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THE IMPACT OF INTEREST RATE AND LIQUIDITY TO INVESTMENT RISK OF REAL ESTATE COMPANIES LISTED IN INDONESIAN STOCK EXCHANGE

THESIS



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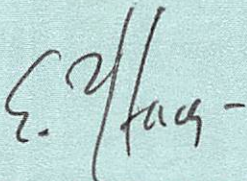
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ABSTRACT

The purpose of this research is to get empirical evidence that the level of interest rate and liquidity statistically has significant impact toward investment risk of real estate companies listed in Indonesian Stock Exchange. The sample of this research is real estate companies listed in Indonesian Stock Exchange in period 2007-2009. There are 33 companies used as sample research which is controlled by firm size, with 22 companies classified as big companies and 11 companies classified as small companies. The result of this research with F test shows that all variables significant impact on investment risks for both big and small companies. The result of this research with t-test indicates that the interest rate has significant effect on investment risk of big companies but do not significantly influence investment risk of small companies. For liquidity, it significantly influences investment risk of big and small companies.

Keywords: Investment Risk, Interest Rate, Liquidity

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CHAPTER I

INTRODUCTION

1.1 Background

The performance of the stock market has been the major story in the financial press recently and has had a widespread impact on investors, investment vehicles, and the investment environment in general. The golden glow of the stock market has changed the way many people view the activity of investing.

Investors are motivated to invest in a given vehicle by its expected return. The return is the level of profit from an investment, that is, the reward for investing. The return on an investment may come from than one source. The most common source is periodic payments such as dividends or interest. The other source of return is appreciation in value- the gain from selling an investment for more than its original purchase price. We call these two sources of return, current income and capital gains (or capital losses).

Common stocks are a popular form of investing, used by millions of individual investors. Their popularity stems in large part from the fact that they offer investors an opportunity to tailor their investment programs to meet individual needs and preferences. Given the size and diversity of the stock market, it's safe to say that no matter what the investment objective, there are common stocks to fit the bill. For retired people and others living on their investment holdings, stocks provide a way of earning steady stream of current income (from the dividends they produce). For investors less concerned about current income, common stocks can serve as the basis for long run accumulation of wealth. Investors buy stock for the long haul as a way to earn not only dividends but also a steady flow of capital gains.

There are some considerations for investors when they decide to invest in capital market. For instance, return consideration and the risk of that investment. As stated before, kind of benefits that expected by investors are dividend or capital gain

that created by increasing of stock price. Capital market trades some kinds of securities in difference level of risk. Stock is one of the securities that have high risk that will be received by investor in the future. Since judgments in investment related to uncertainty in the future, risk have to be considered. The knowledge about risk is essential for investors.

The return that is expected from investment in securities is depending on investor's preference toward risk. Most of investors tend to avoiding risk, although some of them are risk taker. Investors who are avoiding risk would prefer to choose stock that has lower risk with a certain return, but taker risk investors tend to take high risk stock with high expected return. Investment risk is reflected in the variability of stock returns, both individual stock returns and overall stock market return. The level of investment risk in stock market could be measured by variance or standard deviation of stock return. This kind of risk is called total risk that consists of systematic risk and unsystematic risk. Systematic risk is based on the value of coefficient beta that describes the level of a stock price toward the entirely stock price in the market. This type risk is caused by macro factors that influence all of companies in the industries and also it can't be reduced even thought with diversification.

Variables in macroeconomics are intrinsically linked. Such is the delicate balance of global economics and markets, that a change in one variable can positively or negatively infiltrate other parts of the system. Interest rates are one such variable, albeit a very important one, and form only part of the equation to create a particular outcome.

Currently, interest rates reflect mounting worries about a slowdown in global growth and the impact on corporate earnings.

Interest rate as kind of macro factor, every changing in interest rate can influence the investment variability return since interest rate has relationship to

market price of stock. It means, if interest rate increase so stock price will increase, *ceteris paribus*, and vice versa. (Tandeililin, 2001)

Unsystematic risk is caused by micro factors that happen in certain firm or industry. So, the effect of unsystematic risk just limited to that firm or industry it self (Nurdin, 1999).

Liquidity is kind of micro factor which related to how fast the issuance stock traded in secondary market. Faster securities traded in market share so that securities more liquid and vice versa. If the securities are not liquid enough, so the liquidity risk more higher. (Tandellilin, 2001)

Putra (2007) studied the impact of interest rate and liquidity of investment risk level of food and beverage stock in Indonesian Stock Exchange. Research's result indicates that interest rate and liquidity have significant impact on investment risk of food and beverage stock in Indonesian Stock Exchange.

Research conducted by Sinaga (in Nurdin, 1999) stated that the risk of investing in stock is influenced by macro factors and micro factors, they are : economic growth, interest rate, foreign exchange, rate of inflation, capital structures, asset composition, liquidity, firm's size, and government judgment on economic. The result show that variables; economic growth, rate of inflation, foreign exchange, government judgment, firm's size, capital structures, asset composition, and liquidity have impact on investment risk Indonesian Stock Exchange, but the level of interest rate doesn't give impact on investment risk of stock.

Same topic with research conducted by Putra but distinct from the object under study, whereas in this study researcher also uses firm size as control variable to standardize the sample in same level. This study examines real estate companies. The reason why researcher took this real estate companies as sample research is because the number of real estate companies listed in Indonesian Stock Exchange, makes it possible to classify them based on firm size.

This research includes three years observation from year 2007 to 2009. The reason this study used 2007 to 2009 as period of study is because to get the latest data in order the information is update.

Based on the problem above, the author interested in doing further research as outlined in the thesis titled **“The Impact of Interest Rate and Liquidity to the Investment Risk of Real Estate Companies listed in Indonesian Stock Exchange.”**

1.2 Problem Definition

Based on the background stated above, then the problems that writer would like to discuss in this research: is variable of interest rate and liquidity statistically has significant impact toward investment risk of real estate companies listed in IDX.

1.3 Research Objective

The purpose of this research is to get empirical evidence that the level of interest rate and liquidity statistically has significant impact toward investment risk of real estate companies listed in IDX.

1.4 Research Benefits

This research hopefully will give some benefits to the following parties:

1. For the writer is expected to increase knowledge and understanding related to the topic being studied.
2. Becoming bases for investor in assessing level of investment risk which is traded in stock market.
3. This research hopefully gives additional information and could be a reference for future researcher that concerning of investment risk.

1.5 Writing Systematic

This research developed into five chapters with the systematic writing is organized as follows:

Chapter one as the introduction chapter, describes about background, problem definition, research purposes and benefits and writing systematic.

Chapter two will explain the theoretical framework and review the literatures related to research topics. It also gives the preview of previous research conducted.

Chapter three, Research Method, discusses data used in research, sample selection, identification and definition of variables and also collection method used in this research.

Chapter four analyzes data needed in order to achieve research objectives. In this chapter explain the result and discussion of the analysis.

Chapter five consists of conclusion, limitation and possibilities for the next research.

CHAPTER II

LITERATURE REVIEW

2.1 Theoretical Framework

2.1.1. Investment

2.1.1.1. Definition of Investment

An investment is any vehicle into which funds can be placed with the expectation that it will generate positive income and/or preserve or increase its value. The rewards, or returns, from investing are received in either of two basic forms: current income or increased value. (Gitman, Lawrence J and Michael D. Joehnk, 1999).

According to Reilly, Frank K and Brown, Keith C, an investment is the current commitment of dollars for a period of time in order to derive future payments that will compensate the investor for (1) the time the funds are committed, (2) the expected rate of inflation, and (3) the uncertainty of the future payments.

In addition, Samuelson (1992) defines investment as "economic activity that forgoes consumption today with an eye to increasing output in the future". Net investment is the change in capital from period to period.

2.1.1.2.Types of Investments

a. Securities or Property

Investments that represent debt or ownership or the legal right to acquire or sell an ownership interest are called securities.

Property is consists of investments in real property, such as lands and buildings, or tangible personal property includes gold, artwork, and antiques.

b. Direct or Indirect

A direct investment is investment in which an investor directly acquires a claim on a security or property.

Indirect investment is an investment made in a collection of securities or properties.

c. Debt, Equity, or Derivative Securities

Debt represents funds lent in exchange for interest income and the promised repayment of the loan at a given future date.

Equity represents ongoing ownership in a business or property. The most popular type of equity security is common stock.

Derivative securities are securities that are structured to exhibit characteristics similar to those of underlying security or asset and that derive their value from the underlying security or asset.

d. Low or High Risk

Risk is the chance that actual investment returns will differ from those expected.

Low risk investments are those considered safe with regard to a positive return.

High risk investments are considered speculative; their levels of return are highly uncertain.

e. Short or Long Term

Short term investments are investments that typically mature within one year.

Long term investments are investments with maturities of longer than a year or with no maturity at all.

f. Domestic or foreign

2.1.1.3. Investment in Stock

One reason why stocks are so appealing to investors is the substantial return opportunities they offer. Stocks generally provide attractive, highly competitive returns over the long haul. Stocks offer other benefits as well: they are easy to buy and sell, and the transaction cost are modest. Moreover, price and market information is widely disseminated in the news and financial media.

There are also some disadvantages to common stock, risk being perhaps the most significant. Stock are subject to a number of different types of risk, including business risk and financial risk, purchasing power risk, market risk, and possibly event risk. (Gitman, Lawrence J and Michael D. Joehnk, 1999).

2.1.1.4. Types of Stocks

Stock's classification reflects not only its fundamental source of return but also the quality of the company's earnings, the issue's susceptibility to market risks, the nature and stability of its earnings and dividends, and even the susceptibility of the stock to adverse economic conditions.

a. Blue-Chip Stocks

Stocks that are unsurpassed in quality and have a long and stable record of earnings and dividends.

These kinds of stocks are issued by large, well-established firms that have impeccable financial credentials. Blue-chips are particularly attractive to investors who are looking for quality investment outlets that offer decent dividend yields and respectable growth potential. Many use them for long term investment purposes and, because their relatively low risk, as a way of obtaining modest but dependable rates on return on investment dollar. It's relatively high in price, especially when the market is unsettled and investors become more quality-conscious.

b. Income Stocks

Stocks with long and sustained records or paying higher than average dividends. This kind of stock subject to a fair amount of interest rate risk.

c. Growth Stocks

Stocks that experience high rates of growth in operations and earnings. Growth shares generally appeal to investors who are looking for attractive capital gains rather than dividends and who are therefore willing to assume a higher element of risk.

d. Speculative Stocks

Stocks that offer the potential for substantial price appreciation, usually because of some special situation, such as new management or the introduction of a promising new product. Generally the earnings of speculative stocks are uncertain and highly unstable. These stocks are subject to wide swings in the price, and they usually pay little or nothing in dividends. Speculative stocks are highly risky, which are often trade in and out of these securities aggressively as the situation demands.

e. Cyclical Stocks

Stocks whose earning and overall market performance is closely linked to the general state of the economy.

Cyclical stocks generally do well when the economy is moving a head, but they tend to do especially well when the country is in the early stages of a recovery. They are avoided when the economy begins to weaken. Because their prices have a tendency to move with the level of economic activity, they are probably most suitable for investors who are willing to trade in and out of these issues as the economic outlook dictates and who can tolerate the accompanying exposure to risk.

f. Defensive Stocks

Stocks that tend to hold their own, and even do well, when the economy starts to falter. This stock price will remain stable or even increase when general economic activity is tapering off.

g. Mid-Cap Stocks

A stock's size is based on its market value or as its market capitalization (the market price of the stock times the number of shares outstanding). Generally in the U.S. stock market can be broken into three segments, as measured by a stock's market "cap":

Small-cap less than \$750 million

Mid-cap \$750 million to \$3-\$4 billion

Large-cap more than \$3-\$4 billion

So, the mid-cap stocks is the medium size stocks, generally with the market values of less than \$3 to \$4 billion but more than \$750 million.

h. Small-Cap Stocks

Stocks that generally have market values of less than \$500-\$750 million but can offer above average returns.

A special category of small company stock is the so-called initial public offering (IPO).

2.1.2. Interest Rate

2.1.2.1. Definition of Interest Rate

Interest rate is the most pervasive element in the financial world. It affects everything that financial institutions do, and its implications extend into just about every nook and cranny of financial markets.

The definition of interest is the rent paid by a borrower for use of the lender's money. (Ritter, Lawrence S and Udell. 2004)

Similarly, Bencik said that, an interest is a payment that the debtor pays to the creditor for lending money over for a certain period of time.

Weston (in Eugene F. Bringram, 1993) said that interest rate is price which must be paid for the capital of loan; while at capital of equity investor expect compensation in the form of dividend in profit of asset. Samuelson and Wilian, 1997 said that interest rate is payment done for the usage of interest amount or money which must be paid by per unit time. In other word, people must pay the chance of borrow some money.

The interest rate is a price, the price of credit or borrowing money – the price that lenders receive and borrowers have to pay. Since the interest rate is a price, like all prices, it is determined by supply and demand. Analyzing interest rates by supply and demand assumes that financial markets are competitive, so that supply and demand pressures will be reflected in price (interest rate) changes. It rules out the conspiracy theory of interest rates, the view that rates are rigged by a few insiders with substantial market power.

The level of interest rate that paid to the depositor depends on :

1. Expected rate of return by producer of invested capital. This rate of return represent maximum boundary of which they ready to pay for depositor.
2. Consumer time preference and depositor for consumption to be put aside by consumer and saved at various available level of interest rate.

2.1.2.2. Types of Interest Rate

In everyday reality there are four kinds of rate of interest they are:

1. Base Interest Rate

Base interest rate (bank rate) is interest rate that determined by central bank base on credit that central bank give to the general banks and level of interest rate which is specified by central bank for the discounted the value of securities which pulled or taken by bank .

2. Effective Interest Rate

Effective interest rate is actual rate of interest that charged to the debtor in one year if nominal rate of interest will equal to effective interest rate.

3. Nominal Interest Rate

Nominal interest rate is determined rate of interest in one period of time.

4. Equivalent Rate of Interest

Equivalent interest rate is rate of interest which is the amount counted every day (daily interest), each week (weekly interest), each month (monthly interest) or every year (annual interest) to a number of credit or loan or investment during a given time period which if calculated annually will yield result of interest with the same amount.

2.1.2.3. Classical Interest Theory

Classical economists obviously recognize the importance of supply and demand but focus their attention on saving and investment. Saving creating a supply of funds and investment generating the demand for funds. Saving, according to classical economics, is a function of the rate of interest. The higher the rate of interest, the more will be saved, since at higher interest rates people will be more willing to forgo present consumption. The rate of interest rate is an inducement to

save, a reward for not giving in to baser instincts for instant gratification by consuming all your income, classical interest theory worked just as well if saving did not depend on the interest rate. Investment is a function of the rate of interest, increasing as the rate of interest declines, classical interest theory and Say's law remain alive and well. A lower rate of interest induces entrepreneurs to undertake more investment. They will accept projects of lower expected profitability, because the cost of borrowing funds is less.

2.1.2.4. Relationship Interest Rate with Investment

Interest rates are determined by monetary policy of a country according to its economic situation. Like stated before, high interest rates induce the investors to keep their money deposited in saving bank accounts to get high interest rather to put it into risky stock market. As the risk free returns come down, investors switch their money from bank accounts to stock market investments. Consequently, demand of stocks increases and the stock markets go up as a result of interest rate cut. Mishkin (1977) also proved that lower interest rates increase stock prices which in turn reduce the probability of financial distress.

Interest rate plays a very important role in the economy because it determines the spending and savings behaviors of individuals and companies.

- (1) If interest rate rises, the “cost” of spending increases and hence individuals and companies save more.
- (2) If interest rate falls, the “cost” of spending decreases and hence individuals and companies spend more.

Relationship of interest rate and stock returns has been widely examined by researchers. Changes in interest rates influence the value of a company's stocks and shares and thus the stock returns. With an increase in interest rate, risk and required rate of return of a particular investment goes up and profits of a firm tend to decrease (due to increased cost of capital) which in turn causes the stock value to fall down.

Rising or falling interest rates are generally associated with falling or rising stock returns. There is clearly a relationship between interest rate movements and stock prices, the relationship is inverse; that is, as interest rate rise (fall), stock prices fall (rise), other things being equal.

Madura and Zarruk (1995) and Joseph (2002) studied the interest rate sensitivity of stock returns and the results described that stock returns were negatively affected by interest rate changes. Rising interest rates in the country depress stock returns and can result in higher cost of debt.

Similarly, Haavelmo, 1960; Jorgenson, 1963, unearths that increasing in interest rates affect firm's capital investment, the neoclassical theory of investment gives a simple answer: increasing the interest rate reduces investment by raising the cost of capital.

Like most relationships involving investing, the relationship between interest rates and stock prices is not perfect. Nor do interest rates have a linear effect on stock prices.

A decrease in stock prices would induce a reduction in domestic investor's wealth, leading to a fall in the demand for money and lower interest rates. (Tabak. 2006).

For instance, in the short term, the stock market often declines in the midst of rising interest rates because companies must pay more to borrow money for expansion and capital improvements. Increasing rates often impact small companies more than large, well-established firms. That's because they usually have less cash, shorter track records, and other limited resources that put them at higher risk. On the other hand, a drop in interest rates may result in higher stock prices if corporate profits increase.

Investors must take into account the role of changes in interest rate in affecting investor expectations. Investors pay close attention to announcements by the Federal Reserve that could possibly affect interest rates, as well as to any other

factors that may play a role. In turn, the popular press reports possible changes in interest rates when they might affect the stock market.

Thereby, changes in interest rates directly influence the price or value of securities held. Rising interest rates in the country depress stock returns and can result in higher cost of debt. This can limit the investment expansion; therefore, government should maintain an appropriate rate of interest in the country that will help and motivate investors to grab investment opportunities.

2.1.3. Liquidity

2.1.3.1. Definition of Liquidity

There are several definitions of liquidity:

1. Liquidity is the ability to fund assets and meet obligations as they come due.
2. Liquidity is the amount an association holds in cash and other assets that are quickly convertible into cash without significant loss.
3. Liquidity is an association's capacity to meet its financial obligations and commitments at reasonable or acceptable costs.
4. According to Brown, Crocker & Foerster, liquidity is the ability to engage in rapidly trading a large number of securities at a low cost with little impact on market prices.
5. Liquidity of an asset is its ease of convertibility into cash or a cash equivalent asset. Liquidity risk arises from the difficulty of selling an asset quickly without incurring large losses. (Ali.2004)
6. Liquidity, generally referring to the ability to trade large size quickly, at low cost, when one wants to trade, is a very important feature of financial markets. This is a "slippery and elusive" concept (Kyle, 1985) encompassing five dimensions:

Tightness refers to low transaction costs;

Immediacy refers to how fast an order can be settled;

Depth refers to the size of the trade at a give cost;

Breadth means the impact of large trade on prices;

Resiliency refers to the speed with which prices recover from a random, uninformative shock (Kyle, 1985; Sarr and Lybek, 2002).

It is generally acknowledged that there is no single unambiguous, theoretically correct or universally accepted definition of liquidity. Therefore, there is no single measure that can precisely capture all these dimensions of liquidity.

Liquidity usually defined as the ability to buy or sell an asset quickly and in large volume without substantially affecting the asset's price, is not directly observable, and even harder to measure. Several proxies have been proposed in the empirical literature to measure liquidity, such as bid-ask spread (quoted or effective), market depth, and the price impact. (Yafeng. 2006)

The extant literature conceptualizes the pricing of liquidity in two ways, as a characteristic and as a risk factor. Liquidity as a priced characteristic considers the level of liquidity as a determinant of assets returns. Amihud and Mendelson (1986) argue that illiquid stocks should earn a premium over liquid stocks to compensate investors for the trading costs incurred which reduce realizable returns. Liquidity as a risk factor refers to the risk to the value of an asset brought about by the sensitivity of its returns/liquidity to market liquidity. Stocks that suffer more negative returns when the market is less liquid are less desirable for investors, *ceterus paribus*. Sensitivity to adverse changes in market liquidity may not be diversifiable, constituting a risk to investors.

With liquid equity markets, risks associated with investment are reduced, making it more attractive to investors. Thus, the easy transfer of capital ownership facilitates firms' permanent access to capital raised through equity issues. Therefore, as liquid market improves the allocation of capital, the prospect for long-term economic growth is enhanced. Also, savings and investment are increased due to reduction in the riskiness of investment facilitated by stock market liquidity.

Liquidity is a major factor in explaining asset returns and a number of measures have been suggested. These include the quantity of trades (Datar et al, 1998), the speed of trades (Liu, 2006), the costs of trading (Amihud and Mendelson, 1986) or the impact that a trade has on price (Amihud, 2002; Pastor and Stambaugh, 2003). The market- wide illiquidity factor is constructed following Amihud (2002), and is based on intraday trading volumes and order flows that impact stock prices. (Bruce Hearn, Jenifer Piesse and Roger Strange.2008)

It is also added by Ji-Chai Lin, Ajai K. Singh, Wen Yu, Since liquidity can be generally described as “the ability to trade large quantities quickly at low cost with less price impact,” Liu (2006, p. 631) points out that “this description highlights four dimensions to liquidity, namely trading quantity, trading speed, trading cost, and price impact.”

Liu further argues that the number of daily zero trading volumes also reflects the trading cost dimension of liquidity. According to Lesmond, Ogden and Trzcinka’s (1999) model, no trades occur if transaction costs are high and the information value to trading does not exceed the transaction cost threshold.

2.1.4. Risk

Risk is the chance that the actual return from an investment may differ from what is expected. The relationship between risk and return, called the risk –return tradeoff, in which investments with more risk should provide higher returns, and vice versa.

2.1.4.1. Sources of Risk

1. Business Risk

The degree of uncertainty associated with an investment’s earning and the investment’s ability to pay the returns owed investors.

2. Financial Risk

The degree of uncertainty of payment attributable to the mix of debt and equity used to finance a firm or property; the larger the proportion of debt financing, the greater this risk.

3. Purchasing Power Risk

The chance that changing prices levels in the economy (inflation or deflation) will adversely affect investment returns.

4. Interest Rate Risk

The chance that changes in interest rates will adversely affect a security's value.

5. Liquidity Risk

The risk of not being able to liquidate an investment conveniently and at a reasonable price.

6. Tax Risk

The chance that congress will make unfavorable changes in tax laws, driving down the after tax returns and market values of certain investments.

7. Market Risk

Risk of decline in investment returns because of market factors independent of the given security or property investment.

8. Event Risk

Risk that comes from a largely (or totally) unexpected event that has significant and usually immediate effect on the underlying value of an investment.

2.1.4.2. Type of Risk

The risk of an investment consists of two components: diversifiable and non-diversifiable risk.

a. Diversifiable risk or unsystematic risk

The portion of an investment's risk that result from uncontrollable or random events such as labor strikes, lawsuits and regulatory actions. and can be eliminated through diversification.

Here are some examples of nonsystematic risk:

1. Management risk

It also known as company risk, refers to the impact that bad management decisions, other internal missteps, or even external situations can have on a company's performance and, as a consequence, on the value of investments in that company.

2. Credit risk

It also called default risk, is the possibility that a bond issuer won't pay interest as scheduled or repay the principal at maturity. Credit risk may also be a problem with insurance companies that sell annuity contracts, where your ability to collect the interest and income you expect is dependent on the claims-paying ability of the issuer.

b. Non diversifiable risk or systematic risk

The inescapable portion of investment's attributable to forces that affect all investments and therefore are not unique to any given vehicle.

It is attributed to forces such as war, inflation, and political events that affect all investment and therefore are not unique to a given vehicle. (Gitman, Lawrence J and Michael D. Joehnk, 1999).

Systematic risk is also known as market risk and relates to factors that affect the overall economy or securities markets. Systematic risk affects all companies, regardless of the company's financial condition, management, or capital structure, and, depending on the investment, can involve international as well as domestic factors.

Here are some of the most common systematic risks:

1. Interest-rate risk

Describes the risk that the value of a security will go down because of changes in interest rates.

2. Inflation risk

Describes the risk that increases in the prices of goods and services, and therefore the cost of living, reduce your purchasing power.

Inflation risk and interest rate risk are closely tied, as interest rates generally rise with inflation. Because of this, inflation risk can also reduce the value of your investments. To keep pace with inflation and compensate for the loss of purchasing power, lenders will demand increased interest rates.

3. Currency risk

Occurs because many world currencies float against each other. If money needs to be converted to a different currency to make an investment, any change in the exchange rate between that currency and yours can increase or reduce your investment return. You are usually only impacted by currency

risk if you invest in international securities or funds that invest in international securities.

4. Liquidity risk

Liquidity risk is the risk that you might not be able to buy or sell investments quickly for a price that is close to the true underlying value of the asset. Sometimes you may not be able to sell the investment at all if there are no buyers for it. Liquidity risk is usually higher in over-the-counter markets and small-capitalization stocks. Foreign investments can pose liquidity risks as well. The size of foreign markets, the number of companies listed, and hours of trading may limit the ability to buy or sell a foreign investment.

5. Sociopolitical risk

Sociopolitical is the possibility that instability or unrest in one or more regions of the world will affect investment markets. Terrorist attacks, war, and pandemics are just examples of events, whether actual or anticipated, that impact investor attitudes toward the market in general and result in system-wide fluctuations in stock prices.

Based on Tang (2006) in his project report explain that, Investment risk is categorized according to the two sources of investment return: a macro, pervasive factor such as the national economy and micro, localized factors such as the company itself. The risk associated with macro factors is called systematic risk; returns depend in a systematic and associated way on that factor.

The micro risks associated with factors particular to a company are called unsystematic risk or unique risk; investment returns are uniquely determined by the firm's underlying earning power, such as its turnover of assets, its operating margin, and its return on assets and equity.

A. Systematic Risk or Pervasive Risks

1. Exchange Rate Risk

Uncertainty of returns to an investor who acquires securities in a currency different from his or her own. This is the risk that the asset's value will be affected by changes in exchange rates. Such changes will impact the total loss or gain on the investment when the proceeds are converted back to the investor's home currency.

2. Country risk

This is also referred to as political risk and is the uncertainty caused by a major change in the political or economic environment of a country. This addresses the possibility that political events, economic and financial problems, or natural disasters or such other events will weaken a country's economy and cause investments in that country to decline.

3. Purchasing power risk

This is the chance that investment returns will be better or worse than expected because of the sole influence of price of inflation (or deflation).

Since the only reason to invest is to earn a positive real rate of return, purchasing power risk is a major concern for all portfolio managers and clients. This risk transcends international boundaries.

4. Interest Risk

The chance that returns will be better or worse than expected because of changes in the level of interest rates. These prices of all investment assets tend to rise as interest rates decline, and vice versa. This inverse relation pervades all investments, although not to the same degree.

5. Business risk

The uncertainty of income flows (operating cash flows) caused by the nature of a firm's business, which could be affected by factors such as poor management, low product demand, or high operating expense. It can also be viewed as the risk of a firm not being able to cover its operating expenses.

B. Unsystematic risk

1. Financial risk

Uncertainty introduced by the method in which the firm finances its investments (its capital structure). It can be thought of as the risk of not being able to service financial commitments such as interest, lease payments, etc. Similar to operating expenses, these financial costs also increase the volatility of a firm's net income.

2. Liquidity risk

Uncertainty introduced by the secondary market for an investment.

Liquidity of an asset is determined by how quickly it can be sold without loss to fair market value. Liquidity risk is the risk arising from the difficulty of selling an asset or investment at its market value. This could be caused by a weak (or nonexistent) secondary market. Treasury bills are highly liquid (low liquidity risk) while real estate assets have very low liquidity (high liquidity risk)

2.2 Review of Previous Study

Many studies examined the empirical relationships between interest rate, liquidity to investment risk.

Putra (2007) studied the impact of interest rate and liquidity of investment risk level food and beverage stock in Indonesian Stock Exchange. He used research model that developed by Maira Furnalisa as variables measurement. Research result

indicates that interest rate and liquidity have significant impact on investment risk of food and beverage stock in Indonesian Stock Exchange.

Pastor and Stambaugh (2003) investigate whether market wide liquidity is a state variable important for asset pricing. They find that expected stock returns are related cross-sectionally to the sensitivities of returns to fluctuations in aggregate liquidity. Their monthly liquidity measure, an average of individual-stock measures estimated with daily data, relies on the principle that order flow induces greater return reversals when liquidity is lower. From 1966 through 1999, the average return on stocks with high sensitivities to liquidity exceeds that for stocks with low sensitivities by 7.5 percent annually, adjusted for exposures to the market return as well as size, value, and momentum factors. Furthermore, a liquidity risk factor accounts for half of the profits to a momentum strategy over the same 34-year period.

Research conducted by Sinaga (in Nurdin, 1999) stated that the risk of investing in stock is influenced by macro factors and micro factors, they are : economic growth, interest rate, foreign exchange, rate of inflation, capital structures, asset composition, liquidity, firm's size, and government judgment on economic. The result show that variables; economic growth, rate of inflation, foreign exchange, government judgment, firm's size, capital structures, asset composition, and liquidity have impact on investment risk Indonesian Stock Exchange, but the level of interest rate doesn't has impact on investment risk on share.

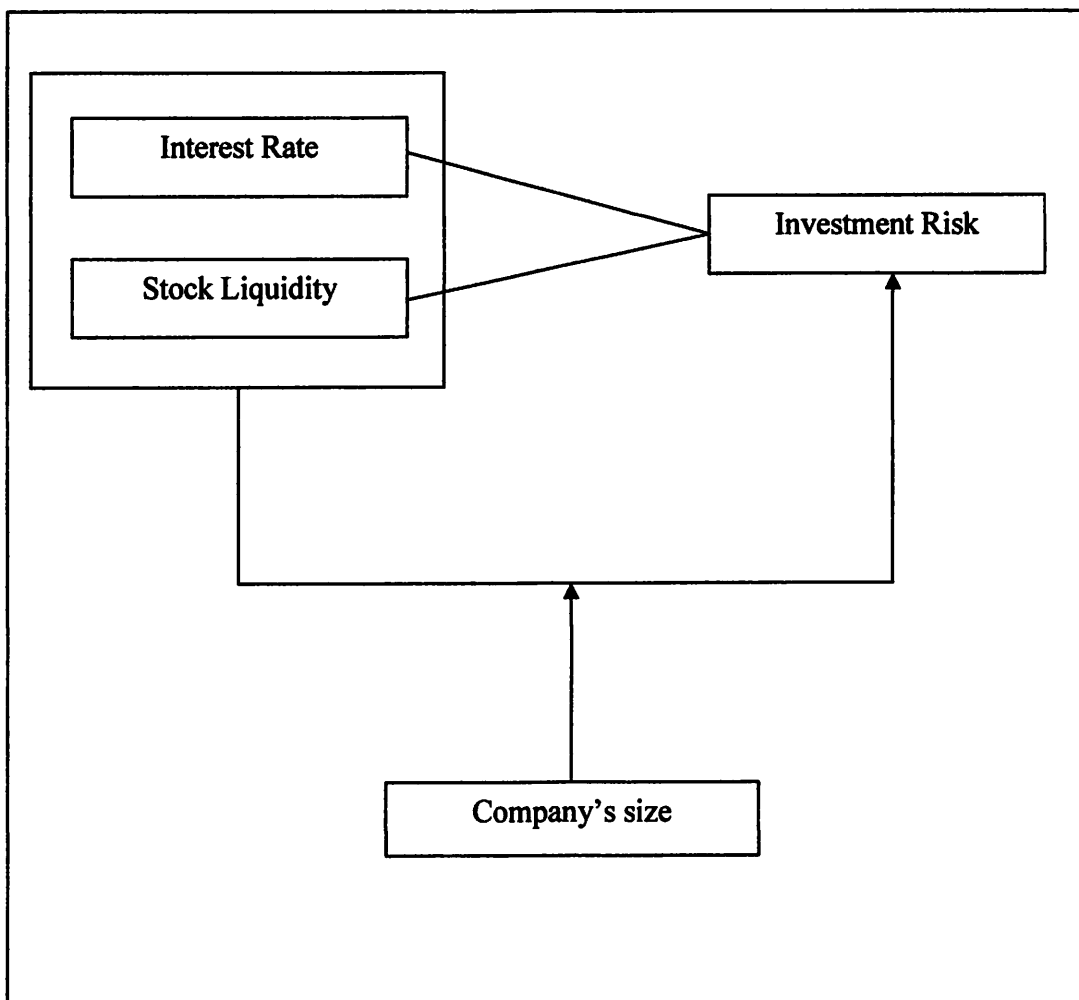
Tandailin (1997) examine about the effect of fundamental and macro economic variables to stock beta results significant influence of accounting variables (activity ratio, firm's size, liquidity, and profitability) and non significant influence of macro economic variables (inflation rate, interest rate and GDP) to stock beta.

Campbell and Ammer (1993) use term spreads as information variables to forecast short-horizon stock returns with a linear vector-autoregressive (VAR) approach. They find that real interest rates have very little impact on stock returns.

2.3 Conceptual Framework

To support the explanation about framework of thinking about this research, the researcher makes conceptual framework to ease seeing the relationship between independent variables and dependent variable, in this research independent variables are interest rate and stock liquidity. Meanwhile, dependent variable is investment risk and company's size as control variable. Model is shown as below:

Figure 2.1
Variables Relationship



2.4 Hypothesis Development

Based on the previous research results, hypothesis is form

H1 : Investment risk of big companies significantly influenced by interest rate

H2 : Investment risk of big companies significantly influenced by liquidity

H3 : Both interest rate and liquidity significantly influencing investment risk

H4 : Investment risk of small companies significantly influenced by interest rate

H5 : Investment risk of small companies significantly influenced by liquidity

H6 : Both interest rate and liquidity significantly influencing investment risk

CHAPTER III

RESEARCH METHODOLOGY

3.1 Type of Research

This research is a kind as hypothesis testing. Sekaran (2003) stated that hypothesis testing is a research that had have explanation and description, it is intended to explain causal relationship between research variables. This kind of research is an explanatory research to test the hypothesis concern with relationship between independent variable to dependent variable in this research.

3.2 Determining Population and Sample

3.2.1. Research Population

Population refers to the entire group of people, events, or things of interest that the researcher wishes to investigate (Sekaran, 2003). In this study, the thing of interest that wishes to investigate is real estate companies listed in Indonesian Stock Exchange.

3.2.2. Sample of the Research

A sample is a subset of the population, or elements of the population (Sekaran, 2003). The sample of this study is the real estate companies listed in Indonesia Stock Exchange (IDX). The numbers of population in this research are 47 companies, but only 33 companies researcher use as sample. The data are taken from Capital Market Directory (ICMD) 2007-2009.

3.2.2.1. Sample Characteristics

A. Research Period

This research includes three years by gathering data from year 2007 to 2009. The reason this research used 2007 to 2009 as period of study is to get the latest data in order information is up to date.

B. Sampling Technique

Sampling is the process of selecting a sufficient number of elements from population (Sekaran, 2003). Since this study used sample based on some criteria, so that this research use purposive random sampling as sampling technique.

The sampling used in this research chosen based on certain criteria (purposive random sampling), as followed:

1. The companies are involved in real estate sector of Indonesia Stock Exchange from 2007 – 2009.
2. The companies have complete financial statements and data for period Jan 2007 to Dec 2009.

Table 3.1 Real Estate companies listed in IDX year 2007-2009

No	Code	Name of Emiten
1.	asri	Alam Sutera Realty Tbk
2.	bapa	Bekasi Asri Pemula Tbk
3.	bipp	Bhuwatanatala Indah Permai Tbk
4.	bkdp	Bukit Darmo Property Tbk
5.	bksl	Bukit Sentul Tbk
6.	bmsr	Bintang Mitra Semestaraya Tbk
7.	bsde	Bumi Serpong Damai Tbk
8.	ckra	Citra Kebun Raya Agri Tbk
9.	cowl	Cowell Development Tbk
10.	ctra	Ciputra Development Tbk
11.	ctrp	Ciputra Property Tbk
12.	ctrs	Ciputra Surya Tbk
13.	dart	Duta Anggada Realty Tbk
14.	dgik	Duta Graha Indah Tbk

No	Code	Name of Emiten
15.	dild	Dharmala Intiland Tbk
16.	duti	Duta Pertiwi Tbk
17.	elty	Bakrieland Development Tbk
18.	gmdt	Gowa Makassar Tourism Development Tbk
19.	gpra	Perdana Gapuraprima Tbk
20.	inpp	Indonesian Paradise Property Tbk
21.	jihd	Jakarta International Hotel & development Tbk
22.	jrpt	Jaya Real Property Tbk
23.	jspt	Jakarta Setiabudi Internasional Tbk
24.	kark	Karka Yasa Profilia Tbk
25.	kija	Kawasan Industri Jababeka Tbk
26.	kpig	Kridaperdana Indahgraha Tbk
27.	lami	Lamicitra Nusantara Tbk
28.	lcgp	Laguna Cipta griya Tbk
29.	lpck	Lippo Cikarang Tbk
30.	lpkr	Lippo Karawaci Tbk
31.	mami	Mas Murni Indonesia Tbk
32.	mdlh	Modernland Realty Tbk
33.	mtsm	Metro Supermarket Realty Tbk
34.	omre	Indonesia Prima Property Tbk
35.	pjaa	Pembangunan Jaya Ancol Tbk
36.	pnse	Pudjiade & Sons Estate Tbk
37.	psab	Pelita Sejahtera Abadi Tbk
38.	ptrs	New Century Development Tbk
39.	pudp	Pudjiadi Prestige Limited Tbk
40.	pwon	Pakuwon Jati Tbk
41.	pwsj	Panca Wiratama Sakti Tbk
42.	rbms	Ristia Bintang Mahkotasejati Tbk

No	Code	Name of Emiten
43.	roda	Roda Panggon Harapan Tbk
44.	siip	Suryainti Permata Tbk
45.	smdm	Suryamas Dutamakmur Tbk
46.	smra	Summarecon Agung Tbk
47.	ssia	Surya Semesta Internusa Tbk

(source; ICMD 2009)

3.3 Variables of Research and Variables Measurement

3.3.1. Variables of Research

Dependent Variable (Y)

Dependent variable is variable that is influenced by or become the effect of independent variables influencing. In this research, the dependent variable is investment risk. The risk of investment generally examine in total by variance or standard deviation of stock return.

Independent Variable (X)

Independent variable is variable that influence the dependent variable. In this research there are two independent variables, they are the interest rate and the level of stock liquidity.

X1 = interest rate

X2 = level of stock liquidity

Control Variable

Control variable is a variable that affects the dependent variable. Company's size is used as control variable in this research.

3.3.2. Variable Measurement

1. Dependent variable used in this research is investment risk. The measurement to measure investment risk is by using total variance value where this method is developed by Maira Furnalisa. The method used is a mean of monthly return in one year.

$$\text{Total variance of firm's risk } t = \frac{\sum_{i=t}^a (RETMi - AMREMY)^2}{n}$$

Where :

RET*M* = Monthly return

AMREMY = Arithmetic mean of monthly in a year

a = Beginning period

t = Month

n = Number of companies

Meanwhile,

$$AMREMY = \frac{\sum_{i=a}^t RETMt}{n}$$

RET*Mt* = Monthly return

a = Beginning period

t = Month

n = number of month in a year

$$\text{RETM}_t = \frac{\text{CLOPM}_t - \text{CLOPM}_{t-1}}{\text{CLOPM}_{t-1}}$$

CLOPM_t = closing stock price in month t

CLOPM_{t-1} = closing stock price in month t – 1

2. Interest rate as independent variable in this study uses central bank rate for each month during year 2007 to 2009. The reason to choose BI rate is because BI rate is used as monetary policy by government since year 2005 and it influence other rate of interest like credit rate and other bank's deposit rate.
3. Liquidity of the stock as independent variable measure from the frequency of trading each month for three year from year 2007 up to 2009. Monthly data are employed in this paper ranging from January, 2007 through December, 2009. The use of monthly data avoids the problems of thin trading and price limits of a stock market (Shen and Wang, 1997).
4. Company's size as control variable is measured by average point of companies' total asset. If the company's total asset above average point so that company classified as big companies and vice versa. The data is taken from sample's annual report.

3.4 Type and Method of Collection Data

This study uses secondary data from Indonesian Capital Market Directory (ICMD). As stated before, research sample is Go public Real Estate Companies in Indonesia, listed in IDX for three years 2007 – 2009 by using 33 companies as sample.

The data type and data source used in this research are:

1. Regarding interest rate, the data is taken from the official website of Central Bank, that is Bank Indonesia, (www.bi.go.id/statistic) for the year 2007 – 2009.
2. Stock information is taken from ICMD for period 2007 – 2009.
3. Total asset is taken from sample's annual report.

3.5. Research Model and Technique

3.5.1. Method of Analysis

Classic Assumption Test

Classic assumption test is done before hypothesis testing. This research uses multiple regressions for data analysis. This test is important in multiple regression process to convince the data is reliable. Classic assumption test consist of normality test, multicollinearity test, autocorrelation test, heteroskedasticity test.

The researcher did classic assumption test to examine the quality of the data that will be used in this research using SPSS 17.0

Classic Assumption Test that are used in this research :

a. Normality Test

Normality Test is used to determine whether the data are used is normal and included in data range. The normality test showed in kolmogorov-smirnov test and normal P – Plot of regression standardized residual. This test uses $\alpha = 5\%$, the data will be distributed normally if value of Asymptotic Significance > 0.05 (Cahyani, 2007)

b. Multicollinearity Test

It is the important assumption, especially in doing multiple regression analysis, where independent variable is not correlated perfectly or is assumed no multi collinear. In doing this test, the researcher uses Variances Inflation

Factor (VIF) using SPSS 15.0 if the value of VIF around 1, it means there is no multi collinear.

Formula :

$$VIF = \frac{1}{(1-R^2)}$$

c. Heteroscedasticity Test

Heteroscedasticity test is done to investigate whether any difference variance in regression model between variable. To detect the heteroscedasticity in regression model is by the result in scatterplot graphic. If the graphic showed spread result, it showed there is no heteroscedaticity symptom in regression model.

d. Autocorrelation Test

Autocorrelation Test is done to investigate whether any relation between error factor at t period and t-1 period. If there were any relation, it must be any autocorrelation problem. It will be showed in value of Durbin-Watson.

3.5.2. Hypothesis Test

A. Multiple Regressions

Multiple regressions are the test that is used to know the influence of independent variables to the dependent variables. Generally in this research, the formula of multiple regressions is:

$$Y = a + b_1 X_1 + b_2 X_2 + e$$

Where;

Y = Investment risk

a = Constanta

b = Regression coefficient

X1 = Interest rate

X2 = Level of stock liquidity

e = error

B. T – Statistical Test

This test is intended to examine the influence of independent variables to dependent variable partially by assuming another variable are constant.

Formula;

$$T = \frac{\beta_n}{S\beta_n}$$

Where :

β_n = variables' regression coefficient

$S\beta_n$ = variables' standard error

In doing this testing, α used is 5% (0.05).

C. F – Test

It is purposed to examine the influence of independent variables to dependent variable simultaneously.

Formula :

$$F = \frac{R^2/k-1}{(1-R^2)/(n-k)}$$

Where ; R^2 = Determinant coefficient

n = number of row

k = number of variables

In this test, $\alpha = 0.5$ and degree of freedom = $n - k$ is used.

D. Determinant Coefficient Test (R²)

The aim of this test is to see how far the changes proportion of independent variable can explain dependent variable. The value of determinant coefficient is between 0 up to 1. The greater the value of determinant coefficient shows that independent variable used as dependent variable value predictor have greater accurate prediction.

CHAPTER IV

RESULTS AND ANALYSIS

4.1 General Describe of Samples

The main focus of this research is to measure the significant influence of interest rate and stock liquidity to investment risk of real estate industry listed in IDX. Since in this research, firm size is used as control variable, so the sample used in this study is divided becoming small companies and big companies. From 47 companies listed in Indonesian Stock Exchange only 33 companies that meet sampling criteria. Then this companies classified based on firm size, the companies which has total asset more than average point of sample's total asset classified as big companies and the companies which has total asset below average point of sample's total asset classed as small companies.

Table 4.1

Code	Name of Emiten	size
ctra	Ciputra Development Tbk	big
dart	Duta Anggada Realty Tbk	big
duti	Duta Pertiwi	big
jihd	Jakarta International Hotel & Development Tbk	big
lpkr	Lippo Karawaci Tbk	big
bksl	Bukit Sentul Tbk	big
elty	Bakrieland development Tbk	big
kija	Kawasan Industri Jababeka Tbk	big
pwon	Pakuwon Jati Tbk	big
smra	Summarecon Agung	big
jspt	Jakarta Setiabudi Internasional	big
kark	Karka Yasa Profilia Tbk	small
lami	Lamicitra Nusantara Tbk	small
mtsm	Metro Supermarket Realty Tbk	small
pnse	Pudjiadi & Sons Estate Tbk	small
pudp	Pudjiadi Prestige Limited	small
rbms	Ristia Bintang Mahkotasejati Tbk	small
ckra	Ciptojaya Kontrindoreksa Tbk	small
mami	Mas Murni Indonesia Tbk	small

Code	Name of Emiten	size
more	Indonesia Prima Property Tbk	small
roda	Roda Panggon Harapan Tbk	small
bipp	Bhuwanataka Indah Permai Tbk	small
bmsr	Bintang Mitra Semestaraya Tbk	small
ctrs	Ciputra Surya Tbk	small
dild	Dharmala Intiland Tbk	small
gmtd	Gowa Makassar Tourism Development Tbk	small
kpig	Kridaperdana Indahgraha Tbk	small
lpck	Lippo Cikarang Tbk	small
mdln	Modernland Realty Tbk	small
pjaa	Pembangunan Jaya Ancol Tbk	small
ptrs	New Century Development Tbk	small
pwsj	Panca Wiratama Sakti Tbk	small
siip	Suryainti Permata Tbk	small

From table 4.1, there are eleven companies that are grouped as big companies and 22 companies are grouped as small companies. For further the sample just classified or named as small and big companies.

4.3. Classical Assumption Testing

Prior to statistical tests, it is necessary for researcher to assess the underlying assumptions of the statistical analysis. It is aimed to convince the data is reliable. Classical assumption testing consists of normality test, multicollinearity test, autocorrelation test, and heteroskedasticity test.

4.3.1. Normality Test

The normality test is using the Kolmogorov-Smirnov test. The standard of this test, if the value of Sig > α , then the data is assumed to be normal ($\alpha = 0.05$). The result of this kolmogorov-smirnov test then described by normal P-P plot of regression graph. According to the graph, the data is assumed to be normal if it have a normal data distribution, at least close to normal distribution, where some dots are spread out following the diagonal line.

1. Small Companies

Figure 4.1

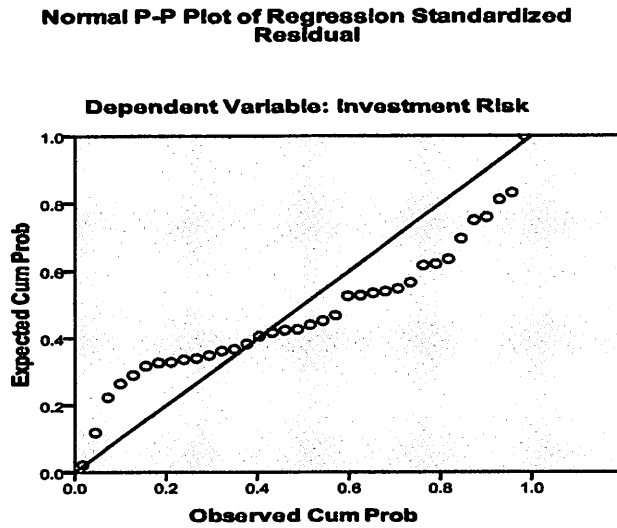


Figure 4.1 show that the distribution of some dots is spread out following the diagonal line. The data assumed to be normal.

2. Big Companies

Figure 4.2

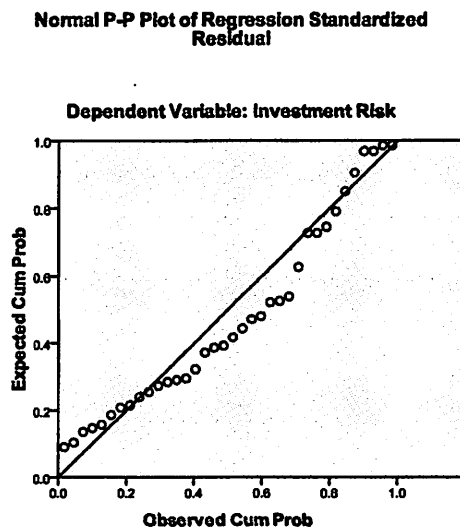


Figure 4.2 show that the distribution of some dots is spread out following the diagonal line. The data assumed to be normal.

4.3.2. Multicollinerality Test

The test for multicollinerality is aimed to get information whether there is a correlation between the independent variables. A good regression model should not have a correlation between its independent variables. Multicollinerality test can be done by examining the tolerance value from variance inflation factors (VIF) on the coefficient correlation table. If $VIF < 10$ and tolerance value > 0.1 so there is no multicollinerality.

1. Small Companies

Table 4.5

	Collinearity Statistics	
	Tolerance	VIF
(constant)		
Interest rate	0.835	1.197
liquidity	0.835	1.197

The table shows that the values of VIF for each independent variable do not more than 10. $VIF = 1.197 < 10$ and value of tolerance do not less than 0.1. Tolerance of independence variable is $0.835 > 0.1$. So there is no multicollinerality.

2. Big Companies

Table 4.6

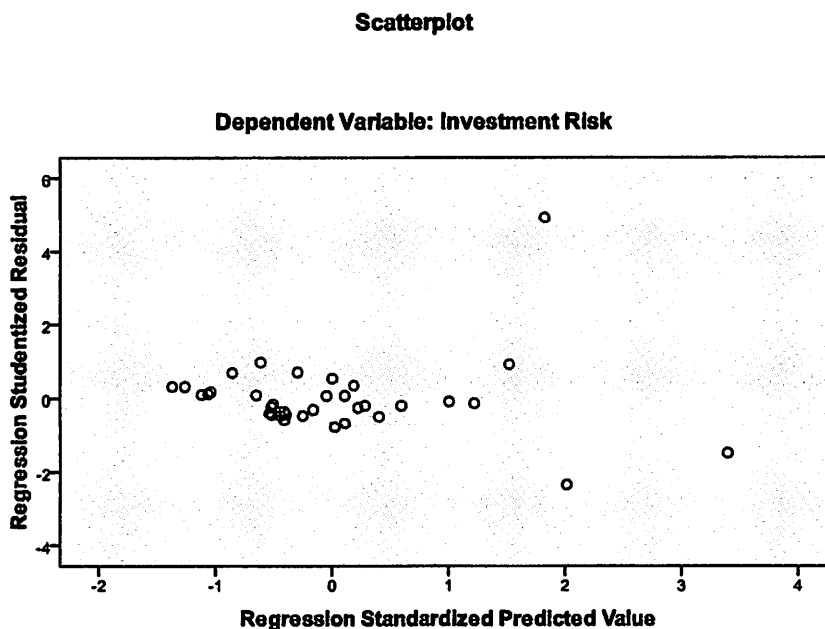
	Collinearity Statistics	
	Tolerance	VIF
(constant)		
Interest rate	0.494	2.026
Liquidity	0.494	2.026

4.3.3. Heteroskedasticity Test

The test for heteroskedasticity test is aimed at getting information whether there is a difference of variance from the residual of a observation to another observation in regression model. This test is done by using scatter plot graph. The standard are:

1. If there is some dots spread out to make a certain character of form, then it's assumed that there is heteroskedasticity in the regression model.
 2. If there are no certain characters of forms made by the dots, then it's assumed that there is no heteroskedasticity in the regression model.
1. Small Companies

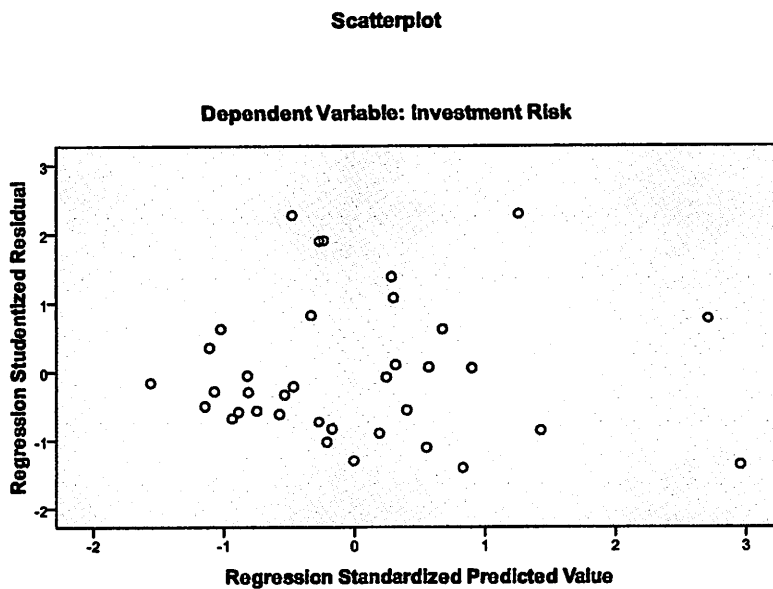
Figure 4.2



The figure 4.2 show that some dots are not made certain characters of form and the dots it self are randomly spread out above and below the zero point. Based on standard, it is assumed that there is no heteroskedasticity in the beta regression model.

2. Big Companies

Figure 4.3



The figure 4.3 show that some dots are not made certain characters of form and the dots it self are randomly spread out above and below the zero point. Based on standard, it is assumed that there is no heteroskedasticity in the beta regression model.

4.3.4. Autocorrelation

The test for autocorrelation is done to get information whether there is some correlation among disturbance variables in one period with other period of time. Autocorrelation is happen in sample with time series data. The easy way to detect the existence of autocorrelation is through Durbin – Watson (DW) tests. A multiple regression model doesn't have autocorrelation, if the DW value is on no-autocorrelation area or close to the point of two.

1. Small Companies

Table 4.7

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.575 ^a	.331	.290	.0692845	2.280

a. Predictors: (Constant), Liquidity, Interest Rate

b. Dependent Variable: Investment Risk

The table shows that the value of DW is 2.280, since no-autocorrelation area is around point of two; it means no autocorrelation in the beta regression model.

2. Big Companies

Table 4.8

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.147 ^a	.022	-.038	.0303387	2.027

a. Predictors: (Constant), Liquidity, Interest Rate

b. Dependent Variable: Investment Risk

The table shows that the value of DW is 2.027, since no-autocorrelation area is around point of two; it means no autocorrelation in the beta regression model.

4.4. Regression Results and Analysis

4.4.1. R Square Test

The purpose of statistical R Square test is to find out whether all independent variables that included in regression model can described the dependent variables. The statistical R Square test is observed from the model

summary table if the value for R Square is above 50%, assumed the capability of the independent variables to describe the dependent variable are high and vice versa (Milza, 2007).

The regression result for the R Square test is:

1. Small Companies

Table 4.9

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.575 ^a	.331	.290	.0692845	2.280

a. Predictors: (Constant), Liquidity, Interest Rate

b. Dependent Variable: Investment Risk

From table 4.9 the value of R Square for regression model is 0.331 or 33.1%. It means the capability of independent variable in describing dependent variable is weak. Only 33.1% investment risk as dependent variable is described by interest rate and liquidity as independent variables and 66.9% remaining is described by other factors. The example of another factors : economic growth, inflation rate, foreign exchange and government judgment.

2. Big Companies

Table 4.10

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.147 ^a	.022	-.038	.0303387	2.027

a. Predictors: (Constant), Liquidity, Interest Rate

b. Dependent Variable: Investmnet Risk

From table 4.10, the value of R Square for regression model is 0.022 or 2.2%. It means the capability of independent variable in describing dependent variable is weak. Only 2.2% investment risk as dependent variable is described by interest rate and liquidity as independent variables and 97.8% remaining is described by other factors. R Square amount around 0 until 1, more less R square the connection between variables become weaker. The example of another factors : economic growth, inflation rate, foreign exchange and government judgment.

4.4.2. Statistical F-Test

The purpose of the F-Test is to find whether all independent variables that included in regression model, can influence the dependent, if act as a group. The statistical F-test is observed from the ANOVA table. If the F value > F table or the value of Sig < α (0.05), it is assumed that the capability of independent variables to dependent variable, if act as a group and vice versa.

The result of statistical F-test of the regression model is:

1. Small Companies

Table 4.11

ANOVA ^b						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.078	2	.039	8.156	.001 ^a
	Residual	.158	33	.005		
	Total	.237	35			

a. Predictors: (Constant), Liquidity, Interest Rate

b. Dependent Variable: Investment Risk

From table anova, the F value is 8.156 and the Sig value is 0.001 which is $< \alpha$ (0.05). It means that interest rate and liquidity as independent variables significantly influencing investment risk as dependent variable if act as a group.

2. Big Companies

Table 4.12

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.006	2	.003	4.006	.028 ^a
	Residual	.025	33	.001		
	Total	.031	35			

a. Predictors: (Constant), Liquidity, Interest Rate

b. Dependent Variable: Investment Risk

From table anova, the F value is 4.006 and the Sig value is 0.028 which is $< \alpha$ (0.05). It means that interest rate and liquidity as independent variables significantly influencing investment risk as dependent variable if act as a group.

4.4.3. Statistical t-Test

The aim of statistical t-test is to find whether all independent variables that included in a regression model, can influence the dependent variable partially. The statistical t-test is observed from the Coefficient Correlation table. For each independent variable, if the t value $>$ t table or the value of sig $<$ α (0.05), it is assumed that the capability of independent variable to influence the dependent variable partially is significant, and vice versa.

The result of t-test of the regression model is;

1. Small Companies

Table 4.13

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.214	.119		-1.803	.081		
	Interest Rate	.027	.014	.306	1.962	.058	.835	1.197
	Liquidity	2.352E-6	.000	.627	4.023	.000	.835	1.197

a. Dependent Variable: Investment Risk

From the table 4.13, the Sig value for interest rate is 0.058, which is >0.05 . It means that the capability of interest rate to influence the investment risk for small companies is insignificant.

For liquidity, the sig value is 0.000 which is < 0.05 . It means that the capability of liquidity to influence the investment risk for small companies is significant.

2. Big Companies

Table 4.14

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.119	.066		-1.822	.078		
	Interest Rate	.015	.007	.485	2.184	.036	.494	2.026
	Liquidity	3.974E-7	.000	.627	2.819	.008	.494	2.026

From the table 4.14, the Sig value for interest rate is 0.036, which is < 0.05 . It means that the capability of interest rate to influence the investment risk for companies is significant. For liquidity, the sig value is 0.008 which is < 0.05 . It means that the capability of liquidity to influence the investment risk for big companies is significant.

4.5 The Equation Model

After analyzing the result from the table 4 above, the statistical equation model that can be made is

1. Small Companies

Equation 4.1 Equation model of small companies

$$\text{Investment Risk} = -0.214 + 0.027 \text{ Interest Rate} - 0.000002 \text{ Liquidity} + e$$

2. Big Companies

Equation 4.2 Equation Model of Small Companies

$$\text{Investment Risk} = -0.119 + 0.015 \text{ Interest rate} - 0.00000039 \text{ Liquidity} + e$$

It means that, the investment risk has positive relationship to interest rate and has negative relationship to liquidity for both small and big companies. If interest rate increases, it will cause investment risk increase and vice versa. If the company's stock more liquid, the investment risk will decrease and vice versa.

Table 4.15
Summary of the Result of Hypothesis Testing

	Hypothesis	Result	Meaning
H1	Investment risk of big companies is significantly influenced by interest rate	Accepted	It means that increasing of interest rate will increase investment risk
H2	Investment risk of big companies is significantly influenced by liquidity	Accepted	It means that increasing of liquidity will decrease investment risk
H3	Both interest rate and liquidity significantly influencing investment risk for big companies	Accepted	As a group, interest rate and liquidity significantly influencing investment risk
H4	Investment risk of small companies is insignificantly influenced by interest rate	Rejected	The increasing of interest rate will not significantly influence investment risk
H5	Investment risk of small companies is significantly influenced by liquidity	Accepted	It means that increasing of liquidity will decrease investment risk
H6	Both interest rate and liquidity significantly influencing investment risk for small companies	Accepted	As a group, interest rate and liquidity significantly influencing investment risk

4.6 Analysis and Discussion

This research is aimed to measure the influence of interest rate and liquidity to investment risk. From previous study, there were studies that related to this subject. It will be explained the result of this study and it relation to the previous study.

A. The Impact of interest rate to investment risk of Real Estate Company (Both Big and Small Companies)

Table 4 showed the t test of regression model about the impact of interest rate to investment risk for small and big companies. T test result showed the value of Sig was bigger than α (0.05) then it means that interest rate doesn't has a significant influence to investment risk of small companies, but in other hand, the value of Sig was lower than α (0.05) for big companies. So, interest rate influencing investment risk significantly for big companies.

The stock market often declines in the midst of rising interest rates because companies must pay more to borrow money for expansion and capital improvements. Increasing rates often impact small companies more than large, well-established companies. That's because they usually have less cash, shorter track records, and other limited resources that put them at higher risk. On the other hand, a drop in interest rates may result in higher stock prices if corporate profits increase.

The deviation of the result with the theory is because in the sample research most of small companies have total liability less than 50 % of total assets, so if the interest rate increase cost of debt also increase not significantly if compared to big companies.

Relationship Interest Rate with Investment Risk

Interest rates are determined by monetary policy of a country according to its economic situation. Like stated before, high interest rates induce the investors to keep their money deposited in saving bank accounts to get high interest rather to put it into risky stock market. As the risk free returns come down, investors switch their money from bank accounts to stock market investments. Consequently, demand of stocks increases and the stock markets go up as a result of interest rate cut. Mishkin (1977) also proved that lower interest rates increase stock prices which in turn reduce the probability of financial distress.

Changes in interest rates influence the value of a company's stocks and shares and thus the stock returns. With an increase in interest rate, risk and required rate of return of a particular investment goes up and profits of a firm tend to decrease (due to increased cost of capital) which in turn causes the stock value to fall down.

Thereby, changes in interest rates directly influence the price or value of securities held. Rising interest rates in the country depress stock returns and can result in higher cost of debt. This can limit the investment expansion; therefore, government should maintain an appropriate rate of interest in the country that will help and motivate investors to grab investment opportunities.

B. The Impact of Liquidity to Investment Risk of Real Estate Company (Both Big and Small Companies)

T results for liquidity showed that Sig value is lower than α (0.05) for both small and big companies. It means that liquidity significantly influence the investment risk.

Relationship Liquidity to Investment Risk

Liquidity as a risk factor refers to the risk to the value of an asset brought about by the sensitivity of its returns/liquidity to market liquidity. Stocks that suffer more negative returns when the market is less liquid are less desirable for investors, *ceterus paribus*. Sensitivity to adverse changes in market liquidity may not be diversifiable, constituting a risk to investors.

With liquid equity markets, risks associated with investment are reduced, making it more attractive to investors. Thus, the easy transfer of capital ownership facilitates firms' permanent access to capital raised through equity issues. Therefore, as liquid market improves the allocation of capital, the prospect for long-term economic growth is enhanced and investment is increased due to reduction in the riskiness of investment facilitated by stock market liquidity.

C. R Square Test

The value of R square is weak for both of big and small companies, it means that the ability interest rate and liquidity as independent variable in describing investment risk as dependent variable is weak. But, r square test has weakness that the value of r square will increase if there is additional independent variable added to the model without considering the variable added could influence dependent variable or not.

CHAPTER V

CONCLUSION

The preceding chapter has presented the empirical results and this chapter provides conclusions, an assessment of the potential limitations present in this study and possible future directions for research.

5.1 Research Conclusions

This study is aimed to get empirical evidence that the level of interest rate and liquidity statistically has significant impact toward risk of investment of real estate share in Indonesian Stock Exchange.

Through a statistical test, this study used investment risk as dependent variable, interest rate and stock liquidity as independent variable. This study found that interest rate doesn't has a significant influence to investment risk of small companies, but in other hand, interest rate influencing investment risk significantly for big companies. T results for liquidity showed that liquidity significantly influence the investment risk for both small and big companies. But, generally from the F test result, if the independent variables act together, they have a significant influence to investment risk of real estate companies.

5.2 Research Limitation and Suggestion

Since this study is done by trying to be perfectly to find the maximum results, however, there are still limitations and areas for further research:

1. The value of R square result is weak.
2. Next research could add more variables to make a rich development study.

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APPENDIX

Interest Rate

Period	Interest Rate (%)
Jan 2007	9.50
Feb 2007	9.25
March 2007	9.00
April 2007	9.00
May 2007	8.75
Jun 2007	8.50
Jul 2007	8.25
Aug 2007	8.25
Sept 2007	8.25
Oct 2007	8.25
Nov 2007	8.25
Dec 2007	8.00
Jan 2008	8.00
Feb 2008	8.00
March 2008	8.00
April 2008	8.00
May 2008	8.25
Jun 2008	8.50
Jul 2008	8.75
Aug 2008	9.00
Sept 2008	9.25
Oct 2008	9.50
Nov 2008	9.50
Dec 2008	9.25
Jan 2009	8.75
Feb 2009	8.25
March 2009	7.75
April 2009	7.50
May 2009	7.25
Jun 2009	7.00
Jul 2009	6.75
Aug 2009	6.50
Sept 2009	6.50
Oct 2009	6.50
Nov 2009	6.50
Dec 2009	6.50

Liquidity

Period	Liquidity (x)
Jan 2007	57,483
Feb 2007	63,974
March 2007	62,169
April 2007	73,200
May 2007	104,908
Jun 2007	130,425
Jul 2007	127,346
Aug 2007	113,008
Sept 2007	114,294
Oct 2007	95,940
Nov 2007	85,498
Dec 2007	72,093
Jan 2008	67,568
Feb 2008	85,466
March 2008	72,429
April 2008	107,585
May 2008	106,632
Jun 2008	67,839
Jul 2008	95,417
Aug 2008	51,580
Sept 2008	69,149
Oct 2008	38,185
Nov 2008	45,354
Dec 2008	54,569
Jan 2009	53,720
Feb 2009	57,911
March 2009	68,060
April 2009	157,222
May 2009	222,016
Jun 2009	254,962
Jul 2009	220,790
Aug 2009	195,024
Sept 2009	121,425
Oct 2009	200,236
Nov 2009	152,308
Dec 2009	114,221

Investment Risk

Period	Investment Risk
Jan 2007	0.0934
Feb 2007	0.1317
March 2007	0.0811
April 2007	0.1239
May 2007	0.1168
Jun 2007	0.1581
Jul 2007	0.5588
Aug 2007	0.1721
Sept 2007	0.2933
Oct 2007	0.108
Nov 2007	0.1218
Dec 2007	0.1427
Jan 2008	0.0319
Feb 2008	0.0349
March 2008	0.0433
April 2008	0.0311
May 2008	0.0838
Jun 2008	0.1123
Jul 2008	0.0732
Aug 2008	0.0167
Sept 2008	0.032
Oct 2008	0.102
Nov 2008	0.0752
Dec 2008	0.038
Jan 2009	0.1287
Feb 2009	0.0349
March 2009	0.0362
April 2009	0.1398
May 2009	0.165
Jun 2009	0.0709
Jul 2009	0.1046
Aug 2009	0.1418
Sept 2009	0.033
Oct 2009	0.0477
Nov 2009	0.061
Dec 2009	0.0429