#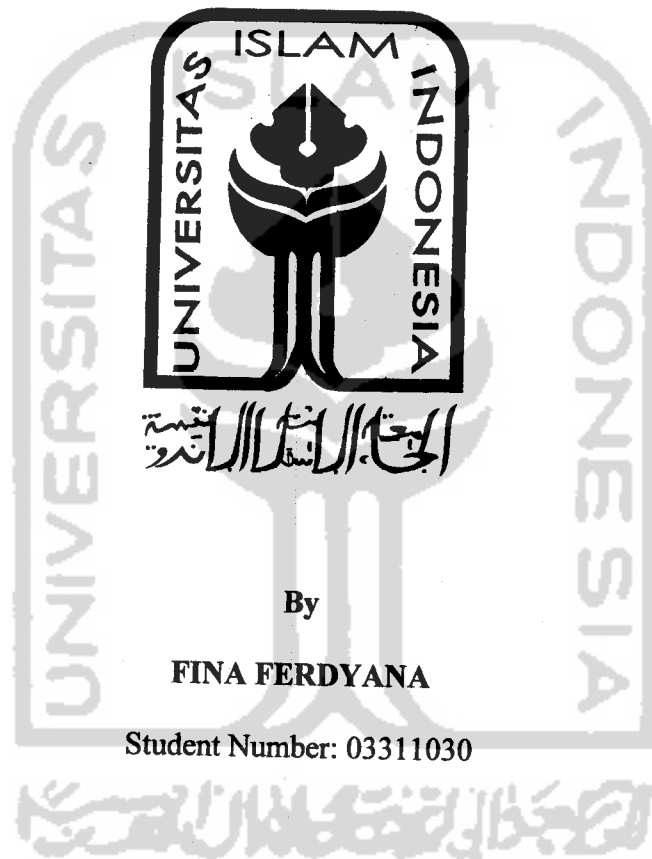 THE EFFECT OF FIRM SIZE AND BOOK-TO-MARKET EQUITY ON STOCK RETURN OF LISTED INDONESIAN LQ 45 COMPANIES FOR THE PERIOD OF 2001-2005

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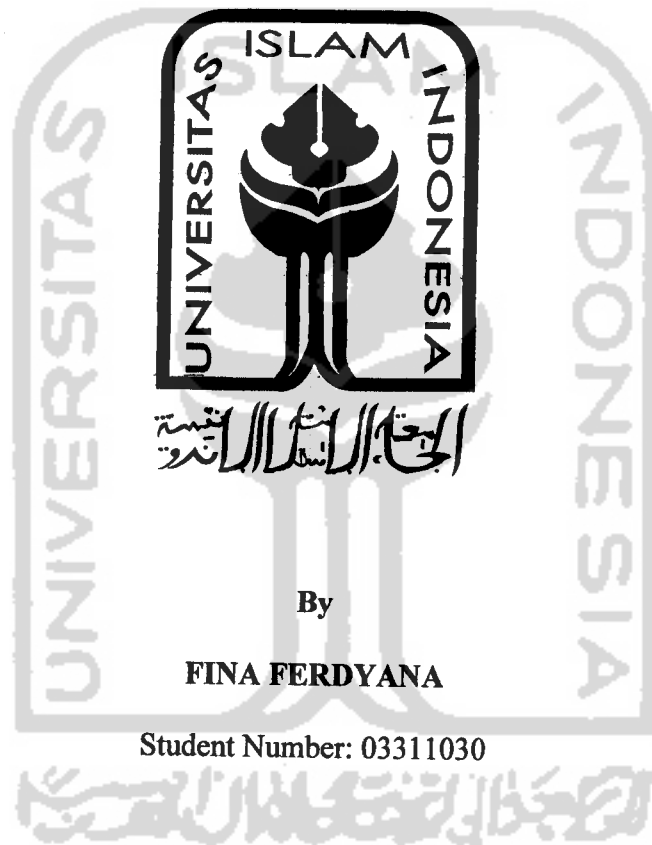
By

FINA FERDYANA

Student Number: 03311030

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Approved by

Content Advisor,

Abdul Mo'in,SE., MBA

May 16, 2007

Language Advisor,

Norman Kurnianto Soejoeti,SE.,M.Si

May 16, 2007

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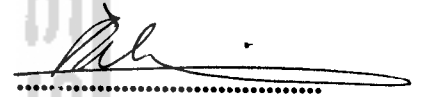
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Defended before the Board of Examiners
on June 28, 2007
and Declared Acceptable

Board of Examiners

Examiner 1

Zaenal Arifin Dr. H.,M.Si

Examiner 2/Content Advisor

Abdul Mo'in,SE., MBA

Yogyakarta, June 28, 2007
International Program
Faculty of Economics
Islamic University of Indonesia
Dean

Drs. Asmai Ishak, M.Bus., Ph.D.

ACKNOWLEDGMENT

بِسْمِ اللهِ الرَّحْمٰنِ الرَّحِيمِ

In the name of Allah Almighty, the most gracious, I would like to express my praise completely to Allah SWT for his marvelous love and guidance upon the accomplishment this thesis. My honor also goes to Prophet Muhammad SAW for his blessing and enlightening direction.

Finally, I could finish this project in order to obtain the Bachelor Degree in Management Department, Faculty of Economics, Islamic University of Indonesia. Realizing that all of this "hard work" could never be done alone, I would like to deliver my sincere gratitude to

1. Akhsyim Afandi, Drs., MA., Ph.D, as the Director of International Program, Faculty of Economics, Universitas Islam Indonesia.

2. Drs. Asmai Ishak, M.Bus., Ph.D, as the Dean of Faculty of Economics, Universitas Islam Indonesia.

3. Abdul Moin,SE., MBA as my content advisor for his support, critics, and advice during this thesis period and my study.

4. Norman Kurnianto Soejoeti,SE.,M.Si as my language advisor, who supported me and was willing to be my partner in making sure that this thesis is written in English properly.

5. My deepest gratefulness goes to all my beloved family, especially for my Dad, Drs. H. Suwadji and my Mom, Hj. Sulasmi who devoted their life to raising me and have helped me to step further than I could be. You have worked hard for me, and this is my hard work for you. This appreciation that I could show it to you, Mom and Dad. And also thank to my sister (mbak Dhona) and her husband (mas Eka), and my little nephew (Rio), my beloved brother and twin sister, mas Renta and Cieka, thank you for your support, care, and advice. My best wishes for all of you.

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STATEMENT OF FREE PLAGIARISM

Herein I declare the originality of this thesis; thesis is no other work which has ever presented to obtain any university degree, and in my concern there is neither one else's opinion nor published written work, except acknowledged quotation relevant to the topic of this thesis which have been stated or listed on the thesis bibliography.

If in the future this statement is not proven as it supposed to be, I am wiling to accept any sanction complying to the determined regulation for its consequence.

Yogyakarta, May 16, 2007

Fina Ferdyana

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ABSTRACT

Ferdyana Fina (2007) "The effect of firm size and book-to-market equity on stock return of listed Indonesian LQ 45 companies for the period 2001-2005" Yogyakarta: Management Department, International Program Faculty of Economics, Universitas Islam Indonesia.

Firms size and book-to-market equity are shown to transcend beta (risk) in explaining stock return. One possible explanation of the book-to-market equity effect is overreaction. The researcher examines the effect of firm size, book-to-market equity, and prior return on stock return by using market equity as proxy of firm size. The researcher took companies listed in LQ 45 companies as the sample data, and used Ordinary Least Square (OLS) as analysis method to determine the effect of firm size and book-to-market equity on stock return.

Based on the research findings, there are only 14 companies that can be the sample because that is the only number of the companies listed consistently in LQ 45 companies and have positive book equity from 2001-2005. According to the final research estimation, the researcher concluded that the firm size has no influence on stock return and book-to-market equity has negative influence on stock return of Indonesian LQ 45 companies.

Keyword: stock return, firm size, book-to-market equity

ABSTRAK

Ferdyana Fina (2007) "The effect of firm size and book-to-market equity on stock return of listed Indonesian LQ 45 companies for the period 2001-2005" Yogyakarta: Management Department, International Program Faculty of Economics, Universitas Islam Indonesia.

Ukuran perusahaan dan nilai buku dari suatu ekuitas pasar lebih penting dari beta (resiko) dalam penjelasannya pada pengembalian saham. Satu kemungkinan yang dapat menjelaskan pengaruh nilai buku dari suatu ekuitas pasar adalah terlalu bereaksi. Peneliti menguji pengaruh dari ukuran perusahaan dan nilai buku dari suatu ekuitas pasar pada pengembalian saham dengan menggunakan ekuitas pasar sebagai turunan dari ukuran perusahaan. Peneliti mengambil perusahaan-perusahaan yang terdaftar di perusahaan-perusahaan LQ 45 sebagai contoh data dan menggunakan Ordinary Least Square (OLS) sebagai metode analisis untuk menentukan pengaruh ukuran perusahaan dan nilai buku dari suatu ekuitas pasar terhadap pengembalian saham.

Berdasarkan penelitian yang dilakukan, hanya ada 14 perusahaan yang bisa dijadikan contoh karena hanya perusahaan-perusahaan tersebut yang terdaftar secara konsisten di perusahaan- perusahaan dalam LQ 45 dan mempunyai ekuitas nilai buku positif dari tahun 2001- 2005. Menurut hasil akhir perhitungan dari penelitian, peneliti menyimpulkan bahwa ukuran perusahaan tidak berpengaruh terhadap pengembalian saham dan nilai buku dari suatu ekuitas pasar berpengaruh negatif terhadap pengembalian saham pada perusahaan- perusahaan LQ 45.

Kata kunci: pengembalian saham, ukuran perusahaan, nilai buku dari ekuitas pasar.

CHAPTER I

INTRODUCTION

1.1. STUDY BACKGROUND

The investment of funds in various assets is only part of financial decision that most individual or company should do. In general, there are three basic purposes that concern about what the objectives of the company. First, to maximize the profit in order to increase the wealth of the owner of the company. Second, to achieve the stability of the company life cycle. Third, to sustain the result of the effort of those points above. It is important to understand the concept of investment decision as a step in gathering fund and allocating to the production activity to the final output.

Every investor always considers two major substances in their investment activities. The first substance is the expected return, and the second one is the investment risk. The basic element of all investment decisions is the trade-off between expected return and risk. Expected return and risk are directly related; the greater (smaller) the expected return, the greater (smaller) the risk. Therefore, it is important for investor to have knowledge about risk and return as the basic consideration in investment decision.

Efficient investment is investment that will give some risks with maximum rate of return or some rates of return with minimum risks. If there

are two investment strategies that offer the same level of return, rational investors will look for the investment with lower risk. The risk should be an important consideration for investor to decide what kind of asset that will give maximum return with lower risk.

Portfolio managers have been trying to achieve the best possible trade-off between risk and return. They are able to construct their portfolios using securities from all asset classes. Stock investments have been more risky, but this kind of decision offers higher average returns compared to fixed-income investments.

Over the past 40 years researchers have identified a number of related regularities in asset prices that have come to be regarded as anomalies. It has been found that the ratio of per-share earnings to price (E/P), the dividend yield and other yield surrogates, the amount of leverage, the firm size (as measured by the market value of equity), and the ratio of the book value of equity to the market value of equity (book-to-market equity) are all correlated (in the cross-section) with future asset returns. Moreover, these variables have been shown to explain the cross-sectional variation in asset returns better than the capital asset pricing model (CAPM) or any other (multi) factor model.

The search for an explanation of those anomalies has been unsuccessful. Almost all authors of papers on the "size effect" agree that it is an evidence of misspecification of the capital asset pricing model rather than an evidence of inefficient capital markets. On the other hand, none of the attempts to modify

the CAPM to account for taxation, transaction costs, skewness preference, and so forth, has been successful in discovering the "missing factor" for which size is a proxy.

Prior research has provided a considerable evidence that firm size (ME) and book-to-market equity (BE/ME) are two firm characteristics that explain a variation in average stock return (Fama and French, 1992, 1993; Davis, 1994; Barber and Lyon, 1997). Fama and French (1992) examined the relationship between book-to-market equity and firm size in excess return. They examined return on portfolios of stocks bought on the basis of stock book-to-market equity. To control firm size effects, they first classified stock into five categories. Within each of the five firm size categories, they classified stocks into ten equal firm size groups on the basis of book-to-market value. The average difference in return between the high book-to-market firms and the low book- to-market firms was 7,8% per year. They found that value stocks produced higher returns than growth stocks in the US stock market. They suggested that value stocks might be riskier and thus require a return premium.

Fama and French (1992) have tested the CAPM based on the daily data of the stocks for the period of 1962-1992. Their research was based on the anomaly that against the CAPM such as firm size effect (Banz, 1981) whereas the firm size (market equity) became an important factors beside beta. Statman (1980), Reid and Lanstein (1985) found that book-to-market equity

ratio influences the stock returns, that is stock with high ratios of book-to-market equity has significantly higher return than stocks with low B/M.

The result of Fama and French (1992) research for the period of 1963-1990, has showed that firm size and book-to-market equity ratio matched a variation of cross section in the average of stock returns. Variable of firm size and book-to-market equity ratio is scaled in the price of the company's stocks.

Based on the above explanation, and the fact that firm size and book-to-market equity ratio has the influence to the stock return, then this research will be focused on *"The Effect of Firm Size and Book-to-Market Equity on the Stock Return of Listed Indonesian LQ 45 Companies for the Period of 2001-2005"*.

1.2. PROBLEM IDENTIFICATION

Fundamental firm characteristics such as the firm size (ME) and the book-to-market equity (BE/ME), explain the cross section of average return. The earlier researches have documented that smaller firms had higher average return than larger firms, and the firm with high book-to-market equity ratio have higher average returns than the firms with low book to market equity ratio.

The theory that was developed by Sharpe (1964), Lintner (1965), and Black, Jensen, and Scholes (1977) in the CAPM has stated that the cross section of expected stock returns is linear in beta and related to variables such

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as firm size and book-to-market equity. However, Fama and French (1992) found that, although the firm size effect has attracted more attention, book-to-market equity had a consistently stronger role in average return. They found that (a) beta does not seem to explain the cross section of average stock return, and (b) the combination of firm size and book-to-market equity seems to absorb the roles of leverage and E/P in average stock return, at least during 1963-1990 sample periods.

Prior research has provided a considerable evidence that firm size (ME) and book-to-market equity (BE/ME) are the two firm characteristics that explain a variation in average stock returns (Fama and French, 1992, 1993; Davis, 1994; Barber and Lyon, 1997).

In this study, the researcher will examine the effect of firm size and book-to-market equity on stock return by using the data from Jakarta Stock Exchange. The research problem being solved in this study is formulated into the following question:

Whether firm size and book-to-market equity influences the stock return.

1.3. PROBLEM FORMULATION

This research examines the effect of firm size (ME) and book-to-market equity (BE/ME) on stock return of Indonesian companies listed in LQ-45 of Jakarta Stock Exchange (JSX) for the period of 2001-2005. Based on the background and the above explanation, the problem formulation is:

How do the firm size (ME) and book-to-market equity (BE/ME) affect the stock return?

1.4. PROBLEM LIMITATION

In this research, the researcher makes several limitations in the investigation. In this case, the researcher does this research on Indonesian companies with some scope limitations, which are:

1. The research will use the data from Indonesian companies, which are listed consistently in LQ-45 and have positive book equity of Jakarta Stock Exchange (JSX) for the period of 2001-2005.

2. The research will use the calculation of book equity, firm size (market value of equity/ ME), book-to-market equity (BE/ME), the stock return, and the regression analysis.

3. The research is aimed at identifying, analyzing, and evaluating the relationship between firm size (ME), book-to-market equity (BE/ME), and the stock return.

4. Other events occur, either political or economical, and they are assumed to have no effect and will be ignored.

1.5. RESEARCH OBJECTIVES

The objective of this research is to know whether the firm size or market equity (ME) and book-to-market equity ratio (BE/ME) influence the stock

return of Indonesian companies listed in LQ-45 of Jakarta Stock Exchange (JSX) for the period of 2001-2005.

1.6. RESEARCH CONTRIBUTIONS

This research examines about the influence of firm size and book-to-market equity on the stock return, which the researcher hopes will be beneficial for the following parties:

1. Company

   This research can be used as an input for company improvement mainly to evaluate and analyze stock return movement with the variables and to anticipate some possibilities of market reaction.

2. Investor

   This research can be used as a guidance and recommendation for investors in determining to which asset they would invest the money that will give maximum return. This research can also be used as a consideration that related to the influence of firm size (ME) and book-to-market equity ratio (BE/ME).

3. Academicians

   This research can be useful as references for the academicians, lecturers, and students.

4. Government

This research can give more information to the government which needs to make economic policies especially about investment policy and financial assessment for Indonesian companies.

1.7. DEFINITION of TERMS

Definitions of term are needed to make the readers easily understand about the meaning of the main terms related to the research in this thesis. The terms used in this research are described as follows:

1. Capital Asset Pricing Model (CAPM)

   Capital Asset Pricing Model (CAPM) is an economic theory that describes the relationship between risk and expected return and serves as a model for the pricing of risky securities. The CAPM explains that the only risk that is priced by rational investors is systematic risk, because the risk can not be eliminated by diversification. The CAPM shows that the expected return of a security or a portfolio is equal to the rate on a risk-free security plus a risk premium.

2. Market Equity (ME)

   Market equity of firm is the size of the firm. Size is the market capitalization that performed by the company, and it can be calculated by multiplying the stock price and the outstanding share.

3. Book-to-market equity ratio (BE/ME)

Book-to-market equity ratio (BE/ME) is the ratio of a company book equity to its market equity.

4. Return

Return is the amount of cash flow that is expected to be earned from some risks within the period of time.

CHAPTER II

REVIEW OF RELATED LITERATURE

2.1. The Stock Return Theories

2.1.1. Markowitz Portfolio Selection

Portfolio theory selects assets that has high return ratio and its covariance and combines those assets in efficient portfolio in order to find the lowest risk to certain return expectation or look for maximum return on certain risk level.

Arifin (2005) explained that any discussion of the theory on stock price behaviour has to be started with Markowitz's theory (1952). Markowitz Portfolio theory has become the basic theory of portfolio. His model is a single-period model, which an investor forms a portfolio at the beginning of the period. Markowitz defined that the investor's objective is to maximize the portfolio expected return subject to an acceptable level of risk (or minimize risk, subject to an acceptable expected return).

2.1.2. Capital Asset Pricing Model (CAPM)

Based on the Markowitz framework (1952), Sharpe (1964), Lintner (1965), and Mossin (1966) independently developed what has come to be known as the Capital Asset Pricing Model (CAPM). This model assumes that investors use the logic of Markowitz in forming portfolio. It further assumes

that there is an asset (the risk-free asset) that has a certain return. This leads to the CAPM equation:

$$E(R_J) = R_f + \beta_j \{E(R_m) - R_f\}$$

$E(R_J)$ and $E(R_m)$ are the expected return to asset j and the market portfolio, respectively, R_f is the free rate, and β_j is the beta coefficient for asset j. Beta is a tool to measure the return volatility from security or portfolio with respect to the market return. Beta also measures the systematic risk from one security or portfolio relative to market risk.

The attraction of the CAPM is its powerfully simple logic and intuitively pleasing predictions about how to measure risk and about the relation between expected return and risk.

2.2. Stock Trading

Individuals like us to do relatively little trading. So far, the much trading is done by large institutional investors: *pension fund companies, life insurance companies,* and *mutual fund companies.*

- **Pension fund companies.** Many workers have a pension fund with their employer: every year, a portion of the worker's earning is deposited into his or her account; the amount in this account accumulates over time, and when the worker retires, the money in this account is paid out to this worker in monthly instalments. The company that runs the pension fund takes

everyone's deposits and invests them in the stock market or in the other financial assets. Pension funds invest hundreds of millions of dollars every year.

- **Insurance companies** (particularly life insurance companies) also invest the premiums people pay. When we buy life insurance, we pay premiums every year; then when we "expire", the company pays a huge lump of money to our beneficiaries. In any given year, each life insurance company collects lots of money in premiums from its customers, which it invests in stocks and other financial assets. By this way, the company can earn some interests or dividends with our money while it is waiting for us to croak.

- **Mutual funds** are companies that pool the savings of many small investors to buy a large, well-diversified portfolio of stocks or other assets. Since mutual funds buy stocks in large quantities, the commissions are spread out over many small investors. For small investors, this is an attractive alternative to hold their own diversified portfolio, because they will have to pay some commission on each trade.

2.3. Stock Market Anomaly

Numerous studies have supported the theory of selecting stocks based on fundamental firm attributes. These attributes have been classified as stock

market anomalies since these are not explained by the Capital Asset Pricig Model (CAPM) of Sharpe and Lintner, include:

1) the low Price Earning effect,

2) the low Price Book Value effect, and

3) the small firm (size) effect.

As Schwert (1983) notes, it is generally recognized that the observed relation between the anomaly variable and return implies that these variables proxy for risk. The reason for the relation between the anomaly variables and the expected return of the firm is not related to the operating characteristics these variables measure (e.g., earnings, firm size).

These asset-pricing anomalies are attractive to financial researchers for several reasons. First, as highlighted by Fama & French (1992, 1996) the empirical evidence on asset pricing anomalies lacks the theoretical foundation of the Capital Asset Pricing Model (CAPM). Another reason for the interest in the subject, a reason highlighted by Sharpe (1992) and Daniel, Grinblatt, Titman and Wermers (1997), is that the anomalies explain the performance of portfolios to a large extent. Fama & French (1992, 1996) and Lakonishok, Shleifer, and Vishny (1994) noted, based on universe of US companies that combination of company's valuation ratio and its market capitalization explains, on average, a larger part of stock volatility than does the CAPM.

Cooper, McConnell, and Alexei (2006) examine the Other January Effect on stock return. They systematically examine the predictive power of

January returns over the next 11 months of the year. They found that January has predictive power for two of the three premiums in the Fama-French (1993) three-factor model of asset pricing. They find that the market return in January is a predictor of returns during the remainder of the year both for stocks with large and those with small market capitalizations and both for firms with high book-to-market equity ratio (i.e., value stock) and those with low book-to-market equity ratios (i.e., growth stock). For each portfolio, returns are significantly higher following Januarys with a positive market return than following Januarys with a negative market return.

2.3.1. Firm Size Effect Anomaly

Banz (1981) published one of the earliest and most often quoted empirical articles on the size effect. Banz documented those excess return (Alphas) would have been earned over the period of 1936-1977 by holding small firms. The striking aspects of Banz's analysis is that the size effect appeared to be important in terms of both statistical significance in explaining return as did Beta.

A second approach to explaining the small firm effect is to argue that expected return was miscalculated because the CAPM or zero betas CAPM are inappropriate models for measuring expected return. Jonathan (1995) explains that the market value of equity of a firm is affected by (at least) two things. First, relatively bigger firms have relatively higher market values.

Second, riskier firms have relatively lower market value. Therefore, so long as there is no positive correlation between the operating size of a firm and its risk, a firm with low market value is more likely to be riskier than a firm with a high market value. Jonathan (1995) also shown that, even in an economy in which firm size and risk are unrelated, the logarithm of market value will be inversely related to expected return. Consequently, market value and expected return will be negatively correlated in the cross-section. An important implication if his finding is that it is misleading to refer to the size effect as an "anomaly". The fact that return and market value have been found to be inversely related certainly can not be regarded as evidence against any asset pricing theory.

2.3.2. Book-To-Market Equity Anomaly

Fama &French (1992) examined the relationship between market-to-book equity and excess return. They examined return on portfolios of stocks bought on the basis of stock book-to-market equity. To control size effects they first classified stock into five categories. Within each of the five size categories, they classified stocks into ten equal size groups on the basis of market-to-book value. The average difference in return between the high book-to-market firms and the low book-to-market firms was 7,8% per year. They found that value stocks produced higher returns than growth stocks in the US stock market. They suggested that value stocks might be riskier and thus require a return premium.

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that Fama and French results were influenced by a combination of survivorship bias in the COMPUSTAT database affecting the high BE/ME stocks performance and period-specific performance of both low BE/ME as past "winner" stocks, and high BE/ME as past "loser". Second, by using an alternative data source, Standard and Poor's (S&P) industry level data from 1947 to 1987 showed that BE/ME was at best weakly related to average stock return. Since 1963, the relation has been statistically significant using the 500 largest COMPUSTAT firms each year, but the estimated effect has been about 40 percent lower than that obtained using all COMPUSTAT firms.

The market, firm size, and book-to-market factors simultaneously have significant effect on stock return only in S/L, B/L, and B/M portfolios. Furthermore, firm size factor significantly affect portfolio returns except in S/M portfolios, while BE/ME factor has significant effect in S/L, B/L, and B/M portfolio. For almost all portfolios, firm size and book-to-market factors have negative correlation in stock return. The increase in *firm size* and *book-to-market* factors will decrease the stock return. The firm size factor only has positive correlation in stock return in S/L portfolio, while the BE/ME factor only has positive correlation in stock return in S/M portfolio (Indriastuti, 2003).

Mine H. Aksu (2000) examine the effect of firm size, book-to-market ratio and prior distress information on the market reaction to troubled debt restructuring (TDR) announcements. His findings are interesting in three

aspects. First, BE/ME seems to plays a bigger role than ME in explaining the cross-sectional differences in average return of TDR firms. Second, the results do not support the well-established negative (positive) relationship between firm size (book-to-market) and excess return. Finally, this anomalous-signed firm size/ book-to-market effect is reassuring because it confirms the study central hypotheses that the positive excess returns are due to the announcement and/or benefits of TDR.

Cooper, McConnell, and Alexei (2006) examine the Other January Effect on stock return. They systematically examine the predictive power of January returns over the next 11 months of the year. They found that January has predictive power for two of the three premiums in the Fama-French (1993) three-factor model of asset pricing. They find that the market return in January is a predictor of returns during the remainder of the year both for stocks with large and those with small market capitalizations and both for firms with high book-to-market equity ratio (i.e., value stock) and those with low book-to-market equity ratios (i.e., growth stock). For each portfolio, returns are significantly higher following Januarys with a positive market return than following Januarys with a negative market return.

Aksu & Onder (1998) applied two different popular asset pricing models, which are, the factor CAPM and the three factor Fama&French model (1993) to individual stock returns and to firm size/ book-to-market sorted portfolio. Aksu & Onder (1998) found both firm size and book-to-market

effects to be significant, but the firm size effect has a higher explanatory power. There is a negative relation between size and average returns in all sample years (during the 1993-1997 period) except for the lowest BE/ME companies in 1996-1997.

Wong, Tan, and Liu (2006) found that beta, ME, BE/ME have weak relationship or significantly negative with stock return. It has been proven that return are negatively correlated with beta and Ln(ME), and positively correlated with Ln(BE/ME). These suggest that return are higher for small value stocks with low systematic risk. Ln(ME) is positively correlated with beta, but it negatively correlated with returns, Ln(BE/ME). This suggests that larger firms have higher systematic risk, lower return, and growth stocks. Ln(BE/ME) is positively correlated with return, but it negatively correlated with beta and Ln(ME). This implies that value stocks have higher return, lower systematic risk, and smaller in firm size.

Based on those research and recent studies that shown the book-to-market ratio of equity and firm size have explanatory power for the cross section of stock return, Roberto and Gutierrez (2001) found that book-to-market equity and firm size effect also exist in the cross section of bond return. While book-to-market has the dominant effect in stock return, firm size has the dominant effect in bond return.

2.5.   Theoretical Framework

For the purpose of this research, thus, it is very important to examine the effect of firm size and book-to-market equity on stock return. Based on this, a model is proposed in Figure 1.

Figure 1.

Model of the relationship between firm size and book-to-market equity on stock return
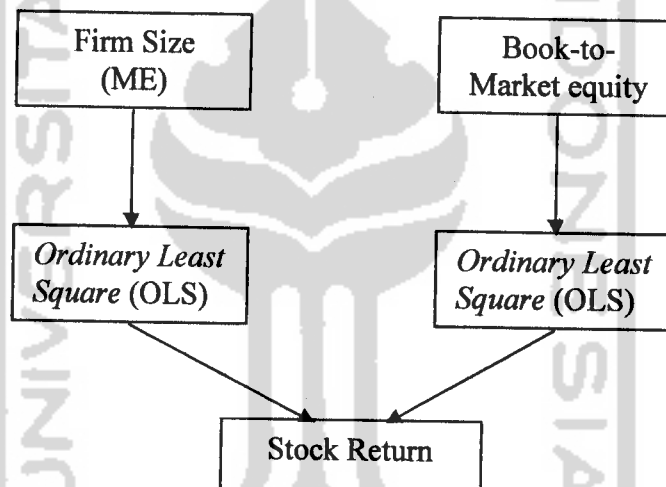
From the figure 1, it can be seen that the framework of this research is arranged as follows:

1. Measure the market equity ratio of the companies from ICMD for the period of 2001-2005.

2. Test the first hypothesis using OLS.

3. Measure the book-to-market equity ratio of the companies from ICMD for the period of 2001-2005.

4. Test the second hypothesis using OLS.

5. Measure the stock return using the yearly closing stock price of the companies from ICMD for the period of 2000-2005.

2.6. Hypotheses Formulation

Banz (1981), Fama & French (1995), Aksu & Onder (1998), Indriastuti (2003), Wong, Tan, Liu (2006) found that firm size has negative influence in stock return.

H_1 : The firm size (ME) has negative influence on stock return.

Rosenberg, Reid, and Lanstein (1985) document a positive relation between average return and book-to-market equity for U.S stock. This condition also happen in the Istanbul for the period of 1993-1997 (Aksu & Onder, 1998), Amman for the period of 1980-2000 (Walid Saleh, 2005), and Shanghai for the period of 1993-2002 (Wong, Tan, Liu, 2006). They found that BE/ME had positive correlation on stock return. Fama & French (1992) examine the cross-section of expected stock returns. They found the strong positive relation between average return and book-to-market equity. John C, Mitchell, and Gerald R. (2004) and Fama & French (1998) found that value firms, that have high book-to-market equity), are shown to have higher return.

H_2 : The book-to-market equity ratio (BE/ME) has positive influence on stock return.

CHAPTER III

RESEARCH METHOD

3.1. POPULATION AND SAMPLE

Population is a group of comprehensive elements that is usually in the form of people, object, transaction or event in which somebody is interested in learning or making them the research object (Kuncoro, 2000). In this research, population is all companies listed consistently in LQ-45 companies of Jakarta Stock Exchange for the period of 2001- 2005. The method used in this research is probability sampling design. Probability sampling design is a technique to collect sample of companies based on the same opportunity to be in the sample. The purpose of the research is to analyze the effect of firm size and book-to-market equity on stock return. The researcher selects the time period of 2001- 2005 because this method more representative in this research.

The sample is a part of the population that becomes the research object in which the characteristic of the sample is homogenous. The sample of this research is all companies that listed consistently in LQ-45 companies as Indonesian companies.

3.2. RESEARCH SETTING

All of the data used in this research are secondary data. The researcher collects and gathers the data from the Indonesian Capital Market Directory (ICMD) for the period of 2001-2005 that is available at Jakarta Stock Exchange (JSX) corner (Pojok BEJ) at UII, Yogyakarta. The data of companies closing stock price, book equity, market equity, and book-to-market equity ratio are measured from company balance sheet and income statement that are collected from the ICMD. To collect the data, the researcher uses two sources, these are literature review and journal.

3.3. RESEARCH VARIABLES

Variables used in this research are market equity ratio and book-to-market equity ratio as independent variables; while, stock return as dependent variable. To know how many of those two independent variables affected stock return and which one the most dominant is, there will be a calculation to show it. Those three variables are measured as follow:

3.3.1. Dependent Variable

Stock return is measured from the yearly closing price under certain period of time.

$$Rit = \frac{P_t - P_{t-1}}{P_{t-1}}$$

where, P_t = closing price of the stock in recent year

P_{t-1} = closing price of the stock in previous year

3.3.2. Independent Variables

3.3.2.1. Firm Size (Market Equity/ ME)

Banz (1981) and Aksu & Onder (1998) explain firm size (market equity) is measured as the stock price times the number of shares outstanding. It is supported by Wong, Tan, and Liu (2006). They define firm size as the market value of A-shares which is the number of A-shares outstanding (including state, legal entity, employee and public shares) multiplied by the market price per share.

$$ME = (stock\ i\ price\ in\ year\ t)\ x\ (number\ of\ outstanding\ share)$$

3.3.2.2. Book-to-Market Equity (BE/ME)

Wong, Tan, and Liu (2006) defined BE/ME as the book value of equity of A-shares divided by the market value of equity of A-shares. Aksu & Onder (1998) used the values of market and book value of equity in previous year to calculate book-to-market equity ratio (BE/ME) for recent year.

Basically, the book-to-market ratio attempts to identify undervalued or overvalued securities. A high ratio is often interpreted as a value stock (the market measuring equity relatively cheap as compared to book value).

$$BE/ME = \frac{Book\ Equity}{Market\ equity}$$

where, book equity is measured from the total assets subtracted by total liabilities.

BE = Book value of firm size i stock in year t

Book Value = total assets – total liabilities

3.4. RESEARCH PROCEDURES

To give empirical evidence in answering the research problem, research procedures are arranged as follow:

1. Measure the market equity ratio of the companies from ICMD for the period of 2001-2005.

2. Test the first hypothesis using OLS.

3. Measure the book-to-market equity ratio of the companies from ICMD for the period of 2001-2005.

4. Test the second hypothesis using OLS.

5. Measure the stock return using the yearly closing stock price of the companies from ICMD for the period of 2000-2005.

3.5. HYPOTHESES TESTING

Based on the explanation of the problem formulation and the theoretical review, the alternative hypotheses are as follow:

H_{01}: The firm size (ME) has no influence on stock return

H_{A1}: The firm size (ME) has negative influence on stock return

H_{02}: The book-to-market equity ratio (BE/ME) has no influence on stock return

H_{A2}: The book-to-market equity ratio (BE/ME) has positive influence on stock return

This research will use Ordinary Least Square (OLS) method to analyze the effect of independent variables on dependent variable. The formulation is:

$$SR = \alpha + \beta_1 ME_i + \beta_2 BE/ME_i + \varepsilon_i \quad ....(3.1)$$

where,

SR   : stock return of i company during t year

ME   : market equity of i company during t year

BE/ME   : book-to-market equity of i company during t year

3.6. CLASSICAL ASSUMPTION TEST

3.6.1 Multicollinearity test

Multicollinearity means the existence of a "perfect" or "exact" linear relationship between some or all explanatory variables of a regression model. The existence of multicollinearity causes inappropriate estimation result (Gujarati, 1995). According to Agus Widarjono (2005), multicollinearity is a relationship between independent variables in one regression model.

3.6.2 Heteroscedascity test

The heteroscedasticity symptom will appears when the residual (e1) has the different variance from one observation to another. In reality, residual from regression model sometimes was not constant. If there is heteroscedasticity, it will affect estimator of OLS in which the researcher uses

it as analysis method. When the heteroscedasticity problem appears, *White HAC* method will solve it.

3.6.3 Autocorrelation test

Autocorellation test is a test of significant relationship between residual. The autocorrelation consequences are the bias of the variance to the smaller value from the real value, so the resulted R-squared value tends to be overestimated. The researcher uses *Q-Stat* method to analyze autocorrelation.
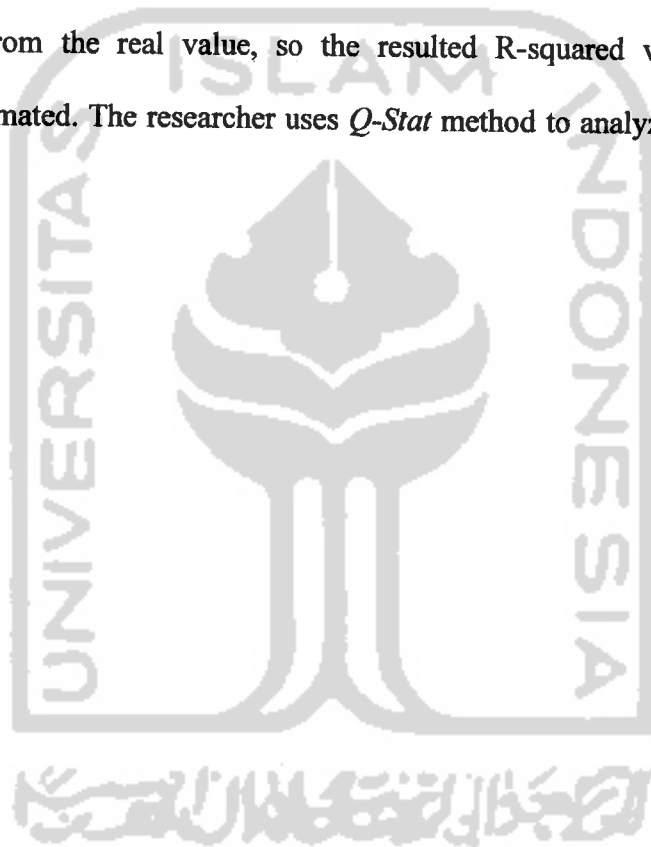
CHAPTER IV

RESEARCH FINDINGS, DISCUSSION, AND IMPLICATIONS

4.1. Overview of the Strategy Analysis

The data used in this research are quantitative data obtained from Indonesian Capital Market Directory (ICMD) 2001-2005 at Jakarta Stock Exchange (JSX) corner at Islamic University of Indonesia, Yogyakarta. The number of companies that became the samples of this research are 14 companies. Thus, the number of samples for the period of 2001-2005 was 70 companies.

The hypothesis testing was done by using statistical testing method which was analyzed by using *Ordinary Least Square* (OLS). Microsoft excel was used to calculate the value of each variable. Then the data are processed by using Eviews 4.1 for the statistical calculations.

4.2. The Result of the Calculation of Stock Return, Market Equity, and Book-to-Market Equity

4.2.1. The Calculation of Stock Return

$$Rit = \frac{P_t - P_{t-1}}{P_{t-1}}$$

where, P_t = closing price of the stock in recent year

P_{t-1} = closing price of the stock in previous year

4.2.2. The Summary of the Calculation of Book Equity, Market Equity, and Book-to-Market Equity

- **Firm Size (Market Equity/ ME)**

Market equity ratio is calculated by multiplying the stock price and number of outstanding share.

ME = (stock i price in year t) x (number of outstanding share)

- **Book-to-Market Equity (BE/ME)**

Book-to-market equity ratio (BE/ME) is defined as the ratio of a firm's book value of equity to its market value of equity.

$$BE/ME = \frac{\textbf{Book Equity}}{\textbf{Market equity}}$$

where, book equity is measured from the total assets subtracted by total liabilities.

BE = Book value of firm size i stock in year t

Book Value = Total assets – total liabilities

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4.3. Statistical Description

The samples in this research are the LQ 45 companies listed consistently in JSX for the period of 2001-2005. In this research, the researcher determined 14 companies as the samples of this research. Some companies are eliminated because they were not listed consistently in JSX and have negative book equity. The reason why the researcher chooses the companies that listed consistently in LQ45 is because of this method more representative in this research. Besides, this was a period during which economic, political, and financial environment changed a lot. From statistical description, we can see the correlation between each variable. Two measurements that are always used to make decision in statistics are central tendency such as mean, median, and modus, and dispersion measurement such as standard deviation, and variance. Table 4.3 shows the calculation of the mean, maximum, minimum, and standard deviation each variable in five years.

From the table 4.3, we can see in central tendency and dispersion measurement, size is a variable which has the highest value.

Table 4.3

Statistical Description of Research Variables

	SR	SIZE	BEME
Mean	0.331943	1.22E+13	1.02E-06
Median	0.047500	5.91E+12	5.86E-07
Maximum	6.391000	6.80E+13	7.59E-06
Minimum	-0.822000	1.74E+11	2.04E-07
Std. Dev.	1.017372	1.51E+13	1.25E-06
Skewness	3.598400	1.768117	3.792995
Kurtosis	20.09938	5.653413	18.72142
Jarque-Bera	1003.866	57.00788	888.7382
Probability	0.000000	0.000000	0.000000
Sum	23.23600	8.55E+14	7.14E-05
Sum Sq. Dev.	71.41812	1.58E+28	1.08E-10
Observations	70	70	70

where:

SR = stock return

SIZE = firm size or market equity (ME)

BE/ME = book-to-market equity (BE/ME)

4.3.1 Classic Assumption Test

The researcher uses all collected data in five years from LQ 45 companies. It means that all data are analyzed in one calculation because the samples had been collected from 2001- 2005. The variables which are used in this research are stock return as dependent variable, and firm size (market equity or ME) and book-to-market equity (BE/ME) as dependent variables.

In hypotheses test, reject or accept H_0 called null hypothesis depends on the size of α. When we test the hypotheses, α is level of error which means the probability of rejecting true hypotheses. α is usually decided by choosing, either 1%, 5%, or 10%. In this research, the researcher uses 10% for α.

From the table 4.4, we can see the calculation of t-Statistic probability. In t-Statistic probability test, the researcher compares value of probability (ρ) with value of significant level (α). If value of probability (ρ) is lower than value of significant level (α), we can accept alternative hypotheses (H_A) or reject null hypotheses (Ho), and if value of probability (ρ) is higher than value of significant level (α), we can reject alternative hypotheses (H_A) or accept null hypotheses (Ho). The researcher uses 10% or 0.1 as value of significant level.

Table 4.4 shows that only BE/ME has value of probability (ρ) lower than value of significant level (α). It means that BE/ME has significant effect on stock return. According to this research hypotheses, BE/ME has positive influence on stock return. The result of analysis supports the hypotheses.

Table 4.4

First Estimate Equation of t-Statistic Test

Dependent Variable: SR				
Method: Least Squares				
Date: 19/04/07 Time: 12:10				
Sample: 1 70				
Included observations: 70				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.659961	0.204948	3.220146	0.0020
SIZE	-8.45E-15	8.38E-15	-1.009057	0.3166
BEME	-220324.8	101030.2	-2.180781	0.0327
R-squared	0.067711	Mean dependent var		0.331943
Adjusted R-squared	0.039882	S.D. dependent var		1.017372
S.E. of regression	0.996878	Akaike info criterion		2.873535
Sum squared resid	66.58230	Schwarz criterion		2.969899
Log likelihood	-97.57372	F-statistic		2.433077
Durbin-Watson stat	1.543217	Prob(F-statistic)		0.095486

4.3.1.1. Multicollinearity Test

Multicollinearity means the existence of a "perfect" or exact linear relationship among some and all explanatory variables of a regression model. According to Agus Widarjono (2005), multicollinearity is a relationship between independent variables in one regression model. The purpose of this test is to show whether the multiple regression models fulfill the assumption that there is no multicollinearity.

The researcher uses matrix correlation to analyze the multicollinearity in a multiple regression model. The criteria of the test are:

- Correlation matrix $\geq$ 0,8 (Linier correlation between independent variables exist).

- Correlation matrix $<$ 0,8 (Linier correlation between independent variables does not exist)

- Correlation matrix $= 1$ (Correlated itself)

Table 4.5

Multicollinearity Test by Using Correlation Matrix

	SIZE	BEME
SIZE	1.000000	-0.318301
BEME	-0.318301	1.000000

According to the multicollinearity test, the value of correlation matrix between independent variables is less than 0,8. It means that linier correlation between independent variable does not exist. Therefore, it will not damage the regression analisis interpretation.

4.3.1.2. Heteroscedasticity Test

Heteroscedasticity test is used for testing the existence of relationship between residual and independent variables. When heteroscedasticity exists, it

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will cause inefficiency in regression coefficient estimation. Therefore the value of probability is more than 0.1 ($\alpha = 0.1$). The researcher will test by using *White Heteroscedasticity* method. The E-views software is used in this test. When the value of chi-square in the heteroscedasticity problem appears, *White HAC* method will solve it. When the chi-square table (Obs*R-squared) is higher than chi-square statistic, it means that heteroscedasticity exists.

Table 4.6 shows that value of coefficient of determination (R-squared) is 0.053823. The value of chi-square table (Obs*R squared) is 3.767609 which is calculated from amount of observation multiplied by coefficient of determination and for the value of the chi-square statistic with $\alpha = 0.1$ and df = 4 equal to 7.7794. It means that chi-square $_{table}$ < chi-square $_{stat}$, in other words heteroscedasticity does not exist.

Table 4.6

Heteroscedasticity Test by Using White Heteroscedasticity

White Heteroskedasticity Test:				
F-statistic	0.924376	Probability		0.455320
Obs*R-squared	3.767609	Probability		0.438369
Test Equation:				
Dependent Variable: RESID^2				
Method: Least Squares				
Date: 19/04/07 Time: 13:20				
Sample: 1 70				
Included observations: 70				
White Heteroskedasticity-Consistent Standard Errors & Covariance				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.671387	2.358792	1.556469	0.1245
SIZE	-1.67E-13	1.14E-13	-1.460849	0.1489
SIZE^2	2.13E-27	1.48E-27	1.434513	0.1562
BEME	-1989501.	1377429.	-1.444359	0.1534
BEME^2	2.13E+11	1.46E+11	1.455894	0.1502
R-squared	0.053823	Mean dependent var		0.951176
Adjusted R-squared	-0.004403	S.D. dependent var		4.198078
S.E. of regression	4.207311	Akaike info criterion		5.780274
Sum squared resid	1150.595	Schwarz criterion		5.940880
Log likelihood	-197.3096	F-statistic		0.924376
Durbin-Watson stat	2.185458	Prob(F-statistic)		0.455320

4.3.1.3. Autocorrelation Test

Autocorellation test is a test to know whether the significant relationship between residual exists or not. The researcher uses Q-Stat method to detect the existence of autocorrelation. When significance exists, it means the autocorellation problem exists.

Table 4.7

The result of autocorrelation test by using Q-Stat Method

Date: 19/04/07 Time: 13:00						
Sample: 1 70						
Included observations: 70						
Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
.|**		.|**		1	0.237	0.237	4.1060	0.043
.|***		.|***		2	0.499	0.469	22.528	0.000
.|***		.|*.		3	0.343	0.230	31.403	0.000
.|***		.|**		4	0.278	-0.003	37.286	0.000

From the table above, the probability shows that the autocorrelation problem exists. The probability is significant. To solve this problem, the researcher uses *Newey-West OLS* that will be shown in **table 4.8**

4.3.2 Test of Hypothesis

4.3.2.1 Regression Result

Result of multiple regression by using *Newey-West OLS (Ordinary Least Squares)* and E-views 4 software is :

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Table 4.8

Result of Final Estimation Regression by using *Newey- West method*

Dependent Variable: SR				
Method: Least Squares				
Date: 19/04/07 Time: 13:30				
Sample: 1 70				
Included observations: 70				
Newey-West HAC Standard Errors & Covariance (lag truncation=3)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.659961	0.315056	2.094743	0.0400
SIZE	-8.45E-15	6.43E-15	-1.315116	0.1930
BEME	-220324.8	94115.02	-2.341016	0.0222
R-squared	0.067711	Mean dependent var		0.331943
Adjusted R-squared	0.039882	S.D. dependent var		1.017372
S.E. of regression	0.996878	Akaike info criterion		2.873535
Sum squared resid	66.58230	Schwarz criterion		2.969899
Log likelihood	-97.57372	F-statistic		2.433077
Durbin-Watson stat	1.543217	Prob(F-statistic)		0.095486

Determination Coefficient (R^2)

Determination coefficient (R^2) shows the proportion of independent variable in explaining the dependent variable comprehensively. R^2 has interval between 0 to 1 ($0 \leq R^2 \leq 1$). The higher R^2 (close to 1), the better result for its regression model, and close to 0, so the entire independent variables can not explain dependent variable comprehensively.

Table 4.8 shows that the value of R-squared is 0.067711. It means that independent variable such as SIZE (X1) and BE/ME (X2) regarding the dependent variable as effectiveness in reducing the stock return (Y) equal to 6,77 %, while the rest 93,23 % will be explained by other factor that is not tested. In other words, firm size and BE/ME have weak relationship with stock return.

The result of t-Statistic is used to prove the influence of independent variable to dependent variable, with assumption that other variables are constant.

H_{01}: The firm size (ME) has no influence on stock return

H_{A1}: The firm size (ME) has negative influence on stock return

H_{02}: The book-to-market equity ratio (BE/ME) has no influence on stock return

H_{A2}: The book-to-market equity ratio (BE/ME) has positive influence on stock return

4.3.2.2. The Effect of Firm Size (Market Equity = ME) on Stock Return

H_{01}: The firm size (ME) has no influence on stock return.

H_{A1}: The firm size (ME) has negative influence on stock return.

Criteria for decision making:

If the probability (ρ) of firm size $< \alpha = 0.1$, so Ho_1 is rejected

If the probability (ρ) of firm size $> \alpha = 0.1$, so Ho_1 is accepted

Based on the table 4.8, the result of regression analysis gives coefficient -8.45E-15 and probability 0.1930. Because the coefficient of firm size value is negative and probability is $> \alpha$, it means that the researcher accepts Ho_1 and conversely the researcher reject H_{A1}. It means that firm size has no influence on stock return. The rising of firm size does not always cause the rising of stock return, and conversely, the decreasing of firm size does not always cause the decreasing of stock return.

4.3.2.3. The Effect of Book-to-Market Equity (BE/ME) on Stock Return

H_{02}: The book-to-market equity ratio (BE/ME) has no influence on stock return.

H_{A2}: The book-to-market equity ratio (BE/ME) has positive influence on stock return.

Criteria for decision making:

If the probability (ρ) of BE/ME $< \alpha = 0.1$ so Ho_2 is rejected

If the probability (ρ) of BE/ME $> \alpha = 0.1$ so Ho_2 is accepted

Based on the table 4.8, the result of regression analysis gives coefficient -220324.8 and probability 0.0222. Because the coefficient of BE/ME is negative and probability is $< \alpha$, it means that the researcher reject all hypotheses (Ho_2 and H_{A2}). It means that BE/ME has negative influence on stock return. The increase in BE/ME factors will decrease the stock return.

4.4. IMPLICATIONS

The findings of the determinant of stock return will give several contributions and implications. For the researcher, the result of firm size has no influence on stock return and BE/ME has negative influence on stock return. With the information, companies manager and outside investors become a consideration whenever they want to set their investment for a company.

For the financial managers, the findings of this research may help them to have some considerations in making optimum formula of stock return by seeing from size and book-to-market equity of firms. For the government, the findings may become consideration in making economic policy especially about investment policy and financial decision for company. The government can make some rules in order to control the economic equilibrium in the country carefully.

CHAPTER V

CONCLUSION AND RECOMMENDATION

5.1. CONCLUSIONS

The purpose of this research is to provide empirical evidence that firm size has negative influence on stock return and book-to-market equity has positive influence on stock return in Indonesian LQ 45 companies listed in Jakarta Stock Exchange (JSX) for the period of 2001-2005.

Firm Size Effect on Stock Return

Market equity as proxy of firm size in this research has no influence on stock return. The rising of firm size does not always cause the rising of stock return, and conversely, the decreasing of firm size does not always cause the decreasing of stock return.

The explanatory power, as measured by R-squared equal to 0.067711 (6,7%). It means that all idependent varibles (firm size and book-to-market equity) contribute only 6,7% to stock return. In other words, firm size has weak relationship with stock return.

This is contradictory with some previous research conducted by Banz (1981), Fama & French (1995), Aksu & Onder (1998), Indriastuti (2003), They found that firm size has negative influence in stock return. And also

consistent with Wong, Tan, and Liu (2006) found that ME has weak relationship with stock return.

Book-to-Market Equity Effect on Stock Return

Book-to-market equity (BE/ME) in this research has negative influence on stock return. It means the increase in BE/ME will decrease the stock return.

This is contrary with my hypotheses that book-to-market equity has positive influence on stock return. But, this is consistent with some previous research conducted by Kothari, Shanken, and Sloan (1995) re-examines whether BE/ME captures cross-sectional variation in average returns over a longer 1947 to 1987 period using a somewhat different data set. They found the relation between BE/ME and returns is weaker and less consistent than that in Fama and French (1992), Fama & French (1995) and Indriastuti (2003) found that book-to-market factors (BE/ME) had negative correlation in stock return.

5.2. RECOMMENDATIONS

After the researcher completes this research, the following recommendations are suggested:

1. For investor

   a. Use another proxy to determine the stock return such as profitability and business risk.

b. Hopefully the result of this research can be used as a reference for investor to analyze their investment strategy.

2. For future research

    a. Use another proxy of firm size by using another measurement which is relevant to the theory such as log total assets.

    b. Extend the sample of this research to other companies in LQ-45 companies, but they are all listed companies in Jakarta Stock Exchange.

    c. Hopefully the result of this research can be used as a reference for other researchers to adequately develop or revise the research result.
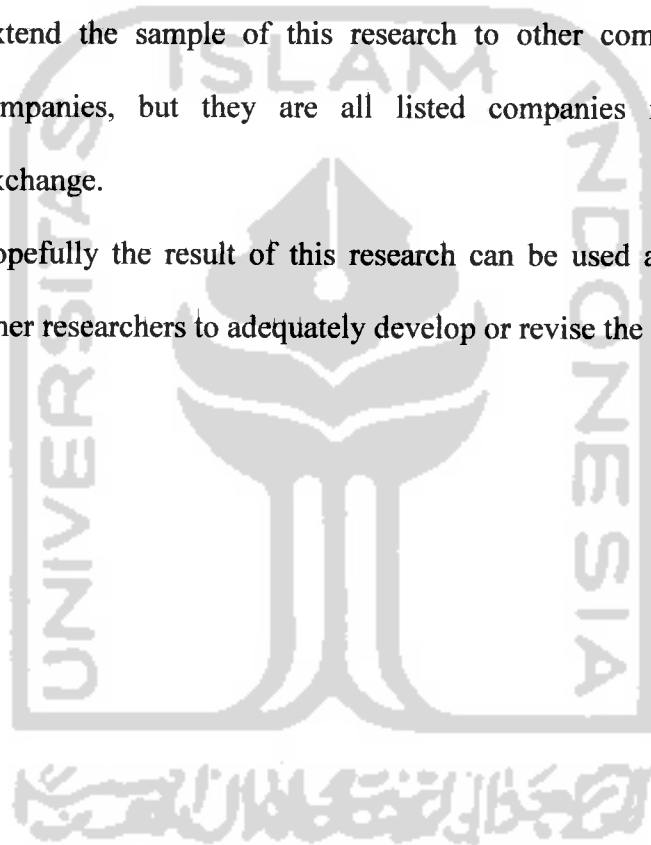
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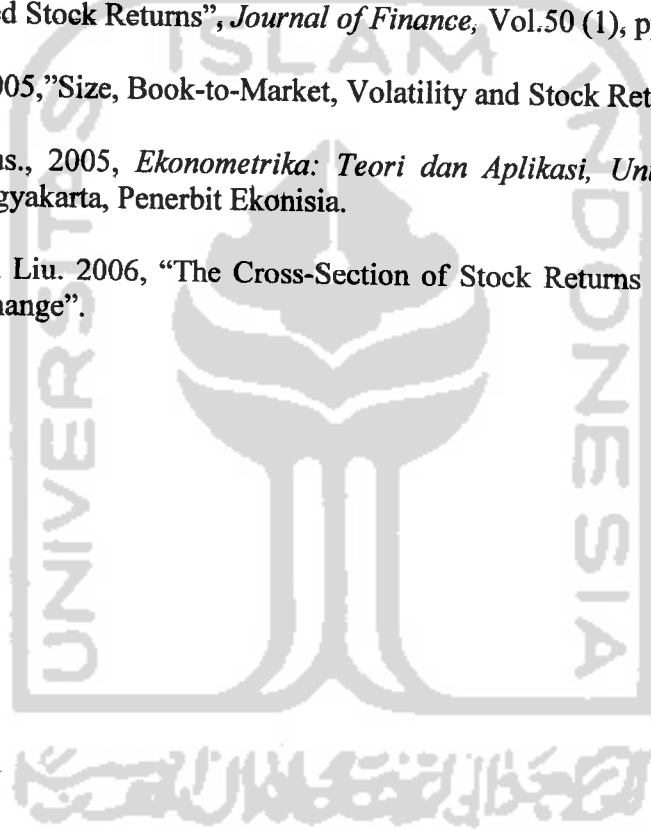
APPENDIX 2

The Calculation of Stock Return

CODE	2001	2002	2003	2004	2005
AALI	-0.051	0.676	0.113	0.797	0.581
ANTM	-0.111	-0.25	-0.083	2.136	1.072
ASII	-0.025	0.615	0.587	0.92	0.063
BBCA	-0.119	0.694	0.35	-0.119	0.143
GGRM	-0.389	-0.04	0.639	-0.004	-0.14
INDF	-0.194	-0.04	0.333	0	0.138
INTP	-0.563	-0.036	2.148	0.447	0.154
ISAT	0.05	-0.021	0.622	-0.617	-0.035
KLBF	-0.274	0.222	2.636	-0.45	-0.736
PNBN	0.088	-0.027	0.583	0.474	0
RALS	-0.49	-0.056	0.723	-0.822	0.045
TINS	-0.687	-0.198	6.391	-0.186	-0.123
TLKM	0.561	0.203	0.753	-0.285	0.223
UNTR	-0.153	-0.153	3.098	0.82	0.615

APPENDIX 3

The Calculation of Book Equity, Market Equity, and
Book-to-Market Equity Ratio

2001

CODE	BE	ME	BE/ME
AALI	1,196,233	1.39638E+12	8.56667E-07
ANTM	1,919,725	9.84615E+11	1.94972E-06
ASII	2,566,826	4.94071E+12	5.19525E-07
BBCA	9,773,242	8.68294E+12	1.12557E-06
GGRM	8,198,192	1.66434E+13	4.9258E-07
INDF	3,561,581	5.7225E+12	6.22382E-07
INTP	2,763,087	2.57686E+12	1.07227E-06
ISAT	10,739,703	9.78548E+12	1.09751E-06
KLBF	220,774	9.1368E+11	2.41632E-07
PNBN	3,488,171	1.08885E+12	3.20355E-06
RALS	1,175,302	3.745E+12	3.13832E-07
TINS	1,492,816	2.1642E+11	6.89778E-06

| TLKM | 9,323,575 | 3.2256E+13 | 2.89049E-07 |
| UNTR | 814,974 | 5.56416E+11 | 1.46468E-06 |

2002

CODE	BE	ME	BE/ME
AALI	1,306,936	2.36685E+12	5.52183E-07
ANTM	1,675,476	1.14462E+12	1.46379E-06
ASII	8,921,310	8.21542E+12	1.08592E-06
BBCA	11,508,553	1.48805E+13	7.73397E-07
GGRM	9,709,701	1.59699E+13	6.07999E-07
INDF	3,662,698	5.63094E+12	6.50459E-07
INTP	3,808,395	2.48483E+12	1.53266E-06
ISAT	10,603,402	9.57838E+12	1.10701E-06
KLBF	489,919	1.11672E+12	4.38712E-07
PNBN	3,501,491	2.64858E+12	1.32203E-06
RALS	1,338,862	3.535E+12	3.78745E-07
TINS	1,318,722	1.73639E+11	7.59461E-06
TLKM	14,613,617	3.8808E+13	3.76562E-07
UNTR	1,097,809	4.71408E+11	2.32879E-06

2003

CODE	BE	ME	BE/ME
AALI	1,515,543	2.66155E+12	5.6942E-07
ANTM	1,783,512	2.37654E+12	7.50465E-07
ASII	13,506,007	2.01725E+13	6.69527E-07
BBCA	12,625,445	2.02843E+13	6.22425E-07
GGRM	10,970,871	2.61676E+13	4.19254E-07
INDF	4,093,881	7.55462E+12	5.41905E-07
INTP	4,533,458	7.82262E+12	5.79532E-07
ISAT	12,198,910	1.55325E+13	7.8538E-07
KLBF	828,958	4.0608E+12	2.04137E-07
PNBN	3,703,089	4.19359E+12	8.83036E-07
RALS	1,525,870	6.09E+12	2.50553E-07
TINS	1,392,565	2.55E+12	5.46104E-07
TLKM	17,312,877	6.804E+13	2.54451E-07

| UNTR | 1,489,203 | 1.96644E+12 | 7.57311E-07 |

2004

CODE	BE	ME	BE/ME
AALI	2,152,830	4.88504E+12	4.40699E-07
ANTM	2,442,470	3.29077E+12	7.42219E-07
ASII	19,719,613	3.88445E+13	5.07656E-07
BBCA	13,926,391	3.62839E+13	3.83817E-07
GGRM	12,197,328	2.60714E+13	4.67843E-07
INDF	4,945,774	7.55535E+12	6.54605E-07
INTP	4,655,793	1.13198E+13	4.11297E-07
ISAT	13,349,042	2.98192E+13	4.47665E-07
KLBF	1,946,923	4.46688E+12	4.35857E-07
PNBN	4,879,214	2.96597E+12	1.64507E-06
RALS	1,656,572	1.085E+12	1.52679E-06
TINS	1,509,306	1.04435E+12	1.44521E-06
TLKM	23,066,468	4.8636E+13	4.74267E-07
UNTR	3,140,089	6.46251E+12	4.85893E-07

2005

CODE	BE	ME	BE/ME
AALI	2,703,338	7.7306E+12	3.49693E-07
ANTM	3,029,645	6.82E+12	4.4423E-07
ASII	24,231,154	4.12932E+13	5.86807E-07
BBCA	15,848,422	4.14734E+13	3.82134E-07
GGRM	13,127,155	2.24156E+13	5.85625E-07
INDF	4,743,501	8.59421E+12	5.51941E-07
INTP	5,629,383	1.30684E+13	4.30764E-07
ISAT	14,491,017	2.91709E+13	4.96763E-07
KLBF	2,906,785	8.0533E+11	3.60943E-06
PNBN	4,816,641	2.96597E+12	1.62397E-06
RALS	1,762,809	1.15992E+12	1.51977E-06
TINS	1,534,291	9.1601E+11	1.67497E-06
TLKM	29,597,594	5.9472E+13	4.97673E-07
UNTR	4,147,921	1.04782E+13	3.95864E-07

APPENDIX 4

Statistical Description of Research Variables

	SR	SIZE	BEME
Mean	0.331943	1.22E+13	1.02E-06
Median	0.047500	5.91E+12	5.86E-07
Maximum	6.391000	6.80E+13	7.59E-06
Minimum	-0.822000	1.74E+11	2.04E-07
Std. Dev.	1.017372	1.51E+13	1.25E-06
Skewness	3.598400	1.768117	3.792995
Kurtosis	20.09938	5.653413	18.72142
Jarque-Bera	1003.866	57.00788	888.7382
Probability	0.000000	0.000000	0.000000
Sum	23.23600	8.55E+14	7.14E-05
Sum Sq. Dev.	71.41812	1.58E+28	1.08E-10
Observations	70	70	70

APPENDIX 5

First Estimate Equation of t-Statistic Test

Dependent Variable: SR				
Method: Least Squares				
Date: 19/04/07 Time: 12:10				
Sample: 1 70				
Included observations: 70				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.659961	0.204948	3.220146	0.0020
SIZE	-8.45E-15	8.38E-15	-1.009057	0.3166
BEME	-220324.8	101030.2	-2.180781	0.0327
R-squared	0.067711	Mean dependent var		0.331943
Adjusted R-squared	0.039882	S.D. dependent var		1.017372
S.E. of regression	0.996878	Akaike info criterion		2.873535
Sum squared resid	66.58230	Schwarz criterion		2.969899
Log likelihood	-97.57372	F-statistic		2.433077
Durbin-Watson stat	1.543217	Prob(F-statistic)		0.095486

APPENDIX 6

Multicollinearity Test by Using Correlation Matrix

	SIZE	BEME
SIZE	1.000000	-0.318301
BEME	-0.318301	1.000000

APPENDIX 7

Heteroscedasticity Test by Using White Heteroscedasticity

White Heteroskedasticity Test:			
F-statistic	0.924376	Probability	0.455320
Obs*R-squared	3.767609	Probability	0.438369
Test Equation:			
Dependent Variable: RESID^2			
Method: Least Squares			
Date: 19/04/07 Time: 13:20			
Sample: 1 70			
Included observations: 70			
White Heteroskedasticity-Consistent Standard Errors & Covariance			

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.671387	2.358792	1.556469	0.1245
SIZE	-1.67E-13	1.14E-13	-1.460849	0.1489
SIZE^2	2.13E-27	1.48E-27	1.434513	0.1562
BEME	-1989501.	1377429.	-1.444359	0.1534
BEME^2	2.13E+11	1.46E+11	1.455894	0.1502
R-squared	0.053823	Mean dependent var		0.951176
Adjusted R-squared	-0.004403	S.D. dependent var		4.198078
S.E. of regression	4.207311	Akaike info criterion		5.780274
Sum squared resid	1150.595	Schwarz criterion		5.940880
Log likelihood	-197.3096	F-statistic		0.924376
Durbin-Watson stat	2.185458	Prob(F-statistic)		0.455320

APPENDIX 8

The Result of Autocorrelation Test by Using Q-Stat Method

Date: 19/04/07 Time: 13:00						
Sample: 1 70						
Included observations: 70						
Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. |** |	. |** |	1	0.237	0.237	4.1060	0.043
. |*** |	. |*** |	2	0.499	0.469	22.528	0.000
. |*** |	. |*. |	3	0.343	0.230	31.403	0.000
. |*** |	. |** |	4	0.278	-0.003	37.286	0.000

APPENDIX 9

Result of Final Estimation Regression by using *Newey- West method*

Dependent Variable: SR				
Method: Least Squares				
Date: 19/04/07 Time: 13:30				
Sample: 1 70				
Included observations: 70				
Newey-West HAC Standard Errors & Covariance (lag truncation=3)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.659961	0.315056	2.094743	0.0400
SIZE	-8.45E-15	6.43E-15	-1.315116	0.1930
BEME	-220324.8	94115.02	-2.341016	0.0222
R-squared	0.067711	Mean dependent var		0.331943
Adjusted R-squared	0.039882	S.D. dependent var		1.017372
S.E. of regression	0.996878	Akaike info criterion		2.873535
Sum squared resid	66.58230	Schwarz criterion		2.969899
Log likelihood	-97.57372	F-statistic		2.433077
Durbin-Watson stat	1.543217	Prob(F-statistic)		0.095486