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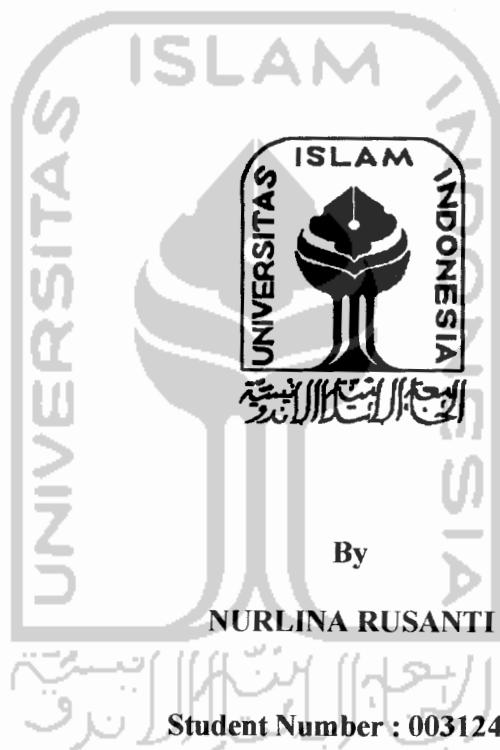
A THESIS

**Presented as a Partial Fulfillment of the Requirements
to Obtain the <u>Bachelor Degree</u> in Accounting Department**

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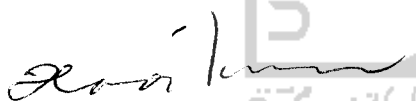ISLAMIC UNIVERSITY OF INDONESIA
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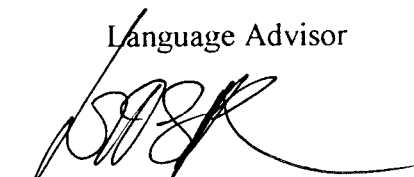
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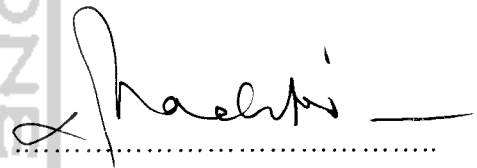
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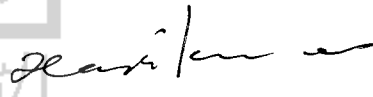
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*"Kehidupan bukanlah jalan yang lurus dan mudah dilalui dimana kita
bisa berpergian bebas tanpa halangan,
namun berupa jalan-jalan sempit yang menyesatkan,
dimana kita harus mencari jalan,
tersesat dan bingung, sekarang dan sekali lagi
kita sampai pada jalan tak berujung.
Namun jika kita punya keyakinan,
pintu pasti akan dibukakan untuk kita,
mungkin bukanlah pintu yang selalu kita inginkan,
namun pintu yang akhirnya akan terbukti terbaik untuk kita."*
(A.J. Cronin)

*"Tidak ada satu tarikan napas pun yang kau hembuskan,
melainkan ada takdir yang dijalankan-Nya pada dirimu.
Karena itu, tunduklah pada Allah dalam setiap keadaan."*
(Ibnu Athaillah As Sakandari)

I dedicated this thesis to my beloved family

THANK YOU

ACKNOWLEDGEMENT

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ABSTRACT

Rusanti, Nurlina (2004). A Test of Signaling Theory on the Relationship between Dividend and Cash Flow. Yogyakarta. Accounting Department. Economic Faculty. Islamic University of Indonesia.

This research is intended to study and analyze whether the dividend policy being used to give the signal for cash flow increased in the future at Jakarta Stock Exchange. The method that is used in this research is purposive sampling method. This research can be additional knowledge to indicate the behavior of stock market in relating to the dividend policy.

This research compares three sets of firms based on cash flow: permanent increase (PI firms), temporary increase (TI firms), and no increase (NI firms). And this research examines 15 companies that are PI firms and NI firms. Both of PI firms and NI firms do not use dividend to signal future cash flow. The cash flow before and after the announcement of dividend increase is not significant. Even so with the abnormal return that there is no significant different before and after the announcement of dividend increase.

Keywords: Cash Dividend, cash flow, abnormal return.
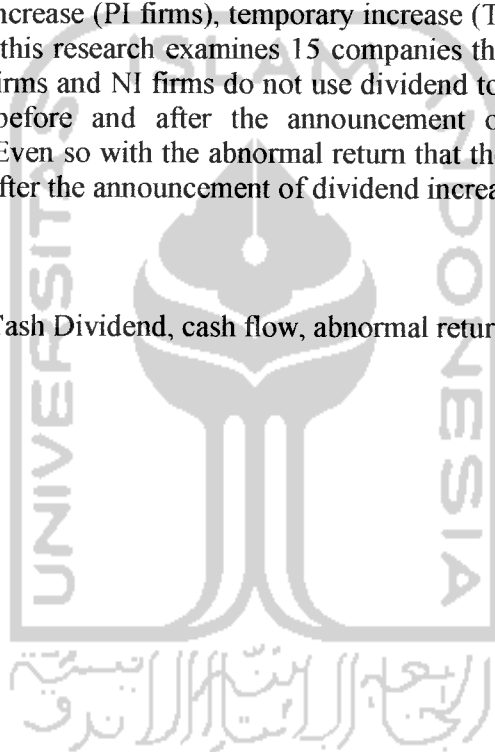
CHAPTER I

INTRODUCTION

1.1. Study Background

Since the previous time, people do investment because they have money. Recently, for those who do not have enough money, they can also have a chance to do investment. They invest to improve their welfare in monetary wealth, both in recent and future condition. Investment can be defined as an activity to place money in one or more assets during a certain period to earn return. At the beginning, they invest in real assets such as land, building, gold, etc. Progress of technology, investment of real assets has been left by many people. They believe that investing real assets is not moveable enough. Then they change to financial assets, such as bond and stock. In this investment activities, the investor and the security seller can do the transaction quickly and it does not need transfer of the object of the security. The investor can do the investment activity in financial market that has been established by the government.

A financial market is not exactly a place, it is merely a framework or organization in which people can buy and sell securities in accordance with well-defined rules and regulations (Lasher, 1997:3). The financial market in this case is stock exchange and most of the transactions are between investors. It is because a company issue securities only once, but among the investors may trade security many times thereafter (Lasher, 1997:3). Those securities are stock that may be chosen by a firm to obtain more funds. Owning stock means that the investors

own a portion of the firm and thus have the right to vote on issues important to the firm and to elect its directors (Mishkin, 2001:23).

In stock investment, the investors get the return that can be received as a cash dividend and the increase in stock price can reflect the increase in the value of the investment. The stock exchange also offers a capital gain that is obtained if the buying price is deducted from the selling price.

Many investors prefer dividend than capital gain because the dividend reduce the uncertainty of the income that investor will get. The expectation of capital gain in the future may have more uncertainty than the income at this moment. Dividend at this moment shows the present value of cash flow to the investor that should be not doubtful. Payment of cash dividend is a strength indication. It conveys information that interprets a good condition of the firms (Halim and Sarwoko, 1995:207).

The dividend decision must be carefully planed and implemented. Many factors that influence dividend decisions are the needs to have funds, the future financial prospects, stockholders' preferences and expectations, and the firms' contractual obligation (Lasher, 1997:415). The firms' board of directors sets the dividend and most of the firms pay a regular cash dividend each quarter. They are not always in the form of cash. Frequently companies also declare stock dividends (Brealey and Myers, 2000:440).

Information is an important thing that can influence security trading in stock exchange. Accounting has the function to give financial information that can be used as one tool in the decision making process of the users (external and

internal). The accounting information from a company is needed for internal parties, that is the management of the company and the external parties, they are creditors, banking, tax institutions, etc (Kieso and Weygandt, 1997:6)

The information provided by a financial statement is primarily financial in nature, quantified an expressed in units of money. The information presented pertains to individual business enterprises, government entities and other accounting entities not to industries or to members of society as consumers. The information provided on the statement is often approximation, rather than exact measures. The measure involves estimation, classifications, summaries, judgements and allocation. The information provided generally reflects the financial effects of transaction and even that have already happened (Woelfel, 1994:463).

Information is the key to show performance management and improvement. But the management frequently has confidential information related to the firm that cannot be informed to investors. Whereas, without actual information, the investors have only opinions with no supporting facts and no directional signal. Investors cannot read managers' minds, but they can learn from managers' actions. Increases of the dividend that is done by the management can be a signal for the investors.

Dividend signalling plays a prominent role in corporate finance theory in which managers use cash dividends to convey information about firm profitability (DeAngelo, DeAngelo, and Skinner, 2000). Thus, when a company declares that dividend larger than that anticipated by the market, it will be interpreted as a

signal that the future financial prospects of the firm are brighter than expected (Gallagher and Andrew, 2000:408).

Cash flow can be the indicator of the firm's profitability. Cash flow is an accounting description of various physical movements of cash resources to and from an economic organization, which result from its operating, investing and financing activities (Lee in Newman, Milgate, and Eatwell, 1994). Information on cash flows help the investors assesses a company's ability to meet obligations, pay dividends, increase capacity, and rise financing. It also helps the investors assess the quality of earnings and the dependence of income on estimates and assumptions regarding future cash flow (Wild, Bernstein, and Subramanyam, 2001:508).

How the information will influence the investors' decision can be seen by the changes of stock price in stock exchange. In the stock exchange, the changes in stock price can be one of the measurements to assess the return of stock.

Many researchers have done researches about the dividend signaling that convey information about future profitability. Several of those researchers are Lintner (1956), Aharony and Swary (1980), Benartzi, Michaely, and Thaler (1997), and Brook, Charlton, and Hendershott (1998).

Lintner (1956) conducted the research about the information content of dividend changes. He argued that dividend increases will be made by firms with higher and more stable cash flows. The dividend increases will be related to permanent but not necessarily to temporary components of cash flow. And the

dividend decrease will be less frequent than dividend increases and accompanied by very poor performance (Jagannathan, Stephens, and Weisbach, 2000).

Benartzi, Michaely, and Thaler (1997) supported Litntners' research. Firms that increase dividends are less likely than no changing firms to experience a drop in future earnings. Thus, their increase in noncurrent earnings can be said to be somewhat "permanent". In spite of the lack of future earnings growth, firms that increase dividends have significant positive excess returns for the following three years.

Aharony and Swary (1980) tested whether quarterly dividend changes provide information beyond that already provided by quarterly earnings numbers. The result of this research is that the changes in quarterly cash dividend provide useful information beyond those, which has been that, provided by corresponding quarterly earnings numbers. In addition, the results also support the semi-strong form of the efficient capital market hypothesis. The stock market adjusts in an efficient manner to new dividend information.

Brook, Charlton, and Hendershoot (1998) conducted a research to find out whether managers ever use dividends to signal positive cash flow information. The result of this research is that the firms on the threshold of large cash flow gains tend to increase their dividends more than benchmark firms before the large cash flow jump. These firms also earn significantly positive abnormal stock returns. As the higher cash flow is realized, the positive abnormal returns is continue.

This research re-examines whether the dividends being used to signal future cash flow increases. The difference with the previous research is the time period in doing the research. The previous research that is done by Brook, Charlton, and Hendershott (1998) examined in 8 years (1992-1999) while this research extends the period examined in 1998-2002. This research uses purposive sampling method. The sample of this research was the company that listed in Jakarta Stock Exchange excluded financial industries from period 1998-2002. In addition, this research also different with other research, which have been done by Wirjolukito, Yanto and Sandy (2003). The difference of this research is in the sample. The samples are manufacturing & commercial, real estate and property, hotel and construction companies that listed on Jakarta Stock Exchange from the period 1994-1996.

1.2. Problem Statement

The information content of dividends hypothesis asserts that managers use cash dividend announcements to signal changes in their expectations about future prospects of the firm (Aharony and Swary, 1980). Managers increase the dividend only if they are confident that higher dividends can be maintained with higher subsequent cash flow. If a company cuts its dividend, the market takes this as a bad signal that management expects poor earnings and does not believe that the current dividend can be maintained (Gallagher and Andrew, 2000:408).

This research compares three sets of firms based on cash flow changes in a given year: the first group of firms that have permanently cash flow increase (PI

firms), the second group is the firm with only temporary cash flow increase (TI firms), and the third group is the firm that no increase the cash flow (NI firms). This configuration is to compare the influence of each group on corporate dividend policy. By focusing on a set of firms with stable recent and current cash flow, it mitigates the noise introduced by dividend changes that occur for reasons other than signaling (Brook, Charlton, and Hendershott, 1998).

The management of a firm may use dividend payments as a method of indicating their estimates of the firm's earning power and liquidity (Pettit, 1972). Cash flow information is a key to measure the liquidity. And the investors will receive this message. Stock prices often change dramatically when a dividend change is announced, indicating that the market believes dividends affect value (Lasher, 1997:415).

Managers use dividend changes to signal large future cash flow increases and managers have important private information about these large future cash flow increases. So, the investors appear to interpret the dividend changes as signals about future profitability.

1.3. Problem Formulation

The main problems of this research are:

1. Do permanent increase firm (PI firm), temporary increase firm (TI firm), and no increase firm (NI firm) use dividends to signal large future cash flow increases?

2. Is there any different of stock return before and after dividend increasing in the permanent increase firm (PI firm), temporary increase firm (TI firm), and no increase firm (NI firm)?

1.4. Problem Limitation

In order to provide a clear description in order to impart useful information, the research has the limitation as indicated below:

1. The population taken is company listed in Jakarta Stock Exchange from period 1998-2002.

2. In order to take the sample, researcher conducts purposive sampling method. The sample to conduct this thesis is the company listed in Jakarta Stock Exchange excluded financial industries and pay dividend from 1998-2002.

3. Variables taken are stock returns, cash flow, dividend per share, and dividend announcements.

4. Variables other than variables chosen are assumed to be constant and stable.

1.5. Research Objectives

The objective of this research is to examine whether the dividend policy being used to give the signal for cash flow increased in the future and stock return in the permanent increase firm (PI firm), temporary increase firm (TI firm), and no increase (NI firm).

1.6. Research Contribution

The writer expects that this research will give contribution for these following parties:

1. For the investor: information to interpret the dividend changes as signals about future profitability of the firm.

2. For the company: a prediction of the investor behavior when the management sends a signal.

3. For the economist: knowledge that indicates the behavior of the stock market.

1.7 Definition of Terms

In this thesis the writer has some terms, which have important meaning. These definitions of terms are intended to eliminate some confusion of the readers. The definitions of terms are:

1. Cash Flows: the amount of money, which moves into and out of a business at a particular point in time (Tuck and Ashley, 1993: 78).

2. Cash Flow Statement: it contains information about cash inflow and cash outflow in accounting period that comes from (use for) operating activity, investing activity and financing activity (PSAK No. 2, 1999).

3. Dividend: cash payments declared and paid quarterly by corporations to stockholders (Jones, 1997:43)

4. Stock return: payments from corporation to stockholders invest their money by buying corporation stock.

5. Stock: the ownership of a corporation. A corporation may have several stocks, and each share within a class has the same rights as every share of stock in its class (Warren, Fess and Reeve, 1996).

CHAPTER II

REVIEW OF RELATED LITERATURE

2.1. Dividends

Investors generally expect to receive dividends as a return on their investment (Gellein and Chamberlain in Davidson, 1970). It is a payment made by a corporation to stockholders. Dividends come in many forms. The most common is the regular cash dividend, but sometimes the firms pay an extra or special cash dividend, and sometimes they pay a dividend in the form of stock.

The amount and timing of a dividend are important issue for management of the firm to be considered. The payment of a large cash dividend could lead to liquidity problem for the firm. Whereas, a small cash dividend may cause unhappiness among stockholders who expect to receive a reasonable cash payment from the company on a periodic basis. Many companies declare and pay quarterly of cash dividend (Weygandt, Kieso, and Kell, 1996:611).

The decisions of the size of the allocated fund that will be distributed as dividend depend on the company's board of directors. Dividends do not accrue like interest on a note payable, and they are not a liability until declared.

2.2. Dividend Policy

Shareholder returns only come in two forms: stock price change and cash dividends received. It follows that the dividend decision directly impacts shareholder wealth. A firm's dividend policy includes two basic components

(Scott, Martin, Petty, and Keown, 1999:575). First, the dividend payout ratio indicates the amount of dividends paid relative to the company's earnings. The second component is the stability of the dividends over time. Dividend stability may be almost as important as the amount of dividend received for the investor. Stability refers to the constancy of dividends over time. A stable dividend is constant in amount from period to period but it is usually increased occasionally. A dividend with a stable growth rate increases by a more or less constant percentage overtime. Investors use a change in dividend policy as a signal towards the firm's financial condition.

Dividends are critical place of the financial system because of their roles in determining the value of stocks. The relationship between dividends and value can be viewed from the perspective of an individual investor or from that of the market as a whole. Investors expect an acceptable return from dividends and from the receipts when the shares eventually are sold. Today's price is the present value of that future cash flow discounted the appropriate rate for an equity investment in the company (Lasher, 1997:416).

There are 3 variables to measure dividend policy (Zeng, 2003: 306):

1. Dividend paid or declared per share is calculated by the total common stock dividend payment divided by total common share outstanding.

2. Dividend payout ratio (dividend per share divided by after-tax earnings per share) is calculated by total common stock dividend payment, and divided by total common share outstanding. Then, it is divided by earnings after tax and before extraordinary items, which is furthermore divided by total common

share outstanding. It is the same as the total common stock dividend payment, which is divided by earnings after tax and before extraordinary items. To use this measurement, negative earnings should be deleted.

3. Dividend yield (dividend per share divided by share price) is calculated by total common stock dividend payout divided by total common shares outstanding. Then it is divided by share price. Share price is measured as the average high price and low price in the year. The high and low prices are obtained from the historical data statistics on the financial post card.

2.3. Signaling Models

Signaling dividend theory is based on the premise that the management of a firm knows more about the future financial prospects of the firm than do the investors. According to this theory, investors presume that management would not have raised the dividend if it did not think that this higher dividend could be maintained. As a result of this signal of good times ahead, investors buy more stock, causing a jump in the stock price (Gallagher and Andrew, 2000:408).

A dividend decrease gives signals an expected downturn in earnings. Whereas, a dividend increase give signals a positive future is expected. The managers who believe the signaling theory will be conscious of the message their dividend decision may send to investors (Lasher, 1997:416).

If the company has some attractive investment opportunities that should be financed with retained earnings, the management of the company may turn

them down if adopting them would prevent paying the expected dividend and send an unfavorable signal to the market (Gallagher and Andrew, 2000:408).

2.4. Statement of Cash Flow

Cash is the lifeblood of a company because without cash, the company will not survive. For small and newly developing companies, cash flow is the single most important element of survival (Kieso and Weygandt, 1998:226). In order to make necessary economic decisions, investors use financial statements as a measurement in decision-making, because they give an accounting picture of the firm's operations and financial position.

The Indonesian Institute of Accountants (IAI) published the Statement of Financial Accounting Standard (PSAK) No. 2 about "Statement of Cash Flow". This statement requires companies to publish the statement of cash flow starting from January 1, 1995. The primary purpose of the statement of cash flow is to provide information about an entity's cash receipts and cash payments during a certain period. A secondary objective is to provide information on a cash basis classify among operating, investing, and financing activities. According to Financial Accounting Standard Board (FASB), the information provided in a statement of cash flow, if it is used with related disclosures and the other financial statements should help investors, creditors and others to assess:

1. The firm's ability to generate positive future net cash flows.

2. The firm's ability to meet its obligations, its ability to pay dividends, and its need for external financing.

3. The reasons for differences between net income and associated cash receipts and payments.

4. The effects on an enterprise's financial position of both its cash and non-cash investing and financing transactions during period (Kieso and Weygandt, 1995:1232).

The cash flow shown in the statement are divided into three major categories (Brigham and Ehrhardt, 2002:41):

1. Operating activities, which includes net income, depreciation, and changes in current assets and liabilities other than cash, short-term investments, and short-term debt.

2. Investing activities, which includes investments in or sales of fixed assets.

3. Financing activities, which include raising cash by selling short-term investments or by issuing short-term debt, long-term debt, or stock. Also because, both dividends paid and cash used to buy back outstanding stock or bonds reduce the company's cash, such transactions are included here.

The cash flow statement combines cash flows for events that are reported on the balance sheet (e.g., purchases of assets) and the income statement (e.g., the sale of goods). The cash flow statement provides information about the firm's liquidity and its ability to finance its growth from internally generated funds (White, Sondhi, and Fried, 1997:110).

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2.5. Return

Investors provide financing in a desire for a return on their investment. A return is income received on an investment plus any positive change in market price, usually expressed as a percentage of the beginning market price of the investment (Van Horne and Wachowicz Jr, 1995:90).

A return on an investment may come from more than one source. The most common source is periodic payments such as dividends or interest (current income). Current income may take the form of dividends from stocks, interest received on bonds, rent received on real estate, and so on. To be considered income, it must be received in the form of cash or be readily convertible into cash (Gitman and Joehnk, 1996:133).

Return consists of realized return and expected return. Realized return is a return that has occurred and it can be calculated based on historical data. Realized return is important because it is used as one of the company's performance measurements and as a basis to determine expected return. Expected return represents the return that would be expected by the investors in the future.

To measure realized return, we can use several measurement. Those several measurements are; total returns, return relative, return cumulative and adjusted return (Jogiyanto, 2000:107).

Total return is totality return from an investment in the certain period. To calculate the total return we can use the formula:

$$\text{Total return} = \text{Capital Gain (Loss)} + \text{Yield}$$

$$\text{Total Return} = \frac{P_t - P_{t-1} + D_t}{P_{t-1}}$$

Where:

Capital gain is a gain (loss) that result from deduction of relative current investment price to the past period's price.

Yield is a percentage of periodic cash receipts to the investment price in the certain period of investment.

P_t = Stock price of period t

P_{t-1} = Stock price of period t-1

D_t = Dividend in period t (Jogiyanto, 2000:108)

Total return can be positive or negative. In specific calculation, for instance in the geometric average the return should be positive. In this circumstance, we can use the return relative formula that add value of 1 to the formula; that is:

$$\text{Return Relative} = \frac{P_t - P_{t-1} + D_t}{P_{t-1}} + 1 \quad \text{(Jogiyanto, 2000:112)}$$

Total return measures the wealth change that is the change of stock price and the changes in stock dividend in the certain period. It is only measure the wealth change at the certain time but not measures the total wealth that has owned. To know the total wealth, it can be used the cumulative wealth index with the formula:

$$IKK = KK_0(1 + R_1)(1+R_2)\ldots(1+R_n)$$

Where:

IKK = cumulative wealth index, from the first period until n-period

KK_0 = beginning wealth

R_t = return in t-period, start from beginning period (t=1) until n period (t=n)

(Jogiyanto, 2000:113)

The return that has been stated above is nominal return that only concern to the changes of money value but not concern about the level of ability to buy. To consider this circumstance, it needs inflation adjusted return with the formula

$$R_{IA} = \frac{(1+R)}{(1+IF)} - 1$$

Where;

R_{IA} = Inflation adjusted return

R   = Nominal Return

IF   = Inflation level (Jogiyanto, 2000:119)

The second dimension of return is concerned with the change, if any, in the market value of an investment. Investors pay a certain amount for an investment, from which they expect to receive not only current income but also the return of the invested funds sometime in the future (Gitman and Joehnk, 1996:133).

Expected return can be counted by multiplying of each outcome with the probability and sum of the entire multiplying product. In mathematically it can be formulated:

$$E(R_i) = \sum_{j=1}^{n} ((R_j \cdot p_j)$$

Where:

$E(Ri)$ = expected return of security i

Rj   = the result of j-future

Pj   = probability of j-future

n   = the amount of the future (Jogiyanto, 2000:126)

Return is a key variable in the investment decision. It allows us to compare the actual or expected gains provided by various investments with the levels of return required to justify them. When the investor making investment decisions it is the future that matters; expected return is a vital measure of performance. Expected return is the return on investor thinks an investment will earn in the future (Gitman and Joehnk, 1996:134).

2.6. The Link between Dividend Signaling, Cash Flow, and Stock Return

The dividend is viewed as a way for management to send a message, because there is information that cannot make available to its shareholders (Lasher, 1997:422). Lintner's premise is that managers prefer to increase dividend regularly and avoid decreasing dividends if possible. These arguments predict that dividend increases will be made by firms with higher and more stable cash flows. And the dividend decrease will be less frequent dividend increase and accompanied by very poor performance (Jagannathan, Stephens, and Weisbach, 2000).

Stock markets are considered to be efficient if the stock prices are fully reflected the availability of public information. If the stock market is efficient and stock prices depend on expected future earnings, then any better prediction of

future earnings that is possible with dividends should be reflected in stock prices at or before the time the dividends become known (Watts, 1973).

Firms that increase dividends display positive excess returns on the announcement, while firms that decrease dividends suffer negative returns on the announcement (Benartzi, Michaely, and Thaler, 1997). Stock prices often change dramatically when a dividends is announced, indicating that the market believes dividends affect value.

2.7. Previous Research

There are many researches concern about the information content of dividend changes and future profitability. Several of those are; the research that is done by Ross (1977) and Battacharya (1979) integrated the information content hypothesis with the signaling theory. They demonstrate that dividends provide information about the firm's future cash flow and thus the dividend decision can changes a firm's value. Their hypothesis assumes that managers possess private information about the firm's attributes not known to the market. This information is valuable if the investments in place or opportunities to invest can have positive affect on the firm's future cash flow (Sartono and Asih, 2002).

Koch and Shenoy (1999) tested about signaling and agency theory. It showed that dividend and capital structure policies interact to provide significant predictive information about future cash flow. This research is done to 249 firms with a complete set of 44 quarters of Compustat and CRSP data in 1979-1989. The hypothesis is if the dividend and capital structure should provide information

about future cash flow, the free cash flow model predicts a U-shaped relation between Tobin's q and the information content of a firm's policies.

Firms that increase dividends in year 0 have experienced significant earnings increases in years –1 and 0, but show no subsequent unexpected earnings growth. And also the size of dividend increase does not predict future earnings. Firms that cut dividends in year 0 have experienced a reduction in earnings in year 0 and in year –1, but these firms go on to show significant increases in earnings in year 1 (Benartzi, Michaely, and Thaler, 1997).

Brook, Charlton, and Hendershott (1998) found that firms poised to experience large, permanent cash flow increase after four years of flat cash flow tend to boost their dividends before their cash flow jumps. The companies that have eight consecutive years of cash flow per share data available on the 1992 tapes conduct this research. Their test compare three subgroups of firms with stable cash flow in years –3 through 0, selected by their cash flow changes in years 1 through 4: the permanent-increase (PI), temporary-increase (TI), and no-increase (NI) samples contain 101, 45, and 34 firms. They define cash flow (CF) as compustat data item 13 (operating income before depreciation) less data items 15 (interest expense), 16 (income taxes), and 19 (preferred stock dividends).

Common dividends are compiled from the Center for Research on Security Prices (CRSP) tapes and confirmed using the Wall Street Journal Index. They calculated dividend changes by applying Watts' (1973) method: dividend changes are assigned to a particular fiscal year if they are paid during the latter three quarters of that fiscal year or in the first quarter of the next year.

To determine the market's response to the various groups' dividend and CF changes, they calculated fiscal year stock market returns for each company from the daily stock return files on CRSP. To calculate abnormal returns, they subtracted the contemporaneous return for the value-weighted CRSP index from each firms' return.

2.7. Hypothesis Formulation

A company can issue its own rights in the form of stock to the public in the capital market. Stock is simply pieces of paper that declares the ownership of a corporation. Therefore instead of receiving dividend income, we may receive capital gain. If the stock is sold at an actual price above its purchase price, then the investor will receive a capital gain. Earnings that are obtained by the company can be held back as a retained earnings or it will be distributed as a dividend. The investors can earn dividend in the form of cash or stock, it depends on the company's board of directors. The most common form of dividend is cash dividend that is paid regularly.

Generally, a company does not want to cut dividends because it will give a bad signal to investors. The company that cuts dividends will be regarded in having liquidity problem, so it needs extra funds. And the company will not remove those signal if the condition is not persistent the company to cut the dividends.

In making economic decision, the investors need financial statement besides a good signal to give them better information about the firm's prospect.

Cash flow is one of the financial statements. The statement of cash flows reports (1) the cash effects of operations during a period, (2) investing transactions, (3) financing transactions, and (4) the net increase or decrease in cash during the period. Cash flow helps users evaluate liquidity, solvency, and financial flexibility.

The investors get return as a reward from the investment. Return from investment is very crucial to the investor. It can be realized return or expected return. Realized return is return that is already happened. Expected return is return that would be expected. Realized return is counted by historical data. It is important because it can be a tool to measure the company's performance. It is also used as a basic of expected return.

Abnormal return is excess from realized return to the expected return. Abnormal return can be a tool to measure the market efficiency. A security market is efficient if security price fully reflects the information available. Publishing of the information available has relationship with corporate event that is happened. Dividend announcements also include the information available.

The announcement of paying dividend that increases from the prior period is provided for the investors at the same time. Usually, the firm uses dividend announcement as a signal to investors. By increasing the dividend, the firms try to give future prospective signal. It can be shown in the cash flow, thus the firms can increase the dividend paid. In contrast, if the firms cut the dividend, it will give a bad signal because the investor deems that the firms lack liquidity. The investors will receive the information of raising dividend as a good signal

without more analysis. And the security prices will fully reflect this good information. The market's response can be measured by using return as a value price change or with using abnormal return.

From the previous research that is done by Brook, Charlton, and Hendershott (1998) the firms can give the signal impending cash flow jumps by raising their dividends successfully. These firms also earn significantly positive abnormal stock returns. Based on the main problem and review of related literature stated above, the hypothesis of this research can be formulated as follows:

H1 : There is a positive cash flow following the announcement of dividend increase in the PI firms, TI firms, and NI firms.

H2 : There is a positive abnormal return following the announcement of dividend increase in the PI firms, TI firms, and NI firms.
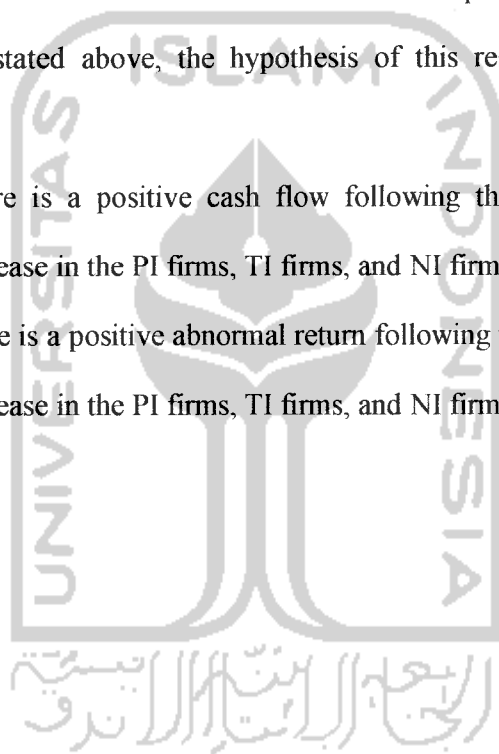
CHAPTER III

RESEARCH METHOD

3.1. Research Method

This research uses quantitative analysis method, where the variable value is declared in the numeric form. Method that is used in this research is purposive sampling method. In this method, the sample has to suitable with the core group that represents this research. Purposive sampling method is a sample taken, based on the specific consideration. It is based on the objective of the research (Sutrisno Hadi, 1997).

3.2. Population and Sample

Population is a collection of target data or collection of problem concerning about the problem in general. In this research, the population is the company that is listed in Jakarta Stock Exchange.

Sample is part of population that becomes an object where the characteristic of the sample is homogenous. The sample of this research is the company that is listed in Jakarta Stock Exchange excluded financial industries year 1999-2002. And also the company that pay the cash dividend during the period of January 1998 to December 1999.

3.3. Research Instrument

In order to test the influence of independent variables to dependent variables, this test statistic research is based on T-tests when comparing means. A means test (T-test) is used to test the difference between means when the two samples are independent and when the samples are taken from two normally or approximately normally distributed populations. Samples are independent when they are not related (Bluman, 2003:436). An independent (or explanatory) variable is one that presumably exerts an influence on or explains variations in the dependent variable. Whereas, dependent variable is the variable to be estimated.

To test whether the population is equal (null hypothesis) or is not equal (alternative hypothesis) to a hypothesized value, a sample is selected and measured, the average calculated, and a decision made. This decision will be based on how far the sample average is from the hypothesized value, taking into account the variability of the sample average (as measured by standard error). If we decide that the population means could be reasonably be equal to the hypothesized value, we will accept the null hypothesized (Siegel and Morgan,1996:354).

In a purpose of calculating the T-test and finding the significant level, the writer will implement MINITAB statistical software; therefore MINITAB can find out the positive cash flow and abnormal return and the level of significance.

3.4 Research Data

The data of this research is:

1. The name of the company that listed in Jakarta Stock Exchange excluded financial industries from period 1998-2002.

2. The companies that pay cash dividend during the period of January 1998 to December 1999.

3. The announcement date of dividend of company that listed in Jakarta Stock Exchange excluded financial industries from period 1998-1999.

4. The operating cash flow for the period 1998-2002.

5. The daily stock price for the period of five days before and after the announcement date.

6. The daily combination stock price index for the period of five days before and after the announcement date.

7. The volume of the outstanding shares for the period five days before and after the announcement date

3.5. Research Variables

Stock return variable and operating cash flow are the dependent variable in this research. The level of stock return will be counted by using abnormal return that is the excess of actual return to expected return. Operating cash flow is the receipt and disbursement of cash within a company during one period.

Independent variable is cash dividend, which is announced in January 1998 to December 1999.

3.6. Research Procedures

In order to answer research problem, it is important to construct research procedures. The procedures are:

1. Obtaining the data from Indonesian Capital Market Directory and Jakarta Stock Exchange.

2. Classifying the firms into PI (permanent-increase) firms, TI (temporary-increase) firms, and NI (no-increase) firms based on cash flow.

   a. Permanent-increase firms: $CF_t > 1.3CF_0$ for $t=1,2,3,4$

   b. Temporary-increase firms: $1.2CF_0 \leq CF_t \leq 1.4CF_0$ for $t=2$ or 3

   c. No-increase firms: $0.7CF_0 \leq CF_4 \leq 1.3CF_0$ and $0.85CF_{t-1} \leq CF_t \leq 1.15CF_{t-1}$ for $t=1,2,3$, and 4

The formulation based on Brook, Charlton, and Hendershoot (1998).
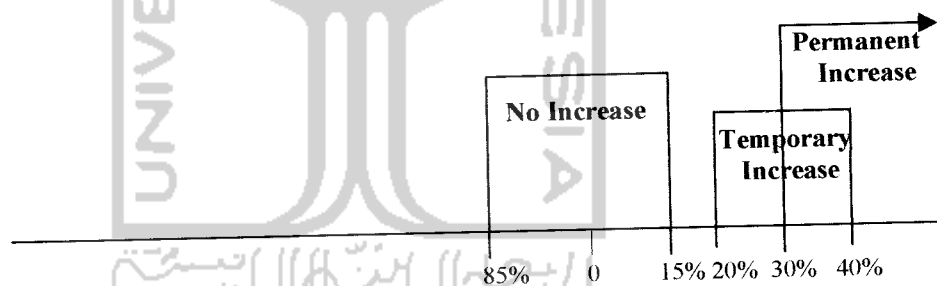
3. Conducting the means test (T-test) to test the first and second hypothesis.

3.7. Technique of Data Analysis

The technique of data analysis that is used in this thesis is means test (T-test). First and second hypothesis is tested using means test (T-test). After having the value of t-statistic is get, the value is compared to the value of t-table. This thesis is using the significant level 95%.

3.8. Analysis Step

The step to analyze the data is:

1. Obtaining the firms that pay the cash dividend from period 1998-1999.

2. The identification of windows period. In this case window period is the 5 days before and after the announcement date of dividends.

3. Obtaining the announcement date of cash dividends during the period of consideration (January 1998 to December 1999).

4. Obtaining data that are daily stock price, combination stock price index, and the volume of outstanding shares for the period five days before and after the announcement date of dividends.

5. Obtaining data that operates cash flow that can get from Indonesian Capital Market Directory.

6. Classifying the firms into three subgroups:

    a. Permanent-increase firms: $CF_t > 1.3CF_0$ for $t=1,2,3$

    b. Temporary-increase firms: $1.2CF_0 \leq CF_t \leq 1.4CF_0$ for $t=2$ or 3

    c. No-increase firms: $0.7CF_0 \leq CF_4 \leq 1.3CF_0$ and $0.85CF_{t-1} \leq CF_t \leq 1.15CF_{t-1}$ for $t=1, 2, 3,$ and 4

7. Counting the abnormal return by using market adjusted stock return;

    a. Counting the daily actual return of each stock five days before and after the announcement date of cash dividend by using the formula:

$$Rit = \frac{Pt - Pt\text{-}1}{Pt\text{-}1}$$

The explanation from the formula above:

Ri,t : actual stock return of i on the day t

Pt   : stock price on the day t

Pt-1 : stock price on the day t-1

b. Counting the daily expected return by using the daily Combination Stock Price Index (IHSG) for each stock five days before and after the announcement date by using the formula:

$$Rmt = \frac{IHSGt - IHSGt-1}{IHSG\ t.1}$$

The explanation from the formula above:

Rmt   : the expected return

IHSGt : the daily combination stock price index on the day of t

IHSGt-1: the daily combination stock price index on the day of t- 1

c. Counting the Abnormal Return, that is deducted from daily actual return to the daily expected return by using market-adjusted return method for the period five days before and after the announcement with the formula:

$$ARit = Rit - Rmt$$

The explanation from the formula above:

ARit : Abnormal Return of stock *i* on the day of t

Rit : actual return of stock i on the day of t

Rmt: expected return of stock i on the day of t

d. Counting the Cumulative Average Abnormal Return for each stock for the period five days before and after the announcement date with the formula:

$$CAARt = \frac{\sum ARt}{N}$$

The explanation for the formula above:

CAARt : cumulative average abnormal return on the day of t

Σ ARt : the amount of Abnormal Return in the day of t

N : the stock we used for this research

8. Making statistical comparison of cash flow before and after the dividend increase in the PI firms, TI firms, and NI firms.

9. Making statistical comparison on CAAR before the dividend increase and after the dividend increase in the PI firms, TI firms, and NI firms.

3.9. Hypothesis testing

Based on the hypothesis formulation, hypothesis can be drawn as follows:

Ho_1: There is no a positive cash flow following the announcement of dividend increase in the PI firms, TI firms, and NI firms.

Ha_1: There is a positive cash flow following the announcement of dividend increase in the PI firms, TI firms, and NI firms.

Ho_2: There is no a positive abnormal returns following the announcement of dividend increase in the PI firms, TI firms, and NI firms.

Ha_2: There is a positive abnormal return following the announcement of dividend increase in the PI firms, TI firms, and NI firms.

To test the hypothesis:

a. First hypothesis is also tested using the difference between two population means (t-test). The sampling tested that is used is calculation of the cash flow 1 year before and 3 year after the announcement of dividend increase in the PI firms, TI firms, and NI firms. The formula of Cash Flow is:

CF = Operating Cash Flow……………………………...…………………….....3.1

After finding the cash flow per share, we test the hypothesis of the difference between two population means (t test). With the formula of t:

$$t = \frac{(\overline{X_1} - \overline{X_2}) - (\mu_1 - \mu_2)}{\sigma_{\overline{X1} - \overline{X2}}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.2$$

Where:

$\overline{X_1}$ = 1 year cash flow before the announcement of dividend increase

$\overline{X_2}$ = 3 year cash flow after the announcement of dividend increase

We use a 5 % degree of freedom here in order to compare the cash flow 1 year before and 3 year after the announcement of dividend increase in the PI firms, TI firms, and NI firms. The criterion to reject Ho is to see the P-value of t. If the P-value of t is less than 0.05 the Ho is rejected but if the P-value is more than 0.05 Ho is fail to reject.

b. Second hypothesis is tested using the difference between two population means (t-test). The sampling tested that is used is Cumulative Average Abnormal Return 5 days before and after the announcement date of dividend increase. The formula of Abnormal Return used here is marked-adjusted model. The formula is:

$$ARit = Rit - Rmt \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 3.3$$

Where:

ARit : Abnormal Return of stock i on the day of t

Rit : actual return of stock i on the day of t

Rmt: expected return of stock i on the day of t

What we compare in this thesis is the cumulative average abnormal return 5 days before and after the announcement date. The formula of Cumulative Average Abnormal Return is:

$$CAARt = \frac{\Sigma \, ARt}{N} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 3.4$$

Where:

CAARt : cumulative average abnormal return on the day of t

Σ ARt : the amount of Abnormal Return in the day of t

N : the stock we used for the research

After we get the Cumulative Average Abnormal Return then we test the hypothesis using the difference between two population means. With the formula of t:

$$t = \frac{(\overline{X_1} - \overline{X_2}) - (\mu_1 - \mu_2)}{\sigma_{\overline{X_1} - \overline{X_2}}} \dots\dots\dots\dots\dots\dots 3.5$$

Where:

$\overline{X_1}$ = the cumulative average abnormal return, 5 days before the announcement date of dividend increase

$\overline{X_2}$ = the cumulative average abnormal return 5 days after the announcement

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date of dividend increase

Here we use 5 % degree of freedom in order to compare the Cumulative Average Abnormal Return 5 days before and after the announcement date. The criterion to reject Ho is to see the P-value of t. If the P-value of t is less than 0.05 the Ho is rejected, but if the P-value is more than 0.05 Ho is fail to reject.

CHAPTER IV

RESEARCH FINDINGS, DISCUSSION, AND IMPLICATIONS

This chapter describes the data collection process, research findings, discussion, and implications of the variables used in this research. All the results that are explained here are summarized by applying the analysis steps that have been explained in chapter three.

4.1 Research Description

4.1.1 Research Preparation

The researcher did literature research, both through physical mean (library and reference) and non physical (internet search) to obtain a relevant research topic. The data was collected from Capital Market Data Base Jakarta Stock Exchange Corner at UII Yogyakarta, Capital Market Data Base at PPA FE UGM Yogyakarta, Capital Market Data Base at MM UGM Yogyakarta, and other relevant sources (Indonesian Capital Market Directory and Bisnis Indonesia).

4.1.2 Research Process

Samples must be chosen firstly to obtain the data that will be utilized as the variables of this research. The companies' data, which is announced cash dividend listed in Jakarta Stock Exchange excluded financial industries from 1998 through 1999, can be seen in the JSX Statistic Index. These companies are then selected based on requirements of the research variables. Based on cash flow, the companies classified into three subgroups:

a. Permanent-increase firms: $CF_t > 1.3CF_0$ for t=1,2,3,4

b. Temporary-increase firms: $1.2CF_0 \leq CF_t \leq 1.4CF_0$ for t=2 or 3

c. No-increase firms: $0.7CF_0 \leq CF_4 \leq 1.3CF_0$ and $0.85CF_{t-1} \leq CF_t \leq 1.15CF_{t-1}$ for t=1,2,3,4

Finally, this research takes 15 companies, which have valid data. The sample of this research can be seen as bellows:

Table 4.1

Permanent Increase

No.	CODE	COMPANY'S NAME
1.	ANTM	Aneka Tambang Tbk.
2.	AALI	Astra Argo Lestari Tbk.
3.	GDYR	Goodyear Indonesia Tbk.
4.	GGRM	Gudang Garam Tbk.
5.	INCI	Intan Wijaya International Tbk.
6.	MERK	Merck Tbk.
7.	MRAT	Mustika Ratu Tbk.
8.	RIGS	Rig Tenders Tbk.
9.	SMGR	Semen Gresik Tbk.
10.	SMSM	Selamat Sempurna Tbk.
11	TCID	Mandom Indonesia Tbk.
12.	TOTO	Surya Toto Indonesia Tbk.

No Increase

No.	CODE	COMPANY'S NAME
1.	ISAT	Indonesia Satellite Corporation Tbk.
2.	TFCO	Tifico Tbk.
3.	TLKM	Telekomunikasi Indonesia Tbk.

There is no companies that fulfill the requirements of temporary increase firms, the calculation of the classified cash flow can be seen in appendix 2.

Several data that was taken from these 15 companies are:

a. The announcement date of cash dividend during the period of consideration (January 1998 to December 1999) from JSX Statistic.

b. Dividend per share in 1998-1999 that can be obtained from JSX statistics.

c. Cash flow in and out from operating cash flow in 1998-2002 that is taken from Capital Market Database in JSX corner at MM UII Yogyakarta.

d. Outstanding stocks that are collected from Indonesian Capital Market Directory.

After the announcement date is collected, then the researcher obtains abnormal return of stocks 5 days before, the announcement date and 4 days after the announcement date at Capital Market Database at PPA FE UGM Yogyakarta. Then the data is processed in order to get the variable chosen as described in previous chapter.

4.2. Research Findings and Discussion

The results of the hypothesis testing for hypothesis one and two were calculated by using T-test and this research implemented MINITAB statistical computer software. First hypothesis conducted in order to see whether there is a positive cash flow following the announcement of dividend increase in the PI firms and NI firms. Two samples T-test were employed in order to find out the

significant difference between cash flow after and before the announcement. The result for the first test is described in table 4.2.

Table 4.2

The Cash Flow Reaction Before and After the Cash Dividend

Announcement in Jakarta Stock Exchange

Period	Permanent Increase (PI firms)				No Increase (NI firms)			
	N	Mean	T-test	P-value	N	Mean	T-test	P-value
After	48	1111	1.2	0.118	12	1355	-2.17	0.975
Before	12	158			3	4746		

Table 4.2, for PI firms showed 1111 for the mean after the announcement and 158 for the mean before the announcement, meaning that the cash flow after the announcement is greater than the cash flow before the announcement. The value of t is 1.20 with the P-value of 0.118 showed that this result was insignificant (Ho$_1$). On the NI firms also showed the same result which shows- 1355 for the mean after the announcement less than 4746 for the mean before the announcement, and 0.975 for the P-value which greater than 5% significant level, thus the comparison meaning that the alternative hypothesis Ha$_1$ is rejected.

From the above explanation, by using 5% significance, it can be said that hypothesis alternative is rejected. It can also be said that the cash flow after and before the announcement date of dividend increase both PI firms and NI firms are not differently significant.

The second hypothesis test is concerned with the significant difference between average abnormal return after the announcement and before the announcement. This test is done during two years (1998-1999). The result for the second hypothesis can be seen as follows:

Table 4.3

The Stock Market Reaction Before and After the Cash Dividend Announcement in the Jakarta Stock Exchange

	Period	N	Permanent Increase (PI firms) Mean	T-test	P-value	N	No Increase (NI firms) Mean	T-test	P-value
1998	After	60	0.0017	0.08	0.468	15	-0.0108	-0.98	0.832
	Before	60	0.0010			15	0.0039		
1999	After	60	0.0047	1.5	0.068	15	0.0082	1.14	0.133
	Before	60	-0.0047			15	-0.0094		

Table 4.3; on the left side shows the result for the PI firms, the abnormal return during 1998 and 1999 are positive. On the P-value column shows that all of the positive abnormal return are greater than 0.05 significant levels, meaning that the result is not significant. NI firms (on the right side) have positive abnormal return only in 1999. On the P-value column shows that the return are greater than 0.05 significant levels, which means that both of the return in 1998 and 1999 shows no significant abnormal return following the announcement of an increase in cash dividends. The conclusion is reached that the hypothesis testing does not confirm the second hypothesis (Ha_2).

4.3. Research Implication

The result of test for the first hypothesis is not consistent with Brook, Charlton, and Hendershott (1998) who found the evidence that the PI firms used dividend to signal their imminent cash flow jump. In this research, the p-value of t showed insignificant result. It may occur because the manager in Indonesia's firms do not use dividend as a signal to change the firm's expectation of the profit in the future.

Based on the test during 1998-1999, which was done in the second hypothesis, the result is consistent with Arsyah (1999) who did the test that showed the dividend changes did not significant with the excess return. There was positive abnormal return after the announcement of cash dividend increase, therefore after testing the abnormal return with one tail t-test the result was insignificant (H_2). It can be said that the dividend announcement did not influence the company's stock price in the Jakarta Stock Exchange.

Based on this research findings, it implies that there was no significant difference in the cash flow and abnormal return before and after the announcement of dividend increase both of PI firms and NI firms. By raising the dividend, the firms cannot do successfully signal impending cash flow jumps. And the investor does not appear to interpret the dividend changes as signal about future profitability. Many factors affected the investor's behavior relating to their decision to buy or sell the stock. The information might become one factor that might affect the investor's decision. The investors might also find the condition of the company through another sources outside the dividend announcement.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1. Research Conclusion

There are some conclusions drawn from the statistical test analysis that have been described in the previous chapters. In the first and second hypothesis, the alternative cannot be proven. It might happen because of the limitation source of data. The researcher can only obtain 15 samples of companies listed in Jakarta Stock Exchange excluded financial industries from period 1998-2002 instead of 206 companies.

Based on the conclusion derived, it can be stated that both of PI firms and NI firms do not use dividend to signal future cash flow. The cash flow before and after the announcement of dividend increase does not tend to have significant different. It also occurs in the average of abnormal return that there is no market reaction concerning the cash dividend increase announcement both of PI firms and NI firms. There is no significant different in the average abnormal return before and after the announcement. This conclusion has been supported by the T-test; in which the positive abnormal return shows that P-value is greater than 5% degree of freedom. Those results may happen because of the lack of sources to collect sufficient evidence to support this research.

5.2. Research Recommendation

There are some recommendations for the next further researcher as follows:

1. This thesis has weaknesses on the data because this thesis only found the PI firms and NI firms. This research did not find the TI firms (temporary increase) as a sample based on the cash flow formulation. It is recommended not to limit the sample amount because it may cause bias, thus the larger samples are needed in order to avoid bias.

2. The model to count abnormal return used market-adjusted model. The result may be different if it uses different model.

3. This research has only been limited to examine the cash dividend announcement, therefore it is necessary for further research to observe the stock dividend announcement. This further research is important in order to find out whether or not dividend and the investors may interpret the stock dividend as good news or not.

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APPENDICES

Appendix 1
Operating Cash Flow per Share

No.	Code	Company's Name	1998(0)	1999(+1)	2000(+2)	2001(+3)	2002(+4)
1	ANTM	Aneka Tambang Tbk.	438.46566008731	183.83334890625	670.69860225599	313.22929810549	159.22157820082
2	AALI	Astra Argo Lestari Tbkk.	299.92368839428	137.51059883413	109.53563857976	268.42209856916	426.58348888234
3	CTBN	Citra Tubindo Tbk.	3,289.80000000000	539.80000000000	285.45000000000	1,072.88750000000	467.33750000000000
4	DPNS	Duta Pertiwi Nusantara Tbk.	311.60801815626	54.94339996675	41.66889207597	141.28035475890	25.93647495407
5	GDYR	Goodyear Indonesia Tbk.	6,819.08829268293	9,458.67821138211	11,786.63252032520	1,310.80885365854	965.58146341463
6	GGRM	Gudang Garam Tbk.	686.48256800832	746.51731105854	-594.42759374831	286.44427905584	1,151.63963394606
7	HITS	Humpuss Intermoda Transportasi Tbk.	2,010.55198222222	144.91396000000	299.51787777778	519.76279555556	724.06362000000
8	INCI	Intan Wijaya Internasional Tbk.	222.53806977273	54.03177925889	344.03606643281	23.08097264032	79.15771342657
9	ISAT	Indonesia Satellite Corporation Tbk.	1,575.93046837277	1,250.61612747465	1,389.78850796717	1,500.42008691453	332.67407049734
10	KICI	Kedaung Indah Can Tbk.	203.41657980435	119.74358634058	150.41399426812	79.54427855072	-187.13988878261
11	MERK	Merck Tbk.	-9,703.46488095238	1,422.00779220779	1,766.37491071429	1,760.91285714286	1,262.78513392857
12	MRAT	Mustika Ratu Tbk.	296.37420343925	164.59538521495	507.75335728037	160.56374761682	-22.17320414486
13	PTRO	Petrosea Tbk.	1,863.17738791423	1,439.55165692008	170.95516569201	1,621.52046783626	285.18518518519
14	RDTX	Roda Vivatex Tbk.	333.18067193080	170.79239097470	-32.47995355283	18.62655629836	70.41107950893
15	RIGS	Rig Tenders Tbk.	1,272.14967248371	1,181.25485528541	1,924.33730074040	1,401.52199037972	625.93421765469
16	SMGR	Semen Gresik (Persero) Tbk.	172.26039699773	1,305.94059869983	784.57235413520	1,319.57675098457	1,406.91564051036
17	SMSM	Selamat Sempurna Tbk.	204.25328946780	177.15064841783	287.90054427272	402.25665343235	464.33122449696
18	STTP	Siantar TOP Tbk.	338.93391270526	222.90078970526	26.59191761134	51.22584257176	16.80624949618
19	TCID	Mandom Indonesia Tbk.	-55.22570512821	727.87298717949	284.51961005128	432.24383107051	536.32560433974
20	TFCO	Tifico Tbk.	8,816.79575644410	7,876.54001006729	917.10256272257	-48.34964473118	85.43949348387
21	TGKA	Tigaraksa Satria Tbk.	2,236.11004754474	47.31703352367	428.33220881275	-114.34765003915	-159.87356784471
22	TINS	Tambang Timah Tbk.	1,088.43596886164	915.55368347434	245.03975744185	387.98772903744	-8.73630543888
23	TLKM	Telekomunikasi Indonesia Tbk.	3,845.30585161807	499.01489877434	682.11897277409	695.69337802080	1,077.82474087469
24	TOTO	Surya Toto Indonesia Tbk.	1,243.13868531593	1,104.63312082985	1,658.80483660368	1,129.38947347384	1,265.01432168524

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Appendix 2

Classifying the Firms Based on Cash Flow

Permanent Increase

| | | | | | $CF_t > 1.3CF_0$ for t=1,2,3,4 | |
No.	Code	1999(+1)	2000(+2)	2001(+3)	2002(+4)	1998(0)
1	ANTM	183.83334890625	670.69860225599	313.22929810549	159.22157820082	570.00535811351
2	AALI	137.51059883413	109.53563857976	268.42209856916	426.58348888234	389.90079491256
3	CTBN	539.80000000000	285.45000000000	1,072.88750000000	467.33750000000	4,276.74000000000
4	DPNS	54.94339996675	41.66889207597	141.28035475890	25.93647495407	405.09042360314
5	GDYR	9,458.67821138211	11,786.63252032520	1,310.80885365854	965.58146341463	8,864.81478048781
6	GGRM	746.51731105854	-594.42759374831	286.44427905584	1,151.63963394606	892.42733841082
7	HITS	144.91396000000	299.51787777778	519.76279555556	724.06362000000	2,613.71757688889
8	INCI	54.03177925889	344.03606643281	23.08097264032	79.15771342657	289.29949070455
9	ISAT	1,250.61612747465	1,389.78850796717	1,500.42008691453	332.67407049734	2,048.70960888460
10	KICI	119.74358634058	150.41399426812	79.54427855072	-187.13989878261	264.44155374565
11	MERK	1,422.00779220779	1,766.37491071429	1,760.91285714286	1,262.78513392857	-12,614.50434523810
12	MRAT	164.59538521495	507.75335728037	160.56374761682	-22.17320414486	385.28646447103
13	PTRO	1,439.55165692008	170.95516569201	1,621.52046783626	285.18518518519	2,422.13060428850
14	RDTX	170.79239097470	-32.47995355283	18.62655629836	70.41107950893	433.13487351005
15	RIGS	1,181.25485528541	1,924.33730074040	1,401.52199037972	625.93421765469	1,653.79457422882
16	SMGR	1,305.94059869983	784.57235413520	1,319.57675098457	1,406.91564051036	223.93851609705
17	SMSM	177.15064841783	287.90054427272	402.25665343235	464.33122449696	265.52927630814
18	STTP	222.90078970526	26.59191761134	51.22584257176	16.80624949618	440.61408651684
19	TCID	727.87298717949	284.51961005128	432.24383107051	536.32560433974	-71.79341666667
20	TFCO	7,876.54001006729	917.10256272257	-48.34964473118	85.43949348387	11,461.83448337730
21	TGKA	47.31703352367	428.33220881275	-114.34765003915	-159.87356784471	2,906.94306180816
22	TINS	915.55368347434	245.03975744185	387.98772903744	-8.73630543888	1,414.96675952013
23	TLKM	499.01489877434	682.11897277409	695.69337802080	1,077.82474087469	4,998.89760710349
24	TOTO	1,104.63312082985	1,658.80483660368	1,129.38947347384	1,265.01432168524	1,616.08029091071

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Temporary Increase

No.	Code	1998(0)	2000(+2)	2001(+3)	$1.2CF_0 \leq CF_t \leq 1.4CF_0$ for t= 2 or 3
					1998(0)
1	ANTM	526.15879210477	670.69860225599	313.22929810549	613.85192412224
2	AALI	359.90842607313	109.53563857976	268.42209856916	419.89316375199
3	CTBN	3,947.76000000000	285.45000000000	1,072.88750000000	4,605.72000000000
4	DPNS	373.92962178751	41.66889207597	141.28035475890	436.25122541876
5	GDYR	8,182.90595121951	11,786.63252032520	1,310.80885365854	9,546.72360975610
6	GGRM	823.77908160999	-594.42759374831	286.44427905584	961.07559521165
7	HITS	2,412.66237866667	299.51787777778	519.76279555556	2,814.77277511111
8	INCI	267.04568372727	344.03606643281	23.08097264032	311.55329768182
9	ISAT	1,891.11656204732	1,389.78850796717	1,500.42008691453	2,206.30265572187
10	KICI	244.09989576522	150.41399426812	79.54427855072	284.78321172609
11	MERK	-11,644.15785714290	1,766.37491071429	1,760.91285714286	-13,584.85083333330
12	MRAT	355.64904412710	507.75335728037	160.56374761682	414.92388481495
13	PTRO	2,235.81286549708	170.95516569201	1,621.52046783626	2,608.44834307992
14	RDTX	399.81680631696	-32.47995355283	18.62655629836	466.45294070313
15	RIGS	1,526.57960698045	1,924.33730074040	1,401.52199037972	1,781.00954147719
16	SMGR	206.71247639728	784.57235413520	1,319.57675098457	241.16455579683
17	SMSM	245.10394736136	287.90054427272	402.25665343235	285.95460525492
18	STTP	406.72069524632	26.59191761134	51.22584257176	474.50747778737
19	TCID	-66.27084615385	284.51961005128	432.24383107051	-77.31598717949
20	TFCO	10,580.15490773290	917.10256272257	-48.34964473118	12,343.51405902170
21	TGKA	2,683.33205705369	428.33220881275	-114.34765003915	3,130.55406656264
22	TINS	1,306.12316263397	245.03975744185	387.98772903744	1,523.81035640629
23	TLKM	4,614.36702194168	682.11897277409	695.69337802080	5,383.42819226529
24	TOTO	1,491.76642237912	1,658.80483660368	1,129.38947347384	1,740.39415944231

No Increase

No.	Code	1998(0)	0.7CF_0≤CF_4≤1.3CF_0		Code	1998(0)	0.85CF_0≤CF_1≤1.15CF_0	
			2002(+4)	1998(0)			1999(+1)	1998(0)
1	ANTM	306.92596206	159.22157820	570.00535811	ANTM	372.69581107422	183.83334890625	504.23550910041
2	AALI	209.94658188	426.58348888	389.90079491	AALI	254.93513513514	137.51059883413	344.91224165342
3	CTBN	2,302.86000000	467.33750000	4,276.74000000	CTBN	2,796.33000000000	539.80000000000	3,783.27000000000
4	DPNS	218.12561271	25.93647495	405.09042360	DPNS	264.86681543282	54.94339996675	358.34922087970
5	GDYR	4,773.36180488	965.58146341	8,864.81478049	GDYR	5,796.22504878049	9,458.67821138211	7,841.95153658537
6	GGRM	480.53779761	1,151.63963395	892.42733841	GGRM	583.51018280708	746.51731105854	789.45495320957
7	HITS	1,407.38638756	724.06362000	2,613.71757689	HITS	1,708.96918488889	144.91396000000	2,312.13477955556
8	INCI	155.77664884	79.15771343	289.29949070	INCI	189.15735930682	54.03177925889	255.91878023864
9	ISAT	1,103.15132786	332.67407050	2,048.70960888	ISAT	1,339.54089811685	1,250.61612747465	1,812.32003862868
10	KICI	142.39160586	-187.13989878	264.44155375	KICI	172.90409283370	119.74358634058	233.92906677500
11	MERK	-6,792.42541667	1,262.78513393	-12,614.50434524	MERK	-8,247.94514880952	1,422.00779220779	-11,158.98461309520
12	MRAT	207.46194241	-22.17320414	385.28646447	MRAT	251.91807292336	164.59538521495	340.83033395514
13	PTRO	1,304.22417154	285.18518519	2,422.13060429	PTRO	1,583.70077972710	1,439.55165692008	2,142.65399610136
14	RDTX	233.22647035	70.41107951	433.13487351	RDTX	283.20357114118	170.79239097470	383.15777272042
15	RIGS	890.50477074	625.93421765	1,653.79457423	RIGS	1,081.32722161115	1,181.25485528541	1,462.97212335626
16	SMGR	120.58227790	1,406.91564051	223.93851610	SMGR	146.42133744807	1,305.94059869983	198.09945654739
17	SMSM	142.97730263	464.33122450	265.52927631	SMSM	173.61529604763	177.15064841783	234.89128288797
18	STTP	237.25373889	16.80624950	440.61408652	STTP	288.09382579947	222.90078970526	389.77399961105
19	TCID	-38.65799359	536.32560434	-71.79341667	TCID	-46.94184935897	727.87298717949	-63.50956089744
20	TFCO	6,171.75702951	85.43949348	11,461.83448338	TFCO	7,494.27639297748	7,876.54001006729	10,139.31511991070
21	TGKA	1,565.27703328	-159.87356784	2,906.94306181	TGKA	1,900.69354041303	47.31703352367	2,571.52655467645
22	TINS	761.90517820	-8.73630544	1,414.96675952	TINS	925.17057353239	915.55368347434	1,251.70136419088
23	TLKM	2,691.71409613	1,077.82474087	4,998.89760710	TLKM	3,268.50997387536	499.01489877434	4,422.10172936078
24	TOTO	870.19707972	1,265.01432169	1,616.08029091	TOTO	1,056.66788251854	1,104.63312082985	1,429.60948811332

No Increase

No.	Code	0.85CF₁≤CF₂≤1.15CF₁			Code		0.85CF₂≤CF₃≤1.15CF₂	
		1999(+1)	2000(+2)	1999(+1)		2000(+2)	2001(+3)	2000(+2)
1	ANTM	156.25834657032	670.69860225599	211.40835124219	ANTM	570.09381191759	313.22929810549	771.30339259439
2	AALI	116.88400900901	109.53563857976	158.13718865925	AALI	93.10529279279	268.42209856916	125.96598436672
3	CTBN	458.83000000000	285.45000000000	620.77000000000	CTBN	242.63250000000	1,072.88750000000	328.26750000000
4	DPNS	46.70188997174	41.66889207597	63.18490996176	DPNS	35.41855826458	141.28035475890	47.91922588737
5	GDYR	8,039.87647967480	11,786.63252032520	10,877.47994308940	GDYR	10,018.63764227640	1,310.80885365854	13,554.62739837400
6	GGRM	634.53971439976	-594.42759374831	858.49490771732	GGRM	-505.26345468606	286.44427905584	-683.59173281056
7	HITS	123.17686600000	299.51787777778	166.65105400000	HITS	254.59019611111	519.76279555556	344.44555944444
8	INCI	45.92701237006	344.03606643281	62.13654614773	INCI	292.43065646789	23.08097264032	395.64147639773
9	ISAT	1,063.02370835345	1,389.78850796717	1,438.20854659585	ISAT	1,181.32023177209	1,500.42008691453	1,598.25678416224
10	KICI	101.78204838949	150.41399426812	137.70512429167	KICI	127.85189512790	79.54427855072	172.97609340833
11	MERK	1,208.70662337662	1,766.37491071429	1,635.30896103896	MERK	1,501.41867410714	1,760.91285714286	2,031.33114732143
12	MRAT	139.90607743271	507.75335728037	189.28469299720	MRAT	431.59035368832	160.56374761682	583.91636087243
13	PTRO	1,223.61890838207	170.95516569201	1,655.48440545809	PTRO	145.31189083821	1,621.52046783626	196.59844054581
14	RDTX	145.17353232850	-32.47995355283	196.41124962091	RDTX	-27.60796051990	18.62655629836	-37.35194658575
15	RIGS	1,004.06662699260	1,924.33730074040	1,358.44308357822	RIGS	1,635.68670562934	1,401.52199037972	2,212.98789585146
16	SMGR	1,110.04950889485	784.57235413520	1,501.83168850480	SMGR	666.88650101492	1,319.57675098457	902.25820725548
17	SMSM	150.57805115515	287.90054427272	203.72324568050	SMSM	244.71546263181	402.25665343235	331.08562591363
18	STTP	189.46567124947	26.59191761134	256.33590816105	STTP	22.60312996964	51.22584257176	30.58070525304
19	TCID	618.69203910256	284.51961005128	837.05393525641	TCID	241.84166854359	432.24383107051	327.19755155897
20	TFCO	6,695.05900855719	917.10256272257	9,058.02101157738	TFCO	779.53717831418	-48.34964473118	1,054.66794713095
21	TGKA	40.21947849512	428.33220881275	54.41458855222	TGKA	364.08237749084	-114.34765003915	492.58204013467
22	TINS	778.22063095319	245.03975744185	1,052.88673599549	TINS	208.28379382558	387.98772903744	281.79572105813
23	TLKM	424.16266395819	682.11897277409	573.86713359049	TLKM	579.80112685798	695.69337802080	784.43681869020
24	TOTO	938.93815270537	1,658.80483660368	1,270.32808895432	TOTO	1,409.98411111313	1,129.38947347384	1,907.62556209423

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No Increase

No.	Code	2001(+3)	2002(+4)	2001(+3)
			$0.85CF_3 \leq CF_4 \leq 1.15CF_3$	
1	ANTM	266.24490338967	159.22157820082	360.2136928213?
2	AALI	228.1587837837?	426.5834888234	308.6854133545?
3	CTBN	911.95437500000?	467.33750000000?	1,233.82062500000?
4	DPNS	120.08830154506	25.93647495407	162.47240797273
5	GDYR	1,114.18752560976	965.58146341463	1,507.43018170732
6	GGRM	243.47763719747	1,151.63963394606	329.41092091422
7	HITS	441.79837622222?	724.06362000000?	597.72721488889?
8	INCI	19.61882674427	79.15771342657	26.54311853636
9	ISAT	1,275.35707387735	332.67407049734	1,725.48309995171
10	KICI	67.61263676812	-187.13989878261	91.47592033333
11	MERK	1,496.77592857143	1,262.78513392857	2,025.04978571429
12	MRAT	136.47918547430	-22.17320414486	184.64830975935
13	PTRO	1,378.29239766082	285.18518519	1,864.74853801170
14	RDTX	15.83257285361	70.41107950893	21.42053974312
15	RIGS	1,191.29369182276	625.93421765469	1,611.75028893668
16	SMGR	1,121.64023833688	1,406.91564051036	1,517.51326363226
17	SMSM	341.91815541749	464.33122449696	462.59515144720
18	STTP	43.54196618599	16.80624949618	58.90971895752
19	TCID	367.40725640994	536.32560433974	497.08040573109
20	TFCO	-41.09719802151	85.43949348387	-55.60209144086
21	TGKA	-97.19550253328	-159.87356784471	-131.49979754503
22	TINS	329.78956968182	-8.73630543888	446.18588839305
23	TLKM	591.33937131768	1,077.82474087469	800.04738472391
24	TOTO	959.98105245276	1,265.01432168524	1,298.79789449491

Appendix 3

Operating Cash Flow per Share

Permanent Increase Firms (PI Firms)

No.	Code	Company's Name	1998(0)	1999(+1)	2000(+2)	2001(+3)	2002(+4)
1	ANTM	Aneka Tambang Tbk.	438.46566008731	183.83334890625	670.69860225599	313.22929810549	159.22157820082
2	AALI	Astra Argo Lestari Tbkk.	299.92368839428	137.51059883413	109.53563857976	268.42209856916	426.58348888234
3	GDYR	Goodyear Indonesia Tbk.	6,819.08829268293	9,458.67821138211	11,786.63252032520	1,310.80885365854	965.58146341463
4	GGRM	Gudang Garam Tbk.	686.48256800832	746.51731105854	-594.42759374831	286.44427905584	1,151.63963394606
5	INCI	Intan Wijaya Internasional Tbk.	222.53806977273	54.03177925889	344.03606643281	23.08097264032	79.15771342657
6	MERK	Merck Tbk.	-9,703.46488095238	1,422.00779220779	1,766.37491071429	1,760.91285714286	1,262.78513392857
7	MRAT	Mustika Ratu Tbk.	296.37420343925	164.59538521495	507.75335728037	160.56374761682	-22.17320414486
8	RIGS	Rig Tenders Tbk.	1,272.14967248371	1,181.25485528541	1,924.33730074040	1,401.52199037972	625.93421765469
9	SMGR	Semen Gresik (Persero) Tbk.	172.26039699773	1,305.94059869983	784.57235413520	1,319.57675098457	1,406.91564051036
10	SMSM	Selamat Sempurna Tbk.	204.25328946780	177.15064841783	287.90054427272	402.25665343235	464.33122449696
11	TCID	Mandom Indonesia Tbk.	-55.22570512821	727.87298717949	284.51961005128	432.24383107051	536.32560433974
12	TOTO	Surya Toto Indonesia Tbk.	1,243.13868531593	1,104.63312082985	1,658.80483660368	1,129.38947347384	1,265.01432168524

No Increase Firms (NI Firms)

No.	Code	Company's Name	1998(0)	1999(+1)	2000(+2)	2001(+3)	2002(+4)
1	ISAT	Indonesia Satellite Corporation Tbk.	1,575.93046837277	1,250.61612747465	1,389.78850796717	1,500.42008691453	332.67407049734
2	TFCO	Tifico Tbk	8,816.79575644410	7,876.54001006729	917.10256272257	-48.34964473118	85.43949348387
3	TLKM	Telekomunikasi Indonesia Tbk.	3,845.30585161807	499.01489877434	682.11897277409	695.69337802080	1,077.82474087469

Appendix 4
Abnormal Return

Abnormal Return 1998
Permanent Increase Firms (PI Firms)

No.	Code	-5	-4	-3	-2	-1	0	+1	+2	+3	+4
1	ANTM	-0.00475000	0.00201000	-0.02581000	0.00885000	0.00074000	0.03974000	-0.01899000	-0.01645000	-0.02333000	0.03228000
2	AALI	0.00030000	-0.01734000	-0.02400000	0.01144000	0.05567000	0.00254000	0.02347000	0.01062000	-0.01026000	-0.01215000
3	GDYR	0.01915000	-0.01215000	0.01560000	-0.00114000	-0.00324000	0.00496000	0.00201000	0.01341000	0.02926000	0.04241000
4	GGRM	0.01491000	0.01427000	-0.00986000	0.04936000	-0.00073000	-0.01411000	0.01586000	0.00759000	0.01059000	0.09616000
5	INCI	0.02840000	-0.01732000	0.10002000	-0.03115000	-0.00504000	0.01616000	0.02751000	0.01554000	0.04043000	-0.10428000
6	MERK	-0.02154000	-0.00895000	-0.02848000	0.02266000	0.00562000	0.01433000	0.00843000	-0.00914000	-0.00747000	-0.01377000
7	MRAT	0.00577000	0.03349000	-0.10190000	0.01393000	-0.02901000	0.02599000	-0.00504000	0.01616000	0.02751000	0.04584000
8	RIGS	0.00496000	-0.03132000	-0.00383000	0.02926000	0.04241000	0.00046000	0.00570000	-0.03059000	0.03349000	0.03388000
9	SMSM	-0.01435000	0.01127000	0.04423000	-0.01861000	0.00499000	-0.05242000	-0.00084000	-0.03406000	-0.02382000	-0.02154000
10	SMGR	-0.01810000	0.09461000	-0.03842000	0.01632000	0.02575000	-0.00110000	-0.07697000	-0.10884000	-0.19820000	-0.06117000
11	TCID	-0.00480000	-0.00084000	-0.03406000	-0.02382000	-0.02154000	-0.00895000	0.02848000	0.24766000	0.00562000	0.07555000
12	TOTO	-0.00914000	-0.00747000	-0.01377000	-0.02630000	-0.00504000	0.00091000	0.01062000	0.01915000	-0.01215000	-0.00713000

No Increase Firms (NI Firms)

No.	Code	-5	-4	-3	-2	-1	0	+1	+2	+3	+4
1	ISAT	0.02600000	-0.02152000	0.02561000	-0.01335000	-0.01793000	-0.00460000	0.00713000	-0.00746000	0.02546000	0.00137000
2	TFCO	0.01995000	0.11955000	0.01192000	-0.02119000	-0.09108000	-0.05716000	0.04143000	-0.06889000	-0.06066000	-0.02052000
3	TLKM	0.01985000	-0.05674000	0.06099000	-0.00084000	-0.00320000	-0.01783000	0.01417000	-0.00895000	-0.02273000	0.01695000

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Permanent Increase Firms (PI Firms)

No.	Code	-5	-4	-3	-2	-1	0	+1	+2	+3	+4
1	ANTM	0.06087000	-0.02757000	-0.00690000	-0.02243000	0.02860000	0.01257000	-0.03712000	-0.01772000	0.02164000	-0.01976000
2	AALI	0.00153000	-0.00213000	0.01693000	-0.03747000	-0.00692000	-0.02422000	-0.00250000	-0.02028000	-0.02580000	0.01723000
3	GDYR	-0.02472000	0.02320000	0.00829000	0.00547000	-0.00987000	0.01046000	-0.03825000	0.00012000	-0.04792000	0.00618000
4	GGRM	0.00610000	0.01717000	-0.01964000	0.01056000	-0.00524000	-0.03732000	-0.03188000	-0.00511000	0.01691000	-0.00464000
5	INCI	-0.04639000	-0.00714000	-0.03861000	0.06357000	-0.02517000	0.07503000	-0.00158000	0.03776000	-0.02489000	-0.01499000
6	MERK	-0.02519000	-0.01777000	0.00438000	-0.03067000	-0.03342000	-0.00362000	0.00518000	-0.01162000	0.03483000	0.00114000
7	MRAT	0.02724000	-0.01664000	0.03943000	-0.02472000	0.09463000	0.00829000	0.00547000	-0.00987000	0.01046000	
8	RIGS	-0.01976000	0.00358000	-0.01477000	-0.00158000	-0.13532000	0.00959000	-0.01499000	0.00854000	-0.00987000	-0.01488000
9	SMGR	-0.03266000	0.01329000	-0.00497000	0.00169000	-0.04608000	0.00959000	-0.01499000	-0.00245000	0.00167000	0.00640000
10	SMSM	-0.02308000	-0.04222000	-0.09677000	0.03600000	0.06883000	-0.00559000	0.11965000	0.13670000	0.01240000	-0.02899000
11	TCID	0.02724000	-0.01664000	0.00372000	0.00804000	0.12528000	0.08830000	0.01367000	0.00547000	0.07709000	0.05046000
12	TOTO	-0.03942000	-0.00566000	0.00806000	0.01409000	0.02647000	0.01314000	0.00153000	-0.01255000	0.02724000	-0.01664000

No Increase Firms (NI Firms)

No.	Code	-5	-4	-3	-2	-1	0	+1	+2	+3	+4
1	ISAT	-0.08922000	0.00440000	0.00502000	0.04397000	-0.02664000	-0.00117000	-0.04888000	0.04415000	0.00083000	0.02803000
2	TFCO	-0.07226000	0.04028000	0.00500000	0.00253000	0.03917000	0.02517000	0.01506000	0.04951000	-0.04098000	-0.03039000
3	TLKM	0.00519000	-0.12816000	0.03950000	-0.01255000	0.00285000	0.04586000	-0.00216000	0.03763000	0.02126000	-0.02076000

Appendix 5
Welcome to Minitab, press F1 for help.
Retrieving worksheet from file: D:\niena\CFO.xls

Results for: CFO.xls

Hypothesis I

Two-Sample T-Test and CI: CFOAPI, CFOBPI

Two-sample T for CFOAPI vs CFOBPI

	N	Mean	StDev	SE Mean
CFOAPI	48	1111	2100	303
CFOBPI	12	158	3624	1046

Difference = mu CFOAPI - mu CFOBPI
Estimate for difference: 953
95% lower bound for difference: -376
T-Test of difference = 0 (vs >): T-Value = 1.20 P-Value = 0.118 DF = 58
Both use Pooled StDev = 2462

Two-Sample T-Test and CI: CFOANI, CFOBNI

Two-sample T for CFOANI vs CFOBNI

	N	Mean	StDev	SE Mean
CFOANI	12	1355	2112	610
CFOBNI	3	4746	3704	2138

Difference = mu CFOANI - mu CFOBNI
Estimate for difference: -3391
95% lower bound for difference: -6164
T-Test of difference = 0 (vs >): T-Value = -2.17 P-Value = 0.975 DF = 13
Both use Pooled StDev = 2426

Appendix 6

Welcome to Minitab, press F1 for help.
Retrieving worksheet from file: D:\niena\abnormal return.xls

Results for: abnormal return.xls

Hypothesis II

Two-Sample T-Test and CI: ARAPI98, ARBPI98

Two-sample T for ARAPI98 vs ARBPI98

	N	Mean	StDev	SE Mean
ARAPI98	60	0.0017	0.0542	0.0070
ARBPI98	60	0.0010	0.0309	0.0040

Difference = mu ARAPI98 - mu ARBPI98
Estimate for difference: 0.00064
95% lower bound for difference: -0.01271
T-Test of difference = 0 (vs >): T-Value = 0.08 P-Value = 0.468 DF = 118
Both use Pooled StDev = 0.0441

Two-Sample T-Test and CI: ARANI98, ARBNI98

Two-sample T for ARANI98 vs ARBNI98

	N	Mean	StDev	SE Mean
ARANI98	15	-0.0108	0.0319	0.0082
ARBNI98	15	0.0039	0.0485	0.013

Difference = mu ARANI98 - mu ARBNI98
Estimate for difference: -0.0147
95% lower bound for difference: -0.0402
T-Test of difference = 0 (vs >): T-Value = -0.98 P-Value = 0.832 DF = 28
Both use Pooled StDev = 0.0411

Two-Sample T-Test and CI: ARAPI99, ARBPI99

Two-sample T for ARAPI99 vs ARBPI99

	N	Mean	StDev	SE Mean
ARAPI99	60	0.0047	0.0308	0.0040
ARBPI99	60	-0.0047	0.0375	0.0048

Difference = mu ARAPI99 - mu ARBPI99
Estimate for difference: 0.00939
95% lower bound for difference: -0.00101
T-Test of difference = 0 (vs >): T-Value = 1.50 P-Value = 0.068 DF = 118
Both use Pooled StDev = 0.0343

Two-Sample T-Test and CI: ARANI99, ARBNI99

Two-sample T for ARANI99 vs ARBNI99

	N	Mean	StDev	SE Mean
ARANI99	15	0.0082	0.0321	0.0083
ARBNI99	15	-0.0094	0.0506	0.013

Difference = mu ARANI99 - mu ARBNI99
Estimate for difference: 0.0176
95% lower bound for difference: -0.0087
T-Test of difference = 0 (vs >): T-Value = 1.14 P-Value = 0.133 DF = 28
Both use Pooled StDev = 0.0424