THE ANOMALY OF FUNDAMENTAL,TECHNICAL, AND RISK FACTORS, AND THE RELATIONS TO STOCK INDICES AND CAPITAL GAINS AT INDONESIA STOCK EXCHANGE

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Abstract: *The research objectives is to prove empirically and get overview of the interrelation among the fundamental, technical and risk factors of stocks; and the correlation of each factor to next period index and capital gain of stocks. The research was designed as an associative research to determine the relationship anomaly among the factors. The variables are Intrinsic Value, Price Index Trend, Capital Gain Trend, Total Risk, and Systematic Risk of stocks at the end of May 2014, as well as the Price Index and Capital Gain at the end of Jun 2014. The population are 425 stocks listed in Indonesia Stock Exchange at June 2014, while the sample are 110 stocks that are determined using the Slovin formula. Correlation analysis and t test hypothesis testing were used in this research. The results are : (1) there are interrelationsanomaly among fundamental, technical, and risk factors of stocks at Indonesia Stock Exchange, (2) fundamental and risk factors can not be prediction basis of the future index and capital gain, (3) index trend as one of indicators of technical factor can be prediction basis of the future index, but it can not be prediction basis of the future capital gain.*

Keywords : *Intrinsic Value, Index Trend, Capital Gain Trend, Total Risk, and Systematic Risk.*

INTRODUCTION

1. Research Background

Indonesian national economy made up of real sector and financial sector, and there are goods/services market and financial market. As Wurgler (2000:187-214) states that financial market contribute and improve capital allocation to the economy sectors. Moreover, financial market indicates the economy condition. As financial market increases/declines, the economy either does. While the financial market can be able to indicate the economy improvement, it also describe the sources of funds for real sector development and as increase of investors funds.

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Accordingly, Bodie et al (2008) mentioned that financial market can be divided into two markets namely money market and capital market. Money market is provided for debt securities market having less than one year maturity, while capital market is provided for long-term debts and stocks. The capital market in this case can be seen into two perspectives, one's as economic and the other is financial perspective. From the economic perspective, the capital market facilitates the investors and also issuers, while form financial perspective it allows the investors to obtain return on their investment. With the capital market, the public company can obtain fresh funds through the sale of stock or debt securities. In financial function capital market gives possibility and opportunity to earn return to the funds owners. In other word, the investors can select their investment by industry sector.

Stock market grow continuously in Indonesia. Its development is illustrated by increasing number of corporation signing up, the number of investors, and the volume of transactions. As an indicator of its development, it is described as Jakarta Composite Index(JCI), which is shown the increasing trend of index and reach 5400.1 points on February 20, 2015(idx.co.id.).

Although the Indonesia Stock Exchange has been operating for a long time, but the characteristics of the market is still poorly known, for example : the behavior of investors in making investment decisions, factors that empirically influence on the market, the existence of fundamental, technical, and risk factors, e.t.c. The existence of fundamental, technical, and risk factors attracted the attention of author to be studied. Do the factors interrelate one to each others ? Do the factors normally work? Can the factors be used as the basis to predict stock price index and capital gain ?

Generally speaking, short-term investors aim to put their money into stocks in order to get a return as much as possible in term of the calculated risk, which is called capital gain/loss. Capital gain/lossis obtained through changes in increasing or decreasing either of stock market prices (SMP) or individual stock price index (ISPI). Accordingly, both are potentially estimated by observation of SMP orISPI, in order to make fundamental and technical analysis of stock. Potential capital gain is described by increasing SMP or ISPI, while potential risk is taken into account through risk analysis and risk-return axiom, which is called Risk-Return Trade-off. Therefore, potential return increase with an increase in risk. In other word, low levels of uncertainty (low-risk) are associated with low potential returns, whereas high levels of uncertainty (high-risk) are associated with high potential returns. Then, risk-return trade-off is the balance between the desire for lowest possible risk and the highest possibel return.

According to Tandelillin (2010), David and Kurniawan (2010), Jogiyanto (2003), Bodie et al (2008), Gitman (2006), and Keown et al (2005),stock price and index is influenced by fundamental and technical factors. The fundamental factors are reflected in financial ratios that describe the financial performance especially Earning per Share (EPS) and Price-Earning Ratio (PER). Both ratios determine the Intrinsic Value of stock. While, technical factors are reflected on the price fluctuation patterns as long as the price trend is a potential capital gains. As a matter of fact, total investment risk is systematic risk plus unsystematic risk. The index fluctuation pattern of stock in the market is indicated as systematic risk or market risk, while unsystematic risk or diversiable risk or residual risk of stock is indicated that a risk remains after all efforts have been made to mitigate or eliminate risks associated with an investment. Therefore, unsystematic risk is able to be reduced by diversify the stock portfolio. In other words, investors compare fundamental, technical, and risks existed in stock portfolio to determinate the stock choosen.

Rationally, the stocks that have high fundamental value (intrinsic value) have high technical value (index tren value) and high risk value too,but the reality is not always. Rationally, the attractive stocks in a period will reach high index and high capital at the next period, but the reality is not always. Empirical phenomenon above mentioned indicates the existence of empirical gaps among the outstanding stock in market. As a consequences, questions are raised: Do the fundamental, technical and risk factors of stocks show the same value direction (both are high/low)? Do the stocks that have high fundamental, technical, and risk value reach the high index and high capital gain at the next period? The indications of anomaleous interrelation among these factors lead to a desire to prove through this research empirically.

2. Problem Formulation

Research issues to be resolved through this research are formulated as follows: *How are interrelation among the fundamental, technical, and risk factors of stock investment at Indonesia Stock Exchange? Are the interrelation among these factors normal (there are no anomaly)? How are relation of each these factors with the next period price index and capital gain?*

3. Scope of Problems

Of the problems identified in relation to the stock issues, this study are restricted to the factors that normally become the prediction basis of index and potential capital gains of stocks listed at Indonesia Stock Exchange, namely the fundamental, technical, and risk factors of stocks. Fundamental factors are restricted to the company's financial performance as reflected in the Intrinsic Value (EPS x PER), technical factors are

restricted to the value of price index trend and capital gain trend, investment risk factors are restricted to the total risk and systematic risk of stock investment. Thus this study is restricted to the seven factors as the variables studied: intrinsic value, price index trend, capital gain trend, systematic risk, total risk, next period index, and next period capital gain. In addition to restrictions on the variables studied, the observation period of the variable is also limited during the past 34 months (September 2011 - June 2014). Restriction of the period due to the purpose of:

1. Being eligible number of periods in statistics interest for the fundamental, technical and risk factors on 32 months.

2. Obtaining 32 months data for these variables (October 2011 - May 2014) it takes the data of 33 months (September 2011 - May 2014)

3. Obtaining data of next period ISPI and capital gain (June 2014, the 34th month).

4. Acquiring data during the "normal" period, where no major turmoil in the stock market during the observed periods.

4. Research Objectives and Usefulness

This research was conducted in order to determine, prove empirically and get overview of:

1. Interrelations among the fundamental, technical and risk factors of stocks.

2. Correlation of each fundamental, technical and risk factors to the next period index and capital gain of stocks.

The results of the research are expected to be useful in academic as well as in practice domains. Academically, the results is expected to be useful on the development of science, particularly theories about stock investments, as well as factors that affect stock index and capital gains. Practically, the results are expected to be able to be used by the parties concerned with stock investment, particularly the company managers (the issuers), stock analysts, fund managers, stockbrokers, investors or potential investors, and the holders of capital market authority in order to:

1. Plan and control market price or index of outstanding shares in order to create an efficient capital market.

2. Make the decision to buy, hold, sell stocks and make a stock investment portfolio for investors.

3. Provide better consultancy advices/services to their customers.

4. Take anticipation of changes in circumstances relating to fundamental, technical, and risk factors.

THEORETICAL FRAMEWORK AND HYPOTHESIS

1. Theoretical Framework

Theoretical framework in this study can be described and illustrated below:
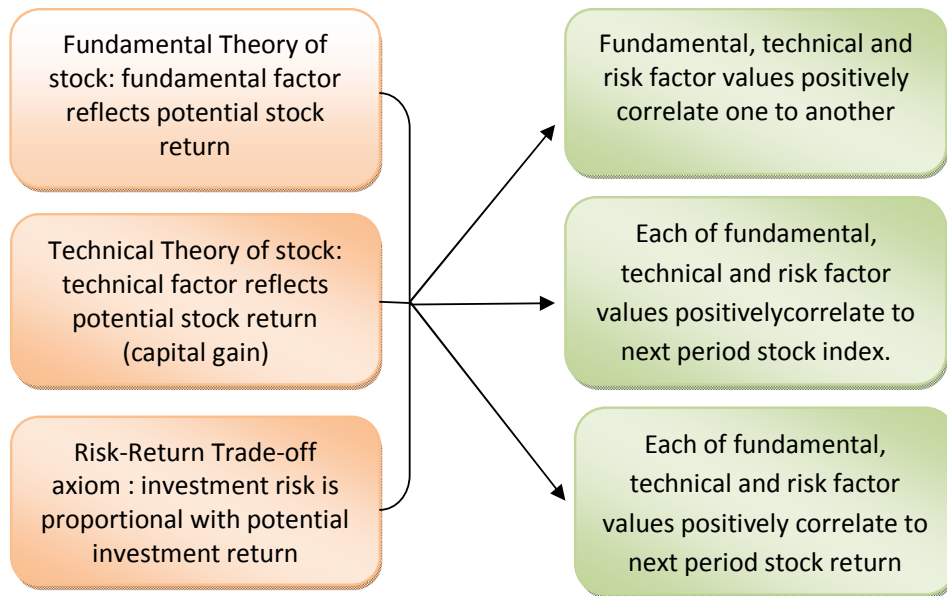
1.1. Individual Stock Price Index

Stock price index is stock price expressed in the index number (fayku.files. wordpress.com). Individual stock price index (ISPI) is the stock price index of each company listed on the stock exchange (www.idx.co.id.). ISPI is a comparative market price of each stock on the basic price, while the composite stock price index (CSPI) is a composite index of all stocks listed on and published by the stock exchange (fayku.files.wordpress.com).

ISPI is the market price of shares of a company that is expressed in the form of an index, expressed in unit of point, and counted in a certain way. High/low value of a company's stock price is reflected in ISPI, or high/low of ISPI is a reflection of high/low value of the shares of a company. If company A's ISPI is higher than company B's, it means that the company A's stock is appreciated higher than the company B's by investors in the market.

ISPI is a key indicator that reflect the movement of the stock market price of a company. The market price is influenced by many factors. Because of ISPI is

a reflection of individual stock market prices (ISMP),then the factors that affect the ISMP will have an impact on ISPI. The factors that affect ISMP or ISPI are explained in the stock analysis/theory.

1.2. Stock Capital Gain

Investors' expectation by investing their funds in stocks is to obtain certain return with certain risk that have been taken into account. According to Van Horne & Wachoviz (2001: 26) return is benefit associated with ownership of stock which includes an annual cash dividend received and the increase of market price or the realization of capital gain at the end of the year. Dividend is a part of company profits distributed to shareholders in a given period. Capital gain/loss is the difference between the current stock price of purchase and the time of sale.

Short-term investors in the stock exchange expect the return mainly from capital gain. In fact almost all investors prefer capital gain than dividend (Susanto and Sabardi, 2010: 25).

1.3. Fundamental Theory of Stock

The influence of fundamental factors on stock price and capital gain are noted in Fundamental Analysis. With the analysis investors observe the companies prospect to determine the company stock choices as investment target. Since the investment objective is to obtain return, then the selected companies are companies that have high potential return. As Tandelillin (2010: 209) mentioned that returns prospect are reflected in the stock issuer's performance, in particular financial performance.

Fundamental analysis can be conducted by the stocks' intrinsic value approach and financial ratios approach. The fundamental analysts argue that the stock has an intrinsic value that is reflected in the company's fundamental factors that influence it, so the analysis is directed to determine whether the stock price is a reasonable price according to its intrinsic value. The selection of companies to invest based on a comparison between the market price of the stock and its intrinsic value. Stock is feasible to be bought if the market price is lower than its intrinsic value (undervalued), and otherwise (overvalued). Tandelillin (2010: 231) stated that the intrinsic value of stock can be assessed through the Earning Per Share (EPS) and Price Earning Ratio (PER), where Intrinsic Value = EPS x PER

1.4. Technical Analysis of Stock

The influence of technical factors set out in the technical analysis of stock. According to Bodie et al (2008), technical analysis is essentially a search of the predictable stock price and return patterns. Technical stock analysis seeks to predict the stock market price and return based on the movement in stock market price and return itself during the observed period. The results of prediction become the investors'

expectations of the market price and return that is going to happen in the future. Stocks that are expected to have a high price and return will be choosen by investors and investors are willing to buy at a higher price than other stocks. The shares of a company will be attractive to investors and the market price will increase if it has a high value of price or return expectations.

Technical analysis of stock theory states that the expected value of stock price and return are important factors that must be considered in making investment decisions. The magnitude of the expected value of stock price and return in the future are based on the value of the price index trend (IT) and capital gain trend (CGT). The movement of the price index in the market is very volatile and indicates a specific pattern of trend. Because of the trend analysis is a statistical approach and is part of the statistical analysis, then according to David and Kurniawan (2010: 110) trend analysis can use a statistical approach called Trend.

1.5. Investment Risk

Investors asesse the stock performance not only on the rate of return generated, but also the investment risk faced. F.S. Mishkin (1993) said that there are four important factors that determine the demand for an investment asset, and one of which is a risk factor. Palepu et al (2006: 9-1) states as follows:

> "*Security analysis is a step in the wider process of investment and involved : (1) determination of the investor objectives, (2)* the formation of expectations of returns and risks of individual securities, *and (3) the combination of individual securities in the portfolio to maximize progress towards investment objectives. Security analysis is the foundation for the second step, the projected future returns and risk measurement. ....* "

According to Palepu one stage in the formation of security analysis is expected returns and risks of individual securities. Related to investment risk, Weston et al (2006) states that risk is the chance of receiving an actual return lower than expected return, which simply means there is variability in the returns or outcomes from the investment. Sharpe (2000) says that risk is the thing for measuring deviation of the actual return to the expected return. Jones et al (2006) states that risk is defined as the chance that the actual return on investment will be different from the expected return. From some sense it can be concluded that the investment risk is (1) the possibility of obtaining the actual return of the investment is not in accordance with the expected returns, or (2) the possibility of not to achieve the expected benefits.

Returns received by investors are fluctuating. Because of the existence of risk shown by the variability in return, then the risk is measured by the magnitude of the variability. Deviation/difference between the actual return and expected return of a security called Total Risk. Deviations arising from macroeconomic factors called Systematic Risk, while the deviation arising from company-specific factor called

Specific Risk. Standard measure of the total risk of a stock is the variance (variance, $\sigma2$, read sigma squared) (Weston et al, 2006) or Standard Deviation (σ, read Sigma) (Bodie et al 2008), whereas the standard measure of systematic risk is Beta (β). But for comparison among the stocks, the total risk is measured by Coefficient of Variation. The magnitude of investment total risk, systematic risk and the specific risk of each stock is measured through the observation of individual stock returns and market prices during some periods.

According to Risk-return trade-off axiom, investment return is generally accompanied with a linear risk, i.e., the greater the expected return the greater the risk to be faced (Keown et al., 2005). So investors who are interested in stocks with high return means also interested in high-risk stocks (must dare to risk).

From the description of the theories, the theoretical basis can be summarized as follows:

1. The theory of stock investment states that the potential stock return is reflected on the fundamental and technical factors.

2. Fundamental theory states that the fundamental factor (intrinsic value of the company) reflects the potential returns. Stocks with high intrinsic value potentially have higher return too (positive correlation).

3. Technical theory of stock states that the technical factor (value of price index trend and capital gain trend) reflects the potential return. Stocks with high trend of price index or capital gain have high potential return too (positive correlation).

4. The risk-return trade-off axiom states that the high potential return of investment is generally accompanied by a high potential risk too (positive correlation). Stock investment is one form of investment, so the axiom also applies to stock investment.

5. Investors are more concerned with capital gain as a component of short-term return. Short-term return in stock investment is capital gain.

2. Previous Research

Several previous researches related to fundamental, technical, risk factors, return and index result in different findings. Some of the researches are as follows:

1. Dechow et al (2001) found that the motivation for short-sellers is return, where the fundamental information in the ratio-to-price used to identify securities that overpriced and stock prices changes (capital gain).

2. Bauman (1996) found that the non-accounting information can be used to predict returns, such a trend.

3. Itan & Syakhroza (2002) found that ROE, OPM and NPM do not have a significant effect on stock prices, while ROA and PBV have.

4. Bloomfield and Hales (2002) found that there is a strong tendency of the participants (investors) to make trend predictions.

5. Bandhari (1998) found that the relationship of DE ratio with stock return and beta with return are positive and significant.

6. Haugen and Baker (1996) found that the realized stocks return difference is not associated with risk, but rather due to the bias in the determination of market prices.

3. Hypothesis

According to the formulation of the research problem and theoretical framework, then the correlations to be studied are described and hypothesa are stated as follows:

Hypothesis 1 : The fundamental, technical, and risk factors value correlate positively one to each others.

Hypothesis 2 : Each of fundamental, technical, and risk factors value correlate positively to the next period price index.

Hipotesis 3 : Each of fundamental, technical, and risk factors value correlate positively to the next period capital gain.

In order to meet testing objectives, the three hypothesa are broken down into 11 research hypothesa.
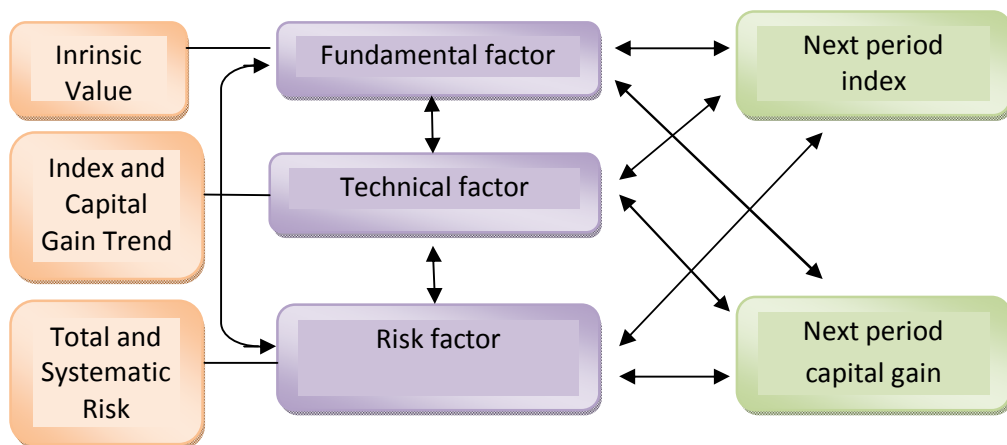
RESEARCH METHOD

1. Research Type

The study was designed as an associative research, i.e. research to determine the presence or absence of a relationship among variables. The variables are Intrinsic Value, Index Trend, Capital Gain Trend, Total Risk, and Systematic Risk of stocks at the end of May 2014, as well as the next period Index and Capital Gain.

2. Population and Sample

Sekaran (2010: 121) states that population refers to a whole group of people, goods or events to be observed. The population in this research is all shares listed at Indonesia Stock Exchange in June 2014 (425 companies of 9 industries).Sample is part of the population that is selected by using certain rules. The sample size was determined using the Slovin's formula (Seville, 2007) below (Analisa-statistika. blogspot.com., March 4, 2014):

$$n = \frac{N}{1 + Ne^2}$$

where N : polupation
n : sample
e : error tolerance

According to the formula, sample needed a minimum of 81 shares. This study took a sample of 110 company stocks from various industries because according Sugiyono (2010) and Roscoe (in Sekaran, 2006) sample size of 100 was enough.

Stock samples were taken from existing 9 industries that randomly stratified (stratified random sampling). Taken company stocks sample must actively traded in the market at least 34 months, corresponding observation periods. Stock data are required 34 months to calculate return every month for 33 months.

3. Counting of Variables

The variables in this study include the ISPI, capital gain, intrinsic value, price/index trend, capital gain trend, total risk, systematic risk, next period ISPI, and next period capital gain. Data of all stocks' ISPI can be obtained from the monthly publication of the Indonesia Stock Exchange. Because the market price of individual shares represented by ISPI, the individual stock capital gain (R_i) is formulated as follows (Jogiyanto, 2003: 282):

$$R_1 = \frac{ISPI_t - ISPI_{t-1}}{ISPI_{t-1}}$$

where $ISPI_t$: Stock Index at a period
ISPIt-1 : Stock Index at previous period

The intrinsic value of the stock can be assessed through the EPS and PER, which Intrinsic Value = EPS x PER (Tandelillin, 2010: 231). Data of EPS and PER can be obtained from the IDX publication each month.

The Secular Trend of index and capital gain are formulated below (Levin & Rubin, 2008 : 866):

$$Y' = a + bX$$

$$a = \bar{Y} - bX$$

$$b = \frac{\sum XY - nX\bar{Y}}{\sum X^2 - nX^2}$$

where:
Y : Stock market price index or capital gain
Y' : Trend value of market price index or capital gain
X : Period value
n : Amount of observed period.

Expected returns {E(r)} which is the average value ($\bar{X}$), the variance (σ^2), standard deviation (σ), the coefficient of variation (CV) and Beta (β) are the values of the statistical magnitudes determined by the fluctuations of stock returns during observed period. Levin and Rubin (2008: 74, 114, 664) and Bodie et al (2008) formulate them as follows:

$$\bar{X} = \frac{\sum X_i}{n} \qquad \sigma^2 = \frac{\overline{\sum X_i} - X)^2 \sigma}{n-1} \qquad \sigma = \sqrt{\sigma^2} \qquad KV = \frac{}{\bar{X}} \times 100$$

where X_i = stock return at period i
         X = averageor expected returns {E(r)}
         n = amount of observed period

$$\beta = \frac{n\sum XY - (\sum X)(\sum Y)}{n\sum X^2 - (\sum X)^2}$$

where:
X = market stock return
Y = individual stock return
n = amount of observed period

The result of the variables calculation are presented in the attached table (appendix).

4. Correlation Analysis

The coefficient of correlation is the coefficient that indicates the level of closeness of the linear relationship of a variable with another variable (Levin & Rubin, 2008: 677). The magnitude of the correlation coefficient is defined as follows (Levin & Rubin, 2008: 682):

$$r^2 = \frac{a\sum Y + b\sum XY - n\bar{Y}^2}{\sum Y^2 - n\bar{Y}^2}$$

where
X = value of a variable
Y = value of other variable
r = Vr²

5. Hypothesis Testing

Hypothesis testing of correlations are conducted with criteria $t = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$ (Anto Dayan, 2012 : 321), where :

H_o: There is no significant correlation between variable X and variable Y.

H_a : There is significant positive correlation between variable X and Y.

With $\alpha = 0,05$ H_o is accepted if t ≤ 1,96.

RESEARCH FINDINGS

The result of the calculation of the correlation coefficients (r) among the variables presented in the table below:

Table 1
Coefficient of Correlation

Cor.	IV	IT	CGT	TR	SR	NPI	NPCG
IV	–	0,2350	0,0341	-0,0100	-0,1560	0,2470	0,0140
IT	0,235	–	-0,0460	-0,0190	0,1030	0,8960	0,1560
CGT	–	–	–	0,2162	-0,0827	0,1026	0,1133
TR	-0,01	–	–	–	0,0590	0,0270	0,1220
SR	-0,156	–	–	0,0590	–	0,1110	-0,1030
NPI	0,247	–	–	0,0270	–	–	-0,0160
NPCG	0,014	–	–	0,122	-0,103	–	–

Source: Analysis results

Correlation table shows that almost all value of correlation coefficients are small (r <0.4, the relationship is low) or very small (r <0.2, the relationship is very low), except the correlation between the index trend and next period index that indicates the very high category of correlation (r> 0.8, very high relationship).

The results of calculation of the t value and accepted/rejected H_o are presented in the table below:

Table 2
t Values

t	IV	IT	CGT	TR	SR	NPI	NPCG
IV	–	1,324 Acc.	0,187 Acc.	-0,055 Acc.	-0,865 Acc.	1,396 Acc.	0,077 Acc.
IT	0,235	–	-0,252 Acc.	-0,104 Acc.	0,567 Acc.	11,052 Rej.	0,865 Acc.
CGT		–	–	1,336 Acc.	-0,079 Acc.	0,596 Acc.	0,657 Acc.
TR	-0,01	–	–	–	0,324 Acc.	0,148 Acc.	0,673 Acc.
SR	-0,156	–	–	0,059	–	0,612 Acc.	-0,567 Acc.
NPI	0,247	–	–	0,027	–	–	-0,088 Acc.
NPCG	0,014	–	–	0,122	-0,103	–	–

Source: Analysis results

H_o is accepted means that no significant correlation between two variables.

H_o is rejected means that there is significant positive correlation between two variables.

Table t values shows that almost all of the H_o are accepted, except the hypothesis of correlation between the trend index and the next period index (t> 1.96). In other words, a significant correlation only exist between index trend and the next period index.

CONCLUSION

The results of the analysis can be summarized as follows:

1. There is interrelation anomaly among fundamental, technical, and risk factors at the Indonesia Stock Exchange. The three factors that should show a positive correlations did not show a significant correlations. Companies' stock that have higher financial performance do not always have higher stock performance (index trend and capital gain trend) and higher investment risk than other companies.

2. There are correlations anomaly between fundamental factor and next period capital gain (NPCG), between technical factor and NPCG, and between risk factors and NPCG. Companies that have higher financial performance, or higher stock performance, or higher investment risk do not always obtain higher NPCG than other companies.

3. There are correlations anomaly between fundamental factor and next period stock price index (NPI), and between risk factors and NPI. It means that the shares of companies that have a higher financial performance or higher investments risk do not always reach the higher NPI.

4. Only the correlation between Index Trend (one of the technical factor indicators)and NPI that shows a normal correlation (not an anomaly). It means that stocks with higher stock performance (Index Trend) can be expected to achieve higher NPI.

IMPLICATION

The implications of the existing anomalous interrelation among fundamental factor (intrinsic value), technical factor (price index trend), and investment risk factors (standard deviation and beta) in the stock market are :

1. The parties concerned with stock investments (stock market players) can not use these factors partially (individually) as the selection basis of company's stock to invest. The use of these three factors together would be more safety, for example with multiple regression models or Structural Equation Model.

2. The parties concerned with stock investments can not use these factors partially as the prediction basis of capital gain of a company's stock in the next period. The use of these three factors together would be more safety.

3. The parties concerned with stock investments can not use the fundamental factor and the risk factor partially as the prediction basis of a company stock index prediction in the next period. The use of these three factors together would be more safety.

4. The parties concerned with stock investments still can use technical factors (index trend)as the prediction basis of price index of a company stock in the next period.

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