sigma^2 + + \beta \ln X_i + v_i$$

   $$= \alpha + \beta \ln X_i + v_i$$

2. Glejser Test

$\hat{u}_i = \sqrt{\beta_1 + \beta_2 X_i + V_i}$ and $\hat{u}_i = \sqrt{\beta_1 + \beta_2 X_2^2 + V_i}$

Glejser has found that for large samples the first four of the preceding models give generally satisfactory results in detecting heteroscedasticity.

3. Spearman's Rank Correlation Test

$$r_s = 1 - \sigma\left[\frac{\sum d_i^{\,2}}{n\left(n^2 - 1\right)}\right]$$

Where d_i = difference in the ranks assigned to two different characteristics of the *i*th individual or phenomenon and n = number of individuals or phenomena ranked. The preceding rank correlation coefficient can be used to detect heteroscedasticity as follows: Assume $Y_i = \beta_0 + \beta_i X_i + u_i$

Step 1. Fit the regression to the data on Y and X and obtain the residuals $\hat{u}_i$.

Step 2. Ignoring the sign of $\hat{u}_i$, that is, taking their absolute value ($|\hat{u}_i|$), rank both ($|\hat{u}_i|$) and X_i (or $\hat{Y}_i$) according to an ascending or descending order and compute the Spearman's rank correlation coefficient given previously.

Step 3. Assuming that the population rank correlation coefficient ρ_s is zero and n > 8, the significance of the sample r_s can be tested by the r test as follows.

$$t = \frac{r_s\sqrt{n-2}}{\sqrt{1 - r_s^{\,2}}}$$

With df = $n - 2$

If the computed t value exceeds the critical t value, we may accept the hypothesis of heteroscedasticity; otherwise we may reject it. If the regression model involves more than one X variable, r_s can be computed between ($\hat{u}_i$) and each of the X variables separately and can be tested for statistical significance by the t test given in equation above.

4. Goldfeld-Quandt Test

Step 1. Order or rank the observations according to the values of X_i, beginning with the lowest X value.

Step 2. Omit c central observations, where c is specified a priority, and divide the remaining $(n - c)$ observations into two groups each of $(n - c)/2$ observations.

Step 3. Fit separate OLS regressions to the first $(n - c)/2$ observations, and obtain the respective residual sums of squares RSS_1 and RSS_2, RSS_1 representing the RSS from the regression corresponding to the smaller X_i values (the small variance group) and RSS_2 that from the larger X_i values (the large variance group). These RSS each have

$$\frac{(n-c)}{2} - k \quad \text{or} \quad \left(\frac{n-c-2k}{2}\right) df$$

Where k is the number of parameters to be estimated, including the intercept.

Step 4. Compute the ratio

$$\lambda = \frac{RSS_2/df}{RSS_1/df}$$

If in an application the computed λ (= F) is greater than the critical F at the chosen level of significance, we can reject the hypothesis of homoscedasticity, that is, we can say that heteroscedasticity is very likely.

5. Breusch-Pagan-Godfrey Test

Step 1. Estimate $Y_i = \beta_1 + \beta_2 PER_i + \ldots + \beta_k X_{ki} + u_i$ by OLS and obtain the residuals $\hat{u}_1, \hat{u}_2, \ldots, \hat{u}_n$

Step 2. Obtain $\sigma^2 = \Sigma \hat{u}_i^2/n$.

Step 3. Construct variables as:

$$p_i = \hat{u}_i^2/\sigma^2$$

which is simply each residual squared divided by σ^2.

Step 4. Regress p_i thus constructed on the Z's as:

$$p_i = \alpha_1 + \alpha_2 Z_{2i} + \ldots + \alpha_m Z_{mi} + v_i$$

where v_i is the residual term of this regression.

Step 5. Obtain the ESS (explained sum of squares) from:

$p_i = \alpha_1 + \alpha_2 Z_{2i} + \ldots + \alpha_m Z_{mi} + v_i$, and define

$$\vartheta = \tfrac{1}{2} (ESS)$$

Therefore, if in an application the computed ϑ (= *PER*) exceeds the critical *PER* value at the chosen level of significance, one can reject the hypothesis of homoscedasticity; otherwise one does not reject it.

6. White's General Heterodasticity Test

Step 1. Given the data, we estimate $Y_i = \beta_1 + \beta_2 PER_i + \beta_3 PDR_i + u_i$ and obtain the residuals, $\hat{u}_i$.

Step 2. We then run the following (auxiliary) regression:

$$\hat{u}_i = \alpha_1 + \alpha_2 X_{2i} + \alpha_3 X_{3i} + \alpha_4 X_2^2{}_i + \alpha_5 X_3^2{}_i + \alpha_6 X_{2i} X_{3i} + v_i$$

Step 3. Under the null hypothesis that there is no heteroscedaticity, it can be shown that sample size (n) times the R^2 obtained from the auxiliary regression asymptotically follows the chi-square distribution with the df equal to the number of regressors in the auxiliary regression. That is:

$$n \cdot R^2 \sim PER_{df}$$

Step 4. If the chi-square value obtained in $n \cdot R^2 \sim PER_{df}$ exceeds the critical chi-square value at the chosen level of significance; the conclusion is that there is heteroscedasticity.

This White test can be a test of (pure) heteroscedasticity or specification error or both.

As we have seen, heteroscedasticity does not destroy the unbiasedness and consistency properties of the OLS estimators, but they are no longer efficient, not even asymptotically.

3.7.2. Multiple Linear Regression Analysis

To analyze the effect of the independent variables to dependent variable, we use multiple linear regression analysis with four predictors that can be formulated as below:

Long Term Period

$$AR = b_0 + b_1PER + b_2DIVYIELD + b_3EAT + b_4BETA$$

AR = Annual Abnormal Returns From 1995 - 2004

b_0 = AR value, if PER = DIVYIELD = EAT = BETA = 0

b_2 = Partial Regresion coefficient, measure the effect of PER to Y, if PER rise 1 unit and DIVYIELD and EAT and BETA remain constant.

b_3 = Partial Regresion coefficient, measure the effect of DIVYIELD to Y, if DIVYIELD rise 1 unit and PER and EAT and BETA remain constant.

b_4 = Partial Regresion coefficient, measure the effect of EAT to Y, if EAT rise 1 unit and PER and DIVYIELD and BETA remain constant.

b_5 = Partial Regresion coefficient, measure the effect of BETA to Y, if BETA rise 1 unit and PER and DIVYIELD and EAT remain constant.

PER = Annual Price Earnings Ratio

DIVYIELD = Dividend Yield Ratio

EAT = Earnings After Tax

BETA = Annual Beta

Short Term Period

$$AR = b_0 + b_1PER + b_2DIVYIELD + b_3INCOME + b_4BETA$$

AR = Quarterly Abnormal Returns From 1995 - 2004

b_0 = AR value, if PER = DIVYIELD = INCOME = BETA = 0

b_2 = Partial Regresion coefficient, measure the effect of PER to Y, if PER rise 1 unit and DIVYIELD and INCOME and BETA remain constant.

b_3 = Partial Regresion coefficient, measure the effect of DIVYIELD to Y, if DIVYIELD rise 1 unit and PER and INCOME and BETA remain constant.

b_4 = Partial Regresion coefficient, measure the effect of INCOME to Y, if INCOME rise 1 unit and PER and DIVYIELD and BETA remain constant.

b_5 = Partial Regresion coefficient, measure the effect of BETA to Y, if BETA rise 1 unit and PER and DIVYIELD and INCOME remain constant.

PER = Quarterly Price Earnings Ratio

DIVYIELD = Quarterly Price Dividend Ratio

INCOME = Quarterly income

BETA = Quarterly Beta

If the variable X and Y are correlated, so the relationship can be positive or negative, which means the effect caused by the X on Y can be positive or negative. The relation between X and Y is called positive if the increase/decrease of X causes the increase/decrease of Y that is X↑↓ → Y↑↓. Meanwhile, the relation of X and Y is called negative if the increase/decrease of X causes the decrease /increase of Y that is X↑↓ → Y↓↑.

X and Y are said to be uncorrelated if the increasing/decreasing X is not followed continuously by the increasing/decreasimg Y.

3.8.3. Hypothesis Testing

Hypothesis testing is used to determine whether to accept or reject the hypotheses that are stated. The hypothesis testing procedure in this research is done by comparing significant value of "t" with parameter 10% as followed:

Ho is rejected, if significant value < 10 %

Ho is accept if, if significant value > 10 %

CHAPTER IV

RESEARCH FINDING, DISCUSSION and IMPLICATIONS

4.1. Sample Selection

To answer the research problem, the computation of data gathered from the experiment will be discussed in this section. From all financial statements published from the year 1995 until 2004, the number of sample found from several sources before and after selection through several criteria stated n the chapter III is described as follows:

a. The number of samples that consist of the firms listed as manufacturing companies continually from 1995-2004.

b. The number of samples are 44 companies for the long term research

c. Because of the availability of the data, the short term research only used 34 companies.

The complete list of the companies used in this research is on the appendices.

4.2. Descriptive Statistics Analysis

The purpose of descriptive statistics is to give the overview or general description from the mean, standard deviation, variance, maximum, minimum, kurtosis and skewness. Using SPSS program the data was processed, and gave the following the results:

4.2.1. Long Term Period

Table 4.1

Descriptive Statistics

	N	Minimum	Maximum	Mean	
	Statistic	Statistic	Statistic	Statistic	Std. Error
AR	440	-0,315	0,664	0,00686	0,00389
PER	440	-256,390	1.494,740	20,19082	4,65243
DIVYIELD	439	0,000	0,474	0,02339	0,00221
EAT	440	-4.820,681	5.405,506	100,91862	36,40194
BETA	440	-0,971	2,368	0,48093	0,02756
Valid N (listwise)	439				

Table 4.2

	Std. Dev.	Variances	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
AR	0,081628	0,007	3,577	0,116	25,002	0,232
PER	97,590158	9.523,839	11,486	0,116	155,824	0,232
DIVYIELD	0,046273	0,002	4,568	0,117	30,202	0,233
EAT	763,573479	583.044,457	0,403	0,116	18,767	0,232
BETA	0,578023	0,334	0,349	0,116	-0,298	0,232
Valid N (listwise)						

The output shows that the N is 440, the sample comes from 44 companies, using the yearly financial reports within ten years. The lowest Abnormal Return is -0,315 or -31% and the highest Abnormal Return is 0,664 or 66,4%. The average Abnormal Return is 0,00686 or 0,69%, with a Standard Deviation of 0,081628.

The lowest PER is -256,390 or -25639% and the highest PER is 1.494,740 or 149.474%. The average PER is 20,19082 or 2.019,1% with a Standard Deviation of 97,590158.

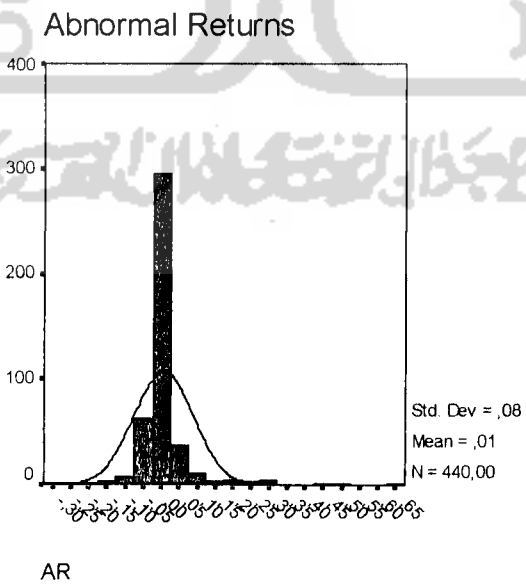
The lowest Dividend Yield is 0,000 or -0% and the highest Dividend Yield is 0,474 or 47,4%. The average Dividend Yield is 0,02339 or 2,339% with a Standard Deviation of 0,046273.

The lowest EAT is -4.820,681 or Rp -4.820,681 billion and the highest EAT is 5.405,506 or Rp 5.405,506 billion. The average EAT is 100,91862 or Rp 100,92 billion with a Standard Deviation of 763,573478.

The lowest Beta is -0,97107 and the highest Beta is 2,368. The average Beta is 0,48093 with a Standard Deviation of 0,578023.

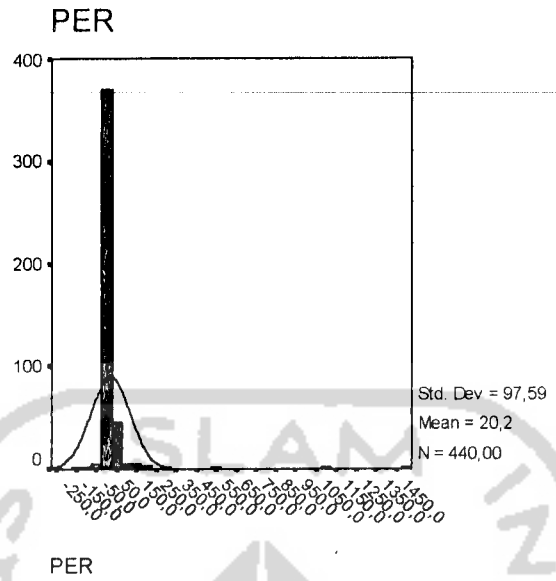
Skewness and Kurtosis are measurements that determine whether the data is of normal distribution or not. Skewness measures the skew of the data and the Kurtosis measure the peak of data distribution. Normally distributed data should have a skewness value near to zero. Based on the output, the Abnormal Returns had a skewness value of 3,577, which means that the Abnormal Returns were not normally distributed. To prove this we can see from the histogram graph bellow:

Figure 4.1



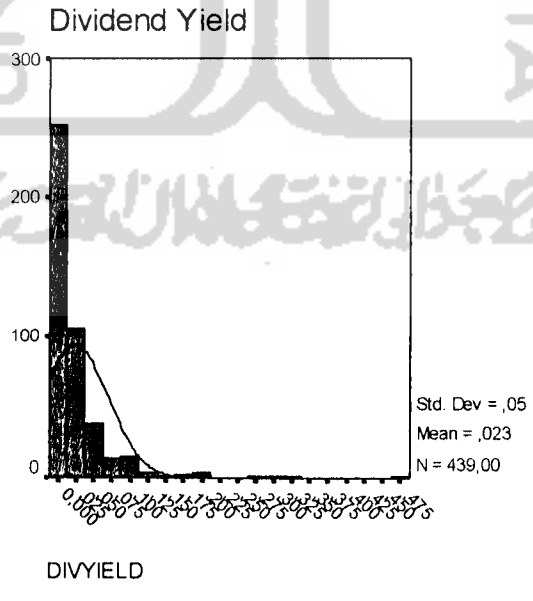
It shows that the Abnormal Returns graph skew to the left.

Figure 4.2



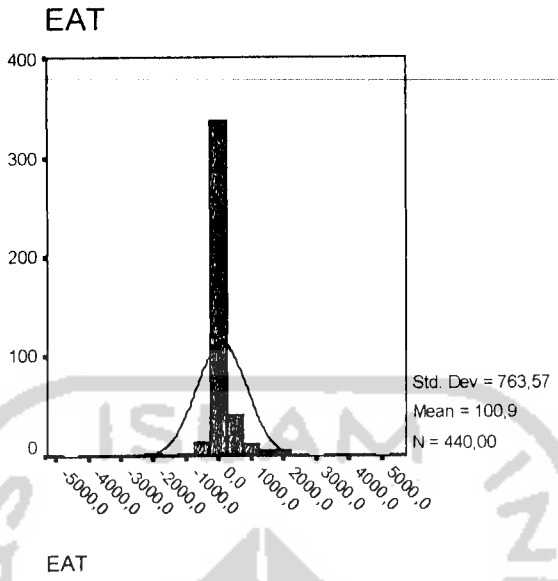
The PER has a skewness value of 11,486 which means that the PER was not normally distributed. That above graph shows that PER skew to the left.

Figure 4.3



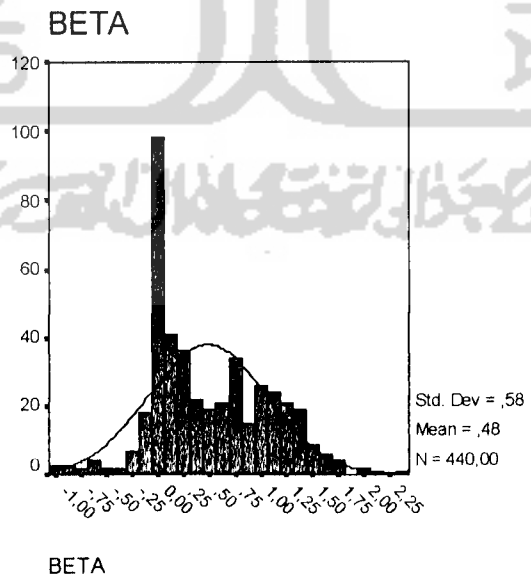
The Dividend Yield has a skewness value of 4,568 which means that the Dividend Yield was quite normally distributed.

Figure 4.4



The EAT has a skewness value of 0,403 which means that the EAT was normally distributed.

Figure 4.5



The Beta has a skewness value of 0,971 which means that the Beta was normally distributed.

4.2.1. Short Term Period

Table 4.3

Descriptive Statistics

	N	Minimum	Maximum	Mean	
	Statistic	Statistic	Statistic	Statistic	Std. Error
ARDP	136	-0,11114	0,12237	-0,0047180	0,0024094
PER	136	-285,71	278,22	12,8923	4,0841
DIV_YLD	136	0,00	0,05	0,0022	0,0008
Q_INC	136	-5.380,61	5.442,61	23,7609	99,4596
BETA	136	-0,98488	0,99565	0,0299398	0,0495698
Valid N (listwise)	136				

Table 4.4

	Std. Dev.	Variances	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
ARDP	0,02809842	0,001	0,546	0,208	8,023	0,413
PER	47,62809	2.268,435	0,846	0,208	21,525	0,413
DIV_YLD	0,00931	0,000	4,240	0,208	17,072	0,413
Q_INC	1.159,88810	1.345.340,411	-0,040	0,208	8,985	0,413
BETA	0,57807826	0,334	-0,067	0,208	-1,092	0,413
Valid N (listwise)						

The output shows that the N is 136, the sample comes from 34 companies using the quarterly financial reports within one year. The lowest Abnormal Return is -0,11114 or -11,1% and the highest Abnormal Return is 0,12237 or 12,2%. The average Abnormal Return is -0,0047180 or -0,47% with a Standard Deviation of 0,02809842.

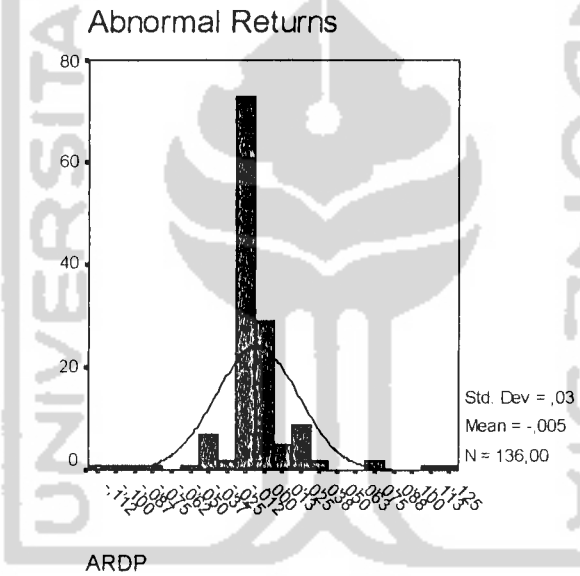
The lowest PER is -285,71or -25.871% and the highest PER is 278,22 or 27.822%. The average PER is 12,8923 or 1.289,3% with a Standard Deviation of 47,62809.

The lowest Dividend Yield is 0,00 or 0% and the highest Dividend Yield is 0,05 or 5%. The average Dividend Yield is 0,0022 or 0,22% with a Standard Deviation of 0,00931.

The lowest Quarterly Net Income is -5.380,61 or Rp -5.380,61 billion and the highest Quarterly Net Income is 5.442,61 or Rp 5.442,61 billion. The average Quarterly Net Income is 23,7609 or Rp 23,7609 billion with a Standard Deviation of 1.159,88810.

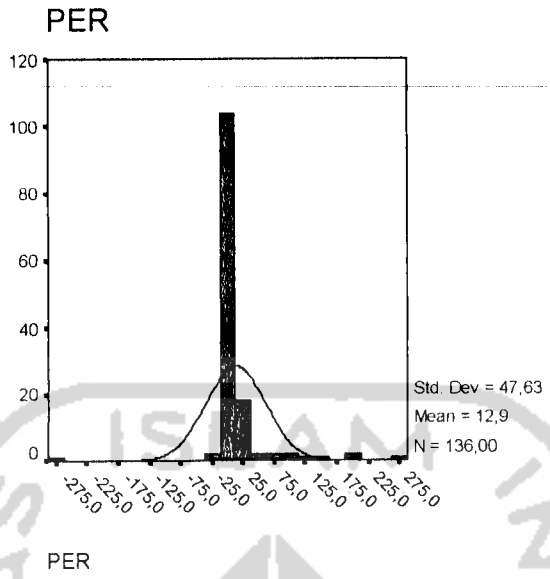
The lowest Beta is -0,98488 and the highest Beta is 0,99565. The average Beta is 0,0299398 with Standard Deviation is 0,57807826.

Figure 4.6



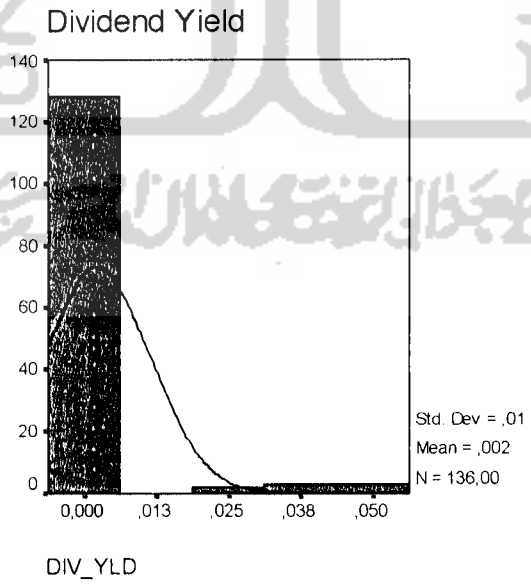
The Abnormal Returns have skewness value 0,546 means that the Abnormal Returns was normal distributed. To prove it we can see from the histogram graph above.

Figure 4.7



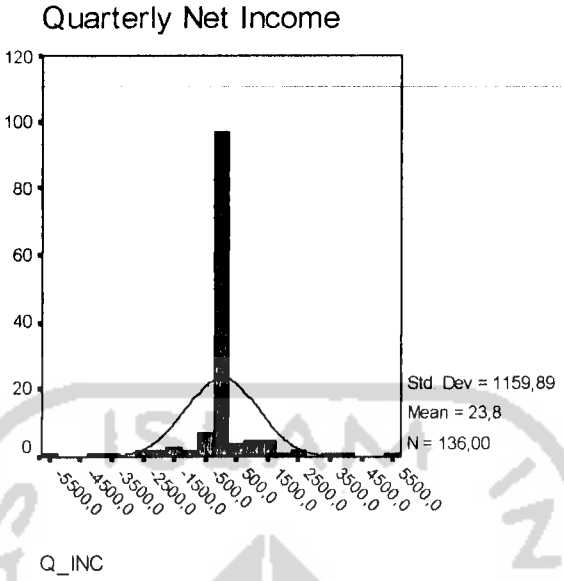
The PER has a skewness value of 0,846 which means that the Abnormal Returns was normally distributed.

Figure 4.8



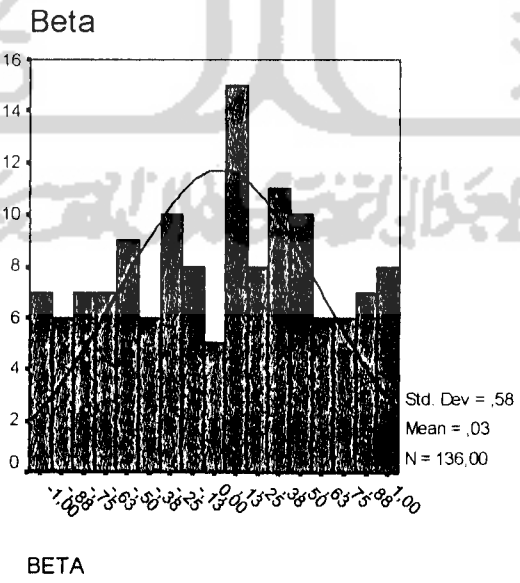
The Dividend Yield has a skewness value of 4,240 which means that the Dividend Yield was not normally distributed.

Figure 4.9



The Quarterly Net Income has a skewness value of -0,040 which means that the Quarterly Net Income was normally distributed.

Figure 4.10



The Beta has a skewness value of -0,067 which means that the Abnormal Returns was normally distributed.

4.3. Classical Assumption Test and Regression Analysis

Before carrying out the regression analysis, the classical assumption tests were done first. The aim of classical assumption testing is to ensure that the regression model is free from classical assumption disturbances, in order to improve the quality of the regression model. The classical assumption tests used here are the Multicollinearity Test, Autocorrelation Test and Heteroscdascity Test.

After the classical assumption tests were done, then regression analysis was used to test the hypothesis. The purpose of the regression here is to determine the relationship between PER, Dividend Yield, Beta, and EAT or Quarterly Net Income and Abnormal Returns.

4.3.1. Long Term Period

The Long Term Period is the period with a time span of one year or more. This research uses yearly data from within 1995-2004, 44 manufacturing companies were used as the samples.

4.3.1.1. Multicollinearity Test

The purpose of Multicollinearity Testing is to determine whether any correlation between independence variables can be found. A good regression model should be free from correlation between independent variables. If those independent variables are correlated it means they are not ortogonal. Ortogonal variables are independent variables which have zero correlation with other independent variables.

Table 4.5

Coefficient Correlations(a)

Model			BETA	PER	EAT	DIVYIELD
1	Correlations	BETA	1,000	,005	,064	,083
		PER	,005	1,000	-,009	,057
		EAT	,064	-,009	1,000	-,043
		DIVYIELD	,083	,057	-,043	1,000
	Covariances	BETA	4,644E-05	1,481E-09	2,245E-09	4,790E-05
		PER	1,481E-09	1,613E-09	-1,905E-12	1,948E-07
		EAT	2,245E-09	-1,905E-12	2,644E-11	-1,905E-08
		DIVYIELD	4,790E-05	1,948E-07	-1,905E-08	,007

a Dependent Variable: AR

Table 4.6

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	,010	,006		1,821	,069		
	PER	6,622E-06	,000	,008	,165	,869	,997	1,003
	DIVYIELD	-,034	,085	-,019	-,396	,692	,988	1,012
	EAT	-3,002E-06	,000	-,028	-,584	,560	,993	1,007
	BETA	-,005	,007	-,037	-,772	,440	,989	1,012

a Dependent Variable: AR

From the correlation between independent variables we can see that there are no variables which have significant correlation with the other. Even the variable DIVYIELD which has the highest correlation with BETA, with a correlation rate of 0,083 or 8,3%, is still much lower than 90%. This means that there are no serious multicollinearity problems with the data. The computation results also show that there are no variables with a tolerance value lower than 10% which means there are no correlations between independent variables that have a value higher than 95%. The variance inflation factor (VIF) results also show that there are no independent

variables with VIF of more than 10. We can conclude that there are no multicollinearity in the regression.

4.3.1.2. Autocorrelation Test

The purpose of Autocorrelation Testing is to test whether any error disturbances correlation occur between t period and t-1 period in a linear regression. If there is any correlation it is called autocorrelation. Autocorrelation occurs when a long series of observations are correlated with each other. This problem emerges when the residuals are not free from one observation to another. Usually this problem is found on time series observation.

Table 4.7

Model Summary(b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,049(a)	,002	-,007	,081998	2,097

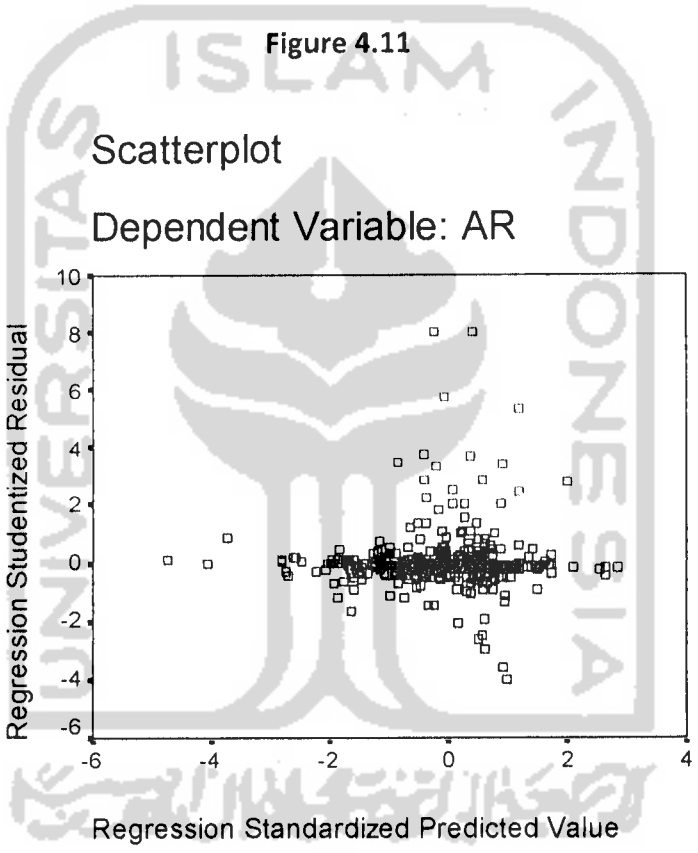
a Predictors: (Constant), BETA, PER, EAT, DIVYIELD
b Dependent Variable: AR

From the computation results the Durbin-Watson value is 2,097, this value will be compared with the table value using confidence level 5%, sample number 44 and four independent variables. In table we find that the value is 1,72. Because the DW value is 2,097 and it is higher than the upper limit (du) 1,72 we can conclude that there are no positive autocorrelation on the regression model.

4.3.1.3. Heteroscedascity Test

The purpose of Heteroscedascity Testing is to test whether there is any unequal variance of residual between one and an other observations in the regression model. If the variance of residual from one to another observation is constant it is called Homoscedascity and if it is different it is called Heteroscedascity. A good regression model is Homoscedascity.

Figure 4.11



From the SPSS output the dots seem to make a pattern. They gather at the number zero on the Y axis. We can say that there is a serious heteroscedascity problem. To fix the model we make transformation in the regression model by dividing the regression model with one of the independent variables used in the model. In this case we used the variable Sales as denominator.

4.3.1.4. Regression Analysis

From the data above we made a regression using SPSS software and here are the results:

4.3.1.4.1. Coefficient Determination

Table 4.8

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,336(a)	,113	,105	,02631384

Predictors: (Constant), BEAT, EAT, PEREAR, DIVEAT

From the output we found that adjusted R^2 is 0,105 which means that 10,5% variation of Abnormal Return can be determined by variation of EAT, PER, Dividend Yield and Beta, the rest (100% - 10,5% = 89,5%) are determined by other factors outside of the model.

4.3.1.4.2. Simultaneous Significance Test (F Statistics Test)

Table 4.9

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,038	4	,010	13,790	,000(a)
	Residual	,301	434	,001		
	Total	,339	438			

a Predictors: (Constant), BEAT, EAT, PEREAR, DIVEAT
b Dependent Variable: AREAT

Anova Test or F Test resulting F counted value 13,790 with the significance level are 0,00. Because the significance probability is

much lower than 0,05, the regression model can be used to predict Abnormal Returns or in the other words PER, Dividend Yield, EAT and Beta simultaneously influence the Abnormal Returns.

4.3.1.4.3. Individual Parameter Significance Test (t Statistics Test)

Table 4.10

Coefficients(a)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	,001	,001		1,118	,264
EAT	-2,432E-07	,000	-,007	-,148	,883
PEREAR	9,645E-06	,000	,026	,481	,631
DIVEAT	,503	,156	,224	3,225	,001
BEAT	-,014	,002	-,484	-6,621	,000

a Dependent Variable: AREAT

From the four independent variables entered in to the regression, only Dividend Yield and Beta significantly influence the Abnormal Return. Dividend Yield gives coefficient of parameter 0,503, with a significance level of 0,001 and Beta gives coefficient of parameter -0,014 , with a significance level of 0,000.

From the regression we found that Dividend Yield and Beta significantly influence the Abnormal Return. Dividend Yield has a positive relationship with constanta 0,503 and Beta has a negative relationship with constanta -0,14. Every increase of 1 unit in Dividend Yield will be followed by a 0,503 unit increase in Abnormal Returns. And every increase of 1 unit in Beta will be followed by a 0,14 unit

decrease in Abnormal Returns. The other variables including PER and EAT do not significantly influence the Abnormal Returns.

Thus in the long term period Dividend Yield significantly and positively influences the Abnormal Returns but PER does not significantly influence the Abnormal Returns.

4.3.2. Short Term Period

The Short Term Period is the period that has a time span of less than one year. This research use quarterly data in year 2004, and we use 34 manufacturing companies as the samples.

4.3.2.1. Multicollinearity Test

The purpose of Multicollinearity Testing is to determine whether there is any correlation between independent variables. A good regression model should be free from correlation between independent variables. If those independent variables are correlated, it means that those variables are not ortogonal. Ortogonal variables are independent variables which have zero correlation with other independent variables.

Table 4.11

Coefficient Correlations(a)

Model			BETA	PER	Q_INC	DIV_YLD
1	Correlations	BETA	1,000	-,038	-,050	-,061
		PER	-,038	1,000	-,001	-,106
		Q_INC	-,050	-,001	1,000	,054
		DIV_YLD	-,061	-,106	,054	1,000
	Covariances	BETA	1,792E-05	-8,245E-09	-4,469E-10	-6,823E-05
		PER	-8,245E-09	2,654E-09	-1,113E-13	-1,439E-06
		Q_INC	-4,469E-10	-1,113E-13	4,439E-12	2,979E-08
		DIV_YLD	-6,823E-05	-1,439E-06	2,979E-08	,070

a Dependent Variable: ARDP

Table 4.12

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,006	,003		-2,166	,032		
	PER	7,026E-05	,000	,119	1,364	,175	,987	1,013
	DIV_YLD	-,023	,264	-,008	-,088	,930	,982	1,018
	Q_INC	-7,629E-08	,000	-,003	-,036	,971	,995	1,005
	BETA	,000	,004	-,002	-,026	,979	,992	1,008

a Dependent Variable: ARDP

From the correlation between independent variables we can see that there are no variables which have a significant correlation with the others. Even the variable DIVYIELD which has the highest correlation with PER, with a correlation rate of -0,106 or -10,6%, is still much lower than 90%. This means that there are no serious multicollinearity problems with the data. The computation results also show that there are no variables which have a tolerance value lower than 10% which means there are no correlations between independent variables with a value higher than 95%. The variance inflation factor (VIF) results also show that there are no independent

variables with a VIF of more than 10. We can conclude that there are no multicollinearity in the regression.

4.3.2.2. Autocorrelation Test

The purpose of Autocorrelation Testing is to test whether any error disturbance correlations occur between t period and t-1 period in a linear regression. If there is a correlation it called is autocorrelation. Autocorrelation occurs when a long series observations correlate with each other. This problem emerged when the residuals are not free from one observation to another. Usually this problem is found on time series observation.

Table 4.13

Model Summary(b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,118(a)	,014	-,016	,02832329	1,880

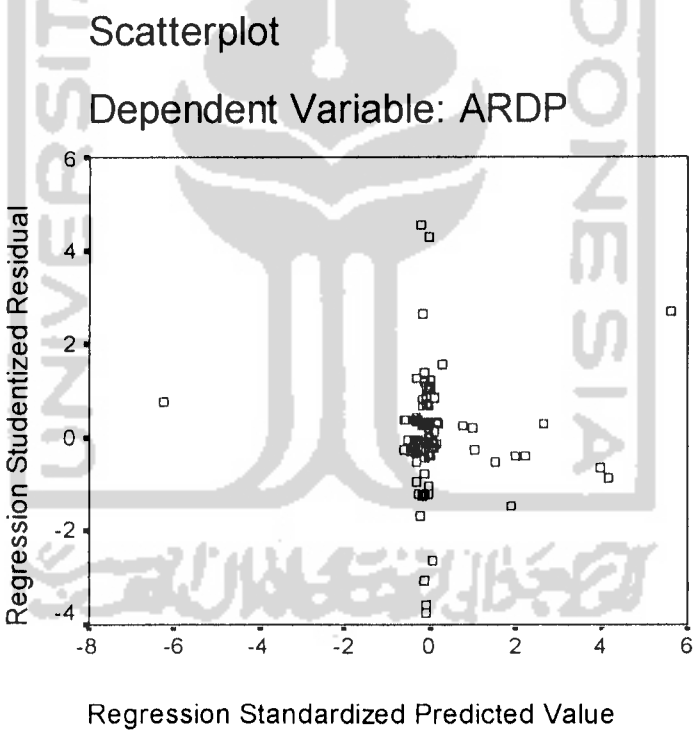
a Predictors: (Constant), BETA, PER, Q_INC, DIV_YLD
b Dependent Variable: ARDP

From the computation results the Durbin-Watson value is 1,880, this value will be compared with the table value using a confidence level of 5%, sample number 34 and four independent variables. In the DW table, we find that the value is 1,73. Because the DW value is 1,880 and it is higher than the upper limit (du) 1,73 Therefore it can be concluded that there are no positive autocorrelations on the regression model.

4.3.2.3. Heteroscedascity Test

The purpose of Heteroscedascity Testingis to test whether there is any unequal variance of residual between one and another observation in the regression model. If the variance of residual from one and another observation is constant it is called Homoscedascity, and if it is different it is called Heteroscedascity. The good regression model is one that shows Homoscedascity.

Figure 4.12



From the SPSS output, the dots seem make a pattern. They gather on the number zero on the Y axis and X axis. We can say that there are a serious heteroscedascity problems. To fix the model transformation was made in the regression model by dividing the regression model with one of the

independent variables used in the model. In this case the variable Sales was used as denominator.

4.3.2.4. Regression Analysis

From the data above we make a regression using SPSS software and here is the results:

4.3.2.4.1. Coefficient Determination

Table 4.14

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,794(a)	,630	,618	,0051131404

a Predictors: (Constant), BETINC, Q_INC, DIVINC, PERINC

From the output we find that adjusted R^2 is 0,618 means that 61,8% variation of Abnormal Return can be determined by variation of Quarterly Income, PER, Dividend Yield and Beta, the rest (100% - 61,8% = 38,2%) are determined by other factors outside of the model.

4.3.2.4.2. Simultaneous Significance Test (F Statistics Test)

Table 4.15

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,006	4	,001	55,307	,000(a)
	Residual	,003	130	,000		
	Total	,009	134			

a Predictors: (Constant), BETINC, Q_INC, DIVINC, PERINC
b Dependent Variable: ARINC

Anova Test or F Test resulting F counted value 55,307 with the significance level are 0,00. Because the significance probability are much lower than 0,05, so the regression model can be used to predict Abnormal Return or in the other words PER, Dividend Yield, Quarterly Income and Beta influence the Abnormal Return simultaneously.

4.3.2.4.3. Individual Parameter Significance Test (t Statistics Test)

Table 4.16

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	,000	,000		-,685	,495
	Q_INC	1,823E-09	,000	,000	,005	,996
	PERINC	4,619E-05	,000	,583	1,855	,066
	DIVINC	-,151	,922	-,009	-,164	,870
	BETINC	-,014	,003	-1,362	-4,332	,000

a Dependent Variable: ARINC

From the four independent variables that were entered in the regression, only BETA and PER that significantly influence the Abnormal Return. BETA gives a coefficient of parameter -0,014 with significance level of 0,000 and PER gives a coefficient of parameter 0,0000462 with significance level of 0,066.

From the second regression we found that PER and Beta significantly influence the Abnormal Return. PER has a positive relationship with constanta 0,0000462 and Beta has a negative relationship with constanta -0,14. Every increase in 1 unit in PER will be followed by a 0,0000462 unit increase in Abnormal Returns. And

every increase in 1 unit in Beta will be followed by a 0,14 unit decrease in Abnormal Returns. The other variables including Dividend Yield and Quarterly Income does not significantly influence the Abnormal Returns.

This means that in the short term period PER significantly and positively influences the Abnormal Returns but Dividend Yield does not significantly influence the Abnormal Returns.

4.3.3. Comparison between Short Term Period and Long Term Period

From the regression model on long term period and short term period we can see that both valuation ratios, PER and Dividend Yield are influence the stock price. We summarize that PER have stronger influence to Abnormal Returns in short term period rather than in long term period. It showed from the t Statistics Test that the significance for PER in long Term Period is 0,631 and in the short term period is 0,066. Dividend Yield have stronger influence on Abnormal Returns in long term period rather than in short term period, from the t Statistics test we can see that the significance of Dividend Yield in long term period is 0,001 and in the short term period is 0,870.

4.4. Implications

From the research process we find that Dividend Yield and PER influencing the Abnormal Return. It was in line with previous research done by Min-Tsung Cheng (2006) titled "The Effect of Financial Ratios on Returns from Initial Public Offerings: An Application of Principal Components

Analysis". He found empirical findings showing that returns of IPO were significantly affected by eight selected financial ratios, including liquid ratio and cash flow ratio.

We also found that Dividend Yield has more influence on Abnormal Returns in long term period rather than in short term period. This is in line with the research done by David E. Raparch and Mark E. Wohar (2005). Using annual data for 1872-1997, where they examined the predictability of real stock price based on price-dividend and price earnings ratios. They found significant evidence of increased long horizon predictability; that is the hypothesis that the current value of a valuation ratio is uncorrelated with future stock price changes cannot be rejected at short horizons but can be rejected at longer horizon based on bootstrapped critical values constructed from linear representations of the data.

Earnings do not significantly influence the stock price in our findings, this is in contrast with the classical paper study done by Ball and Brown (1968). They said that Earnings has a significant information because the good earnings news surprise will push the increase of stock price drastically, and the bad earnings news will push the decrease of stock price. The explanation for this case is that the data that is used in this research containing the year where the monetary crisis happened. The Ball and Brown theories will prevail if the information given from the stock market can be trusted.

Based on paper written by Indra Safitri, he said that there were many distortions in public information when the monetary crisis hit Indonesia.

Those distortions came from the ambivalent behavior of the government combined with flow of information that was contrary with many authorities. One example was when the government failed to announce the name a liquidated bank, this had a serious effect on investors believing information given by the government. Moreover there a lack of independence of market authorities and stock market management to protect the investor from disoriented information.

This condition was worsened by the irresponsibe commentaries from cabinet ministers and government officials, that became the meausring rod for the investors in making investment decisions. This condition taught the investors in the stock market to have investment pattern that consist of being short term, speculative and not trusting in all information they received. The accumulation of the effect of the lies by government officials became worsen along with the behavior of public emiten, where many of them gave fake information about the condition of their companies.

CHAPTER V

CONCLUSIONS and RECOMMENDATIONS

5.1. Conclusions

This study has focused on analyzing the influence of Dividend Yield and PER in the changes of Abnormal Returns. This chapter will give some conclusions and recommendations based on the analysis which has been taken from chapter four. The answers to questions in the problem formulation will also be explained as follows:

1. The data both in long term period and short term period have a heteroscedascity problem but there is no problem in the autocorrelation and multicollinearity, so the data can still be processed.
2. The results as partial or in F statistics show that PER, Dividend Yield and Beta have significant relationship with Abnormal Returns in the long term period and short term period.
3. In the long term period Dividend Yield has stronger influence on Abnormal Returns than in the short term period.
4. In the short term period PER has stronger influence on Abnormal Returns than in the long term period.
5. In our research findings, Earnings do not significantly influence the Abnormal Returns.

The occurrence of the monetary crisis has had an impact since year 1997 on stock price movement in the Jakarta Stock Exchange. This condition might make the investor generally take a decision to invest based on speculation as reason. The role of money market is greater than before because interest of the bank is increasing rapidly as a strategy to reduce the over excess of cash flow in the public as a result of high inflation. This condition made investors prefer to save their money in banks rather than invest it in the stock market. Investing in the stock market is much riskier than investing in a bank. Consequently, company performance at that time did not have a significant and positive influence on investors, because they favor to observe the external condition such as politics, security, economic regulations, etc. Irresponsible information given from cabinet ministers, government officials even from companies themselves was worsened this condition. In brief, the fundamental analysis of stock price becomes less important for investors to make decision of selling and buying stocks.

5.2. Recommendations

The results show that PER and Dividend Yield have a significant influence to Abnormal Returns, but they have different behavior in short term period and long term period. Based on that findings the long term investors should pay more attention to Dividend Yield, and short term investors should pay more attention to PER. Also they should carefully

monitor the actions taken by companies, because there are still many factors that influence the returns when investing in the stock market.

For the companies they must improve their performance, to give a good image to investors. They must make the effort to convince the investors that they have good prospects in the future. Learning from the past, where many investors have low trust in the market information, the company should work hard to build their credibility, to attract more investors in spending their funds in the company.

To give a more complete understanding of the effects of Financial Ratios, in this case PER and Dividend Yield, to Abnormal Returns, it is recommended that further research use samples that consists of all stock that has been listed on the Jakarta Stock Exchange. Because this research only used manufacturing companies, the results will be different to those obtained if we used companies from other business sectors, for example service companies or financial companies. Every business sector has its own characteristics.

APPENDICES I

APPENDICES

Research Samples for Long Term Period

No.	COMPANY NAME	CODE	INDUSTRY
1	PT. Aqua Golden Missisippi Tbk.	AQUA	Food and Beverages
2	PT. Davomas Abadi Tbk.	DAVO	Food and Beverages
3	PT. Fast Food Indonesia Tbk.	FAST	Food and Beverages
4	PT. Indofood Sukses Makmur Tbk.	INDF	Food and Beverages
5	PT. Sari Husada Tbk.	SHDA	Food and Beverages
6	PT. Ultra Jaya Milk Tbk.	ULTJ	Food and Beverages
7	PT. Gudang Garam Tbk.	GGRM	Tobacco Manufacturers
8	PT. HM Sampoerna Tbk.	HMSP	Tobacco Manufacturers
9	PT. Argo Pantes Tbk.	ARGO	Textile Mill Products
10	PT. Panasia Indosyntec Tbk.	HDTX	Textile Mill Products
11	PT. Textile Manufacturing Company Jaya (Texmaco Jaya) Tbk.	TEJA	Textile Mill Products
12	PT. Great River International Tbk.	GRIV	Apparel and Other Textile Products
13	PT. Karwell Indonesia Tbk.	KARW	Apparel and Other Textile Products
14	PT. Sepatu Bata Tbk.	BATA	Apparel and Other Textile Products
15	PT. Sumalindo Lestari Jaya Tbk.	SULI	Lumber and Wood Products
16	PT. Indah Kiat Pulp & Paper Tbk.	INKP	Paper and Allied Products
17	PT. Pabrik Kertas Tjiwi Kimia Tbk.	TKIM	Paper and Allied Products
18	PT Polysindo Eka Perkasa Tbk.	POLY	Chemical and Allied Products
19	PT Unggul Indah Cahaya Tbk.	UNIC	Chemical and Allied Products
20	PT Ekadharma Tape Industries Tbk.	EKAD	Adhesive
21	PT Asahimas Flat Glass Tbk.	AMFG	Plastics and Glass Products
22	PT Dynaplast Tbk.	DYNA	Plastics and Glass Products
23	PT Trias Sentosa Tbk.	TRST	Plastics and Glass Products
24	PT Semen Gresik (Persero) Tbk.	SMGR	Cement
25	PT Citra Tubindo Tbk.	CTBN	Metal and Allied Products
26	PT Lionmesh Prima Tbk.	LMSH	Metal and Allied Products
27	PT Tembaga Mulia Semanan Tbk.	TBMS	Metal and Allied Products
28	PT Kedaung Indah Can Tbk.	KICI	Fabricated Metal Products
29	PT Surya Toto Indonesia Tbk.	TOTO	Stone, Clay, Glass and Concrete Products
30	PT Komatsu Indonesia Tbk.	KOMI	Machinery
31	PT Jembo Cable CompanyTbk.	JECC	Cable
32	PT Voksel Electric Tbk.	VOKS	Cable
33	PT Metrodata Electronics Tbk.	MTDL	Electronics and Office Equipment
34	PT Astra International Tbk.	ASII	Automotive and Allied Products
35	PT Gajah Tunggal Tbk.	GJTL	Automotive and Allied Products
36	PT Goodyear Indonesia Tbk.	GDYR	Automotive and Allied Products
37	PT Nipress Tbk.	NIPS	Automotive and Allied Products
38	PT United Tractors Tbk.	UNTR	Automotive and Allied Products
39	PT Modern Photo Film Company Tbk.	MDRN	Photographic Equipment
40	PT Dankos Laboratories Tbk.	DNKS	Pharmaceutical
41	PT Kalbe Farma Tbk.	KLBF	Pharmaceutical
42	PT Tempo Scan Pacific Tbk.	TSPC	Pharmaceutical
43	PT Mustika Ratu Tbk.	MRAT	Consumer Goods
44	PT Unilever Indonesia Tbk.	UNVR	Consumer Goods

Research Samples for Short Term Period

No.	COMPANY NAME	CODE	INDUSTRY
1	PT. Aqua Golden Missisippi Tbk.	AQUA	Food and Beverages
2	PT. Davomas Abadi Tbk.	DAVO	Food and Beverages
3	PT. Indofood Sukses Makmur Tbk.	INDF	Food and Beverages
4	PT. Sari Husada Tbk.	SHDA	Food and Beverages
5	PT. Ultra Jaya Milk Tbk.	ULTJ	Food and Beverages
6	PT. Gudang Garam Tbk.	GGRM	Tobacco Manufacturers
7	PT. HM Sampoerna Tbk.	HMSP	Tobacco Manufacturers
8	PT. Argo Pantes Tbk.	ARGO	Textile Mill Products
9	PT. Panasia Indosyntec Tbk.	HDTX	Textile Mill Products
10	PT. Textile Manufacturing Company Jaya (Texmaco Jaya) Tbk.	TEJA	Textile Mill Products
11	PT. Sepatu Bata Tbk.	BATA	Apparel and Other Textile Products
12	PT. Sumalindo Lestari Jaya Tbk.	SULI	Lumber and Wood Products
13	PT. Indah Kiat Pulp & Paper Tbk.	INKP	Paper and Allied Products
14	PT. Pabrik Kertas Tjiwi Kimia Tbk.	TKIM	Paper and Allied Products
15	PT Polysindo Eka Perkasa Tbk.	POLY	Chemical and Allied Products
16	PT Unggul Indah Cahaya Tbk.	UNIC	Chemical and Allied Products
17	PT Ekadharma Tape Industries Tbk.	EKAD	Adhesive
18	PT Asahimas Flat Glass Tbk.	AMFG	Plastics and Glass Products
19	PT Citra Tubindo Tbk.	CTBN	Metal and Allied Products
20	PT Lionmesh Prima Tbk.	LMSH	Metal and Allied Products
21	PT Tembaga Mulia Semanan Tbk.	TBMS	Metal and Allied Products
22	PT Kedaung Indah Can Tbk.	KICI	Fabricated Metal Products
23	PT Surya Toto Indonesia Tbk.	TOTO	Stone, Clay, Glass and Concrete Products
24	PT Komatsu Indonesia Tbk.	KOMI	Machinery
25	PT Jembo Cable CompanyTbk.	JECC	Cable
26	PT Voksel Electric Tbk.	VOKS	Cable
27	PT Astra International Tbk.	ASII	Automotive and Allied Products
28	PT Goodyear Indonesia Tbk.	GDYR	Automotive and Allied Products
29	PT Nipress Tbk.	NIPS	Automotive and Allied Products
30	PT Dankos Laboratories Tbk.	DNKS	Pharmaceutical
31	PT Kalbe Farma Tbk.	KLBF	Pharmaceutical
32	PT Tempo Scan Pacific Tbk.	TSPC	Pharmaceutical
33	PT Mustika Ratu Tbk.	MRAT	Consumer Goods
34	PT Unilever Indonesia Tbk.	UNVR	Consumer Goods

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