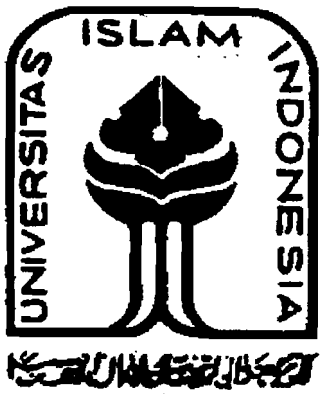
# THE ANALYSIS OF FACTORS THAT INFLUENCE THE COMPANY'S DEBT POLICY

**A THESIS**

**Presented as Partial Fulfillment of the Requirements**
**to Obtain the Bachelor Degree in Accounting Department**




**By**

**MAIYANTI**

Student Number: 98312386

DEPARTMENT OF ACCOUNTING
INTERNATIONAL PROGRAM
FACULTY OF ECONOMICS
ISLAMIC UNIVERSITY OF INDONESIA
YOGYAKARTA
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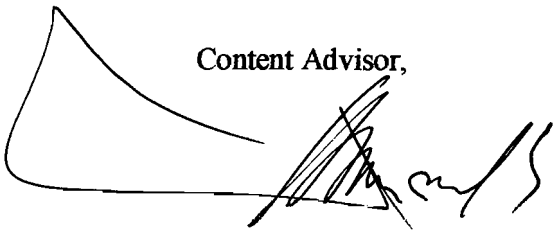
Student Number: 98312386

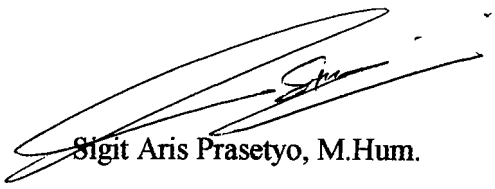
**Approved by**

Content Advisor,



Syamsul Hadi, Drs.,MS,Ak. November 02, 2004

Language Advisor:



Sigit Aris Prasetyo, M.Hum. November 02, 2004

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A BACHELOR DEGREE THESIS

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**MAIYANTI**

Student Number: 98312386

Defended before the Board of Examiners
On November , 2004
And Declared Acceptable

Board of Examiners

Examiner 1: Syamsul Hadi, Drs.,MS,Ak. .....

Examiner 2: Yunan Najamudin, Drs.,MBA .....

Yogyakarta, November , 2004
International Program
Faculty of Economic
Islamic University of Indonesia

Dean

H. Suwarsono, MA.

# PAGE OF DEDICATION

***I dedicate this thesis to:***

- *My beloved Mother and Father, I promise that I will always do the best.*
- *My brother and My sister.....De' Lutfi and De' Sari, thanks for your help and pray.*
- *Mas Yudha, million thanks for your help and support.*

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*Bismillahirrahmannirrahiim*

First of all, I would like to express my praise to Allah SWT for all the strength, ideas and blessing given to me. It is very hard work in doing and finishing this thesis, so without all blessing from Allah SWT, it is impossible for me to accomplish anything in my life. The arrangement of this thesis can be done because of many parties, without them it is very difficult to finish this thesis. Because of that, it is an obligation for me to give appreciation to them.

1. My sincere appreciation goes to Mr. Syamsul Hadi, Drs., MS, Ak., as my content advisor, for his helpful, comments, advices, and insight during my thesis writing. He makes everything easy and understandable.
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4. I also want to say big thanks to my beloved brother, Muhammad Lutfi and my sweet sister, Sari Anggraini. Thanks a lot for your helps, support, and pray. You are everything to me.

# Abstrak

Maiyanti (2004). *Analisis Faktor-faktor yang Mempengaruhi Kebijakan Hutang Perusahaan*, Yogyakarta: Fakultas Ekonomi, Universitas Islam Indonesia.

Penelitian ini bertujuan untuk menguji pengaruh dari resiko sistematik, rasio aktiva tetap, ukuran perusahaan, leverage financial terhadap kebijakan hutang perusahaan. Penelitian ini dilakukan berdasarkan penelitian Chung (1993) dan Ghosh (2000). Data penelitian pada penelitian ini didapat secara acak dengan sampel dari perusahaan manufaktur yang terdaftar di BEJ pada tahun 2000 dan 2001 sebanyak 32 data. Dengan menggunakan analisis regresi berganda, maka hasil penelitian tersebut mengindikasikan bahwa resiko sistematik dan ukuran perusahaan tidak berpengaruh secara signifikan terhadap kebijakan hutang perusahaan, sedangkan rasio aktiva tetap dan leverage finansial secara signifikan berpengaruh terhadap kebijakan hutang perusahaan. F test menunjukkan bahwa semua variabel bebas dapat menjelaskan pengaruhnya terhadap kebijakan hutang perusahaan secara signifikan sebesar 3,84665 dan R Square sebesar 0,20685.

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# CHAPTER I

# INTRODUCTION

## 1.1. Study Background

Nowadays, managers play significant role in the companies since they have duties to improve the company's value. A manager refers to anyone who is responsible for a significant corporate investment or financing decision. Managers ultimately answer to stockholders, who are the owners of the corporation, because the stockholders have a general preemptive right to anything of value that the company may wish to distribute. They also have the ultimate control of the company's affairs. They hold the equity interest or residual claim, since they receive whatever assets or earnings are left over in the business after all its debt are paid. The most stockholders can lose if their company goes bust. None of the stockholders other assets is exposed to the company's troubles. Usually, the managers trusted by stockholders are conceived as agents. Hence, they have to manage and run the company's activities. All managers are expected to work for the stockholders' prosperity by boosting up the company value. If successful investments are ones that increase a firm's value, the managers need to know how investors value a firm. Assessing the performance of the company can be seen from the stability of the share price at present and the significant increase of the share price in long-term. Managers trusted by stockholders are conceived as agent.

In the effort to manage and run the company activities, managers need fund to finance the activity of the business expansion. Publishing debt will be one of the alternatives for the company to fulfill the fund. The holders of a company's long term debts, of course, are creditors. Generally they cannot exercise control over the company and do not have a voice in management. If the company violates any of the provision of the debt contract, then these holders may be able to exert some influence on the direction of the company. Holders of long term debt do not participate in the residual earnings of the company. Depending on the nature of the debt instrument, however, there may be differences in the priority of claim among the various creditors of a company. On the other hand, debt policy is fragile to conflict between stockholders, management and creditors (bondholders). This conflict is called as agency conflict since related parties (stockholder, manager and bondholder) have similar interests that enable them to interfere in.

Sometimes, stockholders may cause conflicts that occur between them and the managers in financing the activities since stockholders care only systematic risk of the company share. This happens because they have invested better-diversified portfolio. On the contrary, management cares company's risk as a whole, because it is related with the reputation of the company. As a result, a serious and comprehensive solution needs to be made.

Conflicts in debt policy between management and bondholder emerge when management takes the project that turns out to have bigger risk than estimated by creditors. In this case, creditors do not want to be harmed if their funds invested in the projects that have higher risk which can lead company to

bankruptcy. The company bankruptcy itself, in the end, will influence the company value because of the decrease of market assess of debt or obligation. On the contrary, if the high project risk gives good result, compensation accepted by creditor (in the form of interest rate) does not increase. It indicates that the debt can cause the transferring of wealth from bondholders to shareholders that will be avoided by bondholders.

In order to bargain more effectively for outside funds, the management of a company should be interested in all aspects of financial analysis that outside suppliers of capital use in evaluating the company. Management also employs financial analysis for purposes of internal control. Thus, the type of financial analysis undertaken varies according to the specific interests of the analyst. Financial statement analysis is part of a larger information processing system on which informed decision can be based.

According to Brigham (1996), company's debt policy is related to the theory of financial structure. Theory of financial structure instructs to balance between debt and company's asset by using base analysis about how big of the asset is defrayed with the debt. Meanwhile, Ferry and Jones (1979) conducted an empirical research about the factors that can determine the wisdom of company's debt by using different types of industry. This research indicates that the industrial classification does not have strong influence on wisdom of company's debt.

On the other hand, Chung (1993) also did an empirical study about the factors underlying that will determine the company's debt policy. The result of the study indicates that the company owning high fixed asset ratio tends to use the

high debt too. While the companies that face high risk tend to use less debt, whether for long-term liabilities or short-term liabilities.

Ghosh et.al. (2000) investigated Chung's study (1993) by adding some variables that can influence company debt policy. Ghosh et.al. (2000) used some variables in his research, that were *Asset Size, Growth of Asset, fixed Asset Ratio, Net Profit Margin, Research and Development Expenditure, Advertising Expenditure, Selling Expense and Coefficient of Variation of Cash Flow.* Meanwhile proxy that be used for company's debt policy is leverage ratio. Result from study of Ghosh et.al. (2000) indicates that *Growth of Asset, Fixed Asset ratio and research and Development Expenditure* are factors that significantly influencing capital structure. Result of Ghosh et.al. (2000) is consistent with Chung's study (1993) in which asset growth has negative significant relation towards extend of company's debt.

The issue of company's debt policy in this research becomes main topic to analysis some variables that convinced influential factors for manufacture companies. This research is trying to re-discuss the research that is already done by Chung (1993) and Ghosh et.al. (2000) by combining some variables known significantly influencing company debt policy at manufacture companies that listed in Jakarta Stock Exchange. Thus, this thesis is entitled: ***"THE ANALYSIS OF FACTORS THAT INFLUENCE THE COMPANY'S DEBT POLICY"*** which focuses several factors in financial statement of manufacture companies that viewed important to be analyzed in this study.

## 1.2. Problem Formulation

Based on the condition that is discussed in the study background, there are several problems which are formulated in these following statements:

1. Does Systematic Risk (BETA) give significant influence toward company's debt policy?
2. Does Fixed Asset Ratio (FAR) give significant influence toward company's debt policy?
3. Does Firm Size (ASSET) give significant influence toward company's debt policy?
4. Does Financial Leverage (LEV) give significant influence toward company's debt policy?

## 1.3. Research Objectives

Based on the problem formulation, there are several research objectives in this study which are described as follows:

1. To get empirical evidences about the systematic risk influence, financial leverage, fixed asset ratio, and size of the company which are related to company's debt policy.
2. To study the previous analysis conducted by previous researchers in order to know whether the research result is still consistent at manufacturing business in Jakarta Stock Exchange.

## 1.4. Research Contribution

This research is expected to provide several contributions to these following parties:

1 Investors can use the result of this research as one of consideration to do investments, especially in choosing a particular company after knowing the management behavior in the company.

2. Companies can gain contribution from the research result to assist them in the decision making process related to financial problems and factors which influence their financial.

3. Further researcher can get additional knowledge, references and contribution to continue this study.

## 1.5. Research Method

### 1.5.1. Research Data

Population used in this research is all manufacturing companies that are listed in Jakarta Stock Exchange. The sample is taken by using Purposive Sampling Method, a method that takes samples based on certain criteria. Those certain criteria used in this research are:

1. Manufacturing companies listed in Jakarta Stock Exchange that reports comprehensive financial statements in 2000 and 2001.
2. Companies which have only common stocks. To obtain valid data, preferred stocks are not used in this study.

1.5.2. Data Analysis

The analysis steps that will be conducted in this research are:

1. Hypothesis Examination

The research model used is multiple regression with 4 (four) independent variables.

The model can be formulated as follows:

$$\mathbf{LR} = \alpha + \beta_1 \mathbf{BETA} + \beta_2 \mathbf{FAR} + \beta_3 \mathbf{ASSET} + \beta_4 \mathbf{LEV} + e$$

In which:

LR = Company debt policy

$\alpha$ = Constant

$\beta_1 - \beta_4$ = Regression coefficient from each independent variables

$\beta_1$ BETA = Independent variable systematic risk

$\beta_2$ FAR = Independent variable fixed asset ratio

$\beta_3$ ASSET = Independent variable firm size

$\beta_4$ LEV = Independent variable financial leverage

e = Error term

a. F test

The F test is conducted to testify the significance of simultaneous influence from all of independent variables.

b. T test

The T test is conducted to testify the significance of individual influence from each independent variable on dependent variable.

## 1.6. Terms Organization

The organization of this thesis is explained briefly as follow:

Chapter I Contains about introduction of basic explanation including study background, problem formulation, research objectives, research contribution, research method and terms organization.

Chapter II This chapter discusses company's debt, the previous researches, including hypothesis development of each variable.

Chapter III This chapter discusses data source, data collecting method, research variables, operational definition and variable measurements and statistic analysis that are used to prove the hypotheses.

Chapter IV This chapter explains findings of data analysis process to prove the hypotheses.

Chapter V This chapter will highlight summary, conclusion and recommendation of the research results.

# CHAPTER II

# REVIEW OF RELATED LITERATURE

## 2.1. Company's Debt

The analytical process includes an evaluation of the amount and proportion of debt in a company's capital structure as well as the ability to service debt. Debt implies risk because it involves the satisfaction of fixed financial obligation. The disadvantage of debt financing is that the fixed commitments must be met in order that the company can continue its business operations. The major advantage of debt financing is that, when used successfully, stockholder returns are magnified through financing leverage. There is a dilemma in capital structure decision. Debt may be better than equity in some cases, or even worse than others. There are several important things, according to Brealy and Myers (1991: 118-119), that must be well- paid attention to run business activities, which are described as follows:

1. *Taxes*

   If the company is in taxpaying position, an increase in leverage reduces the income tax paid by the company and increases the tax paid by investors. If the company has large accumulated losses, an increase in leverage cannot reduce corporate taxes but it increases personal taxes.

2. *Risk*

   In all condition whether the company is run well or not, financial distress is still costly. The distress is more likely for firms with high business risk. That is why such firms generally issue less debt.

3. *Asset Type*

   The costs of distress are likely to be greater for firms whose value depends on growth opportunities or intangible assets. These firms are more likely to ignore profitable investments opportunity and if default occurs, their asset may destroy rapidly. Hence, firms whose assets are weighted toward intangible assets should less borrow significantly, on average, than firms holding assets you can kick.

4. *Financial Slack*

   In a long run, a company's value rests more on its capital investment and operating decisions than on financing. Thus, financing is quickly accessible when good investment opportunities arise.

According to Brealy and Myers (1991: 118-119), there are two common ratios related to debt, which are:

1. *Debt to Equity Ratio*

   Financial ratio is usually measured by the ratio of long-term debt to equity.

$$\text{Debt-equity ratio} = \frac{\text{Long term debt}}{\text{Equity}}$$

Supposed, it is known that the company A has long term debt Rp 450 million and equity Rp 700 million. The value of Debt to Equity Ratio, fitted with the formula, is described as follows:

$$\text{Debt-Equity Ratio} = \frac{450}{700} = 0.64$$

It means, in every Rp 1 of equity in financing the operational activities of the company, there is Rp 0.64 of long term debt participating.

2. *Times Interest Earned*

Another measure of financial leverage is the extent to which interest is covered by earnings before interest and taxes plus depreciation. The formula below explains:

$$\text{Times interest earned} = \frac{\text{EBIT} + \text{depreciation}}{\text{Interest}}$$

Supposed that company A has EBIT Rp 300 million and depreciation Rp 15 million. On the other hand, it has obligation to pay the interest caused by the borrowing made in the amount of Rp 25 million. The following formula explains:

$$\text{Times interest earned} = \frac{300 + 15}{25} = 15.75 \text{ times}$$

It means the company has the ability 15.75 times to pay the interest of Rp 25 million.

## 2.2. The Previous Researches

The source of fund can be obtained from internal and external equity. Internal equity comes from retained earning and external equity comes from the shareholders as well as debt. Brigham et. al (1999) pointed out that the use of debt bearing interest has some advantages and disadvantages. The advantages of using debt are:

a. Interest expense reduces tax burden
b. Bondholders only have relativcly fixed interest wherein the shareholders of the company can gain the excess of income.
c. The shareholders of the company can control the company by using fewer funds since bondholders have minority interest which is no significant influence.

The use of debt also has some disadvantages, which are:

a. The higher debt increases the technical insolvency risk.
b. If the business of the company does not go well, operational income gets lower and will be insufficient to cover interest expense and thus, the decrease of company's asset happens. Under extreme circumstance, the loss can endanger the performance of the company since it can lead to bankruptcy.

Many financial experts have conducted researches about factors that influence the debt policy. Friend and Lang (1988), for example, conducted

empirical test by seeing the management interest shown by managerial ownership on equity structure as pointed by debt ratio. This study came into conclusion that managerial equity has strong relationship on equity structure.

Wahidahwati (2000) also conducted a research on 61 companies listed in Jakarta Stock Exchange in 1995 and 1996. The research was about the influence of equity structure on the company's debt policy by using controlling variables, which were dividend payout ratio, firm size, and share risk. She discovered that managerial ownership of the companies listed in Jakarta Stock Exchange did not have significant influence as well as dividend payout ratio. On the other hand, firm size variable and share risk influenced company's debt policy significantly.

Chung conducted a study by using sample of 1449 companies. The data was gathered from *Standard and Poor's Compustad Annual Industry* and PDE file in the year between 1980 and 1984. Chung took two different time periods in order to testify the balancing assumptions resulted in the periods of 1975 – 1979 and 1980 – 1984. The result of the two different periods concluded that there was no difference. Chung (1993) applied variables such as Systematic Risk, Fixed Asset Ratio and Size. He also applied dependent variables, which were:

a. Long-term debt ratio
b. Short-term ratio
c. Total ratio of debt and company's asset.

He used multiple linear regression model. Through his study, Fixed Asset Ratio and Size variable were discovered to have positive relation to financial leverage. On the other hand, the risk was found to have negative relation

to financial leverage. The result of the study showed that companies which had high fixed asset ratio tended to use higher debt. Meanwhile, companies facing high risk tended to use less debt, neither was it short-term debt nor long-term debt.

Ghosh et.al. (2000) preceded the study of Chung (1993) by adding variables that could influence the company's debt policy. In his research, Ghosh used variables, which were:

a. Asset Size
b. Growth of Asset
c. Fixed Asset Ratio
d. Research and Development Expenditure
e. Advertising Expenditure
f. Selling Expense, and
g. Coefficient of Variation of Cash Flow.

The proxy used for the company's debt policy was long-term debt ratio divided by total asset (leverage ratio). Ghosh used sample of companies in manufacturing industries in United States. The data was obtained from Compustat and Fortune 500. The result of his study pointed out that Growth of Asset, Fixed Asset Ratio and Research and Development Expenditure were factors that could influence equity structure significantly. It means the finding of Ghosh et.al. (2000) is consistent with the study conducted by Chung (1993).

## 2.3. Hypothesis Development

### 2.3.1. Systematic Risk

In valuing investment, the relation between risk and the extent of income must be put on top priority. In the theory of portfolio, risk is claimed as how far the result obtained will be discrepancy on the expected result. On the other hand, the extent of income means expected return. Risk and expected return have positive relation. The higher the risk of security is, the higher the expected return will be gained. On the contrary, the lower the risk of security is, the lower the expected return.

In general, combining some singular securities into the form of portfolio can reduce risk. The risk of portfolio is not weighted average from all risks of singular securities and the size may be smaller or bigger compared with risk of each weighted average of singular securities. Individually, the risk of valuable securities will be higher than the risk of portfolio in general.

Valuing investment will be closely related to risk element. In brief, there are three risks that included in investment:

1. Systematic Risk

   This risk occurs due to the factors that influence all operating companies and applies to all shares in stock market. Those factors are:

   a. Economic conditions.

   b. Government policy

c. Outer company's events, such as inflation, recession, etc. The investors cannot avoid this risk even though they do diversification.

Systematic risk was measured by using BETA. According to Hartono (2000), BETA is measure of volatility return of a security on market return. Volatility itself is fluctuation from returns of a security or portfolio. If the fluctuation of returns of a security or portfolio systematically follows fluctuation from market returns, then BETA is 1. This shows that systematic risk of a security risk of a security or portfolio is equal to market risk

2. Unsystematic Risk

This risk mainly happens because of company's characteristics. It can also happen when financial institutions launching securities are different with one to another, such as:

a. Ability of management.
b. Investment policy.
c. Working environment.

Those differences make each security has different sensitivity to market change. The examples of the cause of the risk are several problems that happen inside the company, such as strike, law suits that later on will influence fluctuation of share price of the company. Unsystematic risk is a

risk that is tightly bounded with certain share and can be avoided or made smaller through diversification.

3. Total Risk

Total risk is the sum of systematic and unsystematic risk.

Moh'd Perry and Rimbey (1995) stated that companies facing high risk would find troubles in seeking for external fund. This is consistent with the Chung's (1993) finding that the higher the risks faced by the companies then the companies tend to have less debt. From the description explained above, hence a hypothesis can be drawn, which is:

**$H_1$: Systematic risk has significant influence on company's debt policy.**

### 2.3.2. Fixed Asset Ratio

Fixed asset (ex: property, plant and equipment) is also called tangible, long-lived, and capital assets. Those assets are not used up in the ebb and flow of annual business operations. These assets produce economic benefits for more than one year, and they are considered tangible because they have a physical substance. This variable is related to amount of asset that can be collateral. Companies that are more flexible tend to use bigger debt when they are compared with the companies that have inflexible asset structure (Wahidahwati, 2000). The investors will always give loan only when there is collateral. Myers and Majluf (1984) mentioned that the asset composition of the company is influential on the source of fund.

Brigham and Gapensky (1999) concluded that generally, the companies having available collaterals would be a lot easier to get loan than the companies that have no available collaterals. The results of Moh'd et.al. (1995), Ghosh et.al. (2000) and Chung (1993) concluded that fixed asset ratio had significant positive influence on the extent level of the company's debt policy.

A hypothesis can then be drawn from the description explained above, which is:

**$H_2$: Fixed asset ratio has significant influence on the company's debt policy**.

### 2.3.3. Firm Size

One of the measurements on the company's performance is total asset. The size of the company depends on the total asset owned. Managers also care of the high value of asset as the guideline in looking deeper in the company's intrinsic value. Therefore, the companies can use total asset to fund profitable investments. The impact is there will be prospects on earning growth and good dividend price in the future.

Big companies can have access on stock market. Because of it, those companies can be more flexible and able to get fund in order to finance their activities. It indicates that the firm size played role in explaining the debt policy in the company. They found that big companies tended to be more mature and had easier access in the stock market, whereas it would reduce their dependent on internal financing, so that the company would give agency effect from the influence of firm size, hence the percentage of stock owned by insiders and the

amount of common stockholders would be done by regression with natural log from total asset. Proxy that will be used to measure firm size in this research is log total asset.

The result of study conducted by Feri and Jones (1979) showed that the measure of the company had a significant positive influence on company's debt. Again, this was consistent with the research of Chung's (1993), Moh'd et.al. (1998) and Ghosh (2000).

The description explained above results a hypothesis, which is:

**H3: Size of the company has significant on company's debt policy.**

### 2.3.4. Financial Leverage

Some people state that financial leverage has no effect on shareholders' wealth. On the other hand, some people mention that the rate of return they expect to receive on their shares increases as the firm's debt-equity ratio increases. How can stockholders be indifferent to increase leverage when it increases expected return? The answer is that any increase in expected return is exactly offset by an increase in risk and therefore in shareholders' required rate of return.

Each of the three debt ratios measures the extent of the firm's financing with debt. The amount and proportion of debt in a company's capital structure is extremely important to the financial analyst because of the trade off between risk and return. The use of debt involves risk because debt carries a fixed commitment in the form of interest charges and principal repayment. Failure to satisfy the fixed charges associated with debt will ultimately result in bankruptcy. When debt is

used successfully –if operating earnings are more than sufficient to cover the fixed charges associated with debt- the returns to stockholders are magnified through financial leverage.

Financial leverage describes the extent of the debt fund source in the company's equity structure. The use of high debt reimburses fixed expense in the form of interest expense, and thus, increases risks, consequently. The more debt burden the company must carry, the higher the financial leverage level, the higher the inherent financial risk on that company. To point out, the high risk influences the company's prospect on the share price of that company.

The high extent of liabilities made the management in trouble in running the business forwards. The increasing or decreasing companies' prospect influences the fluctuation of share price. The higher the liabilities of the company, the less influence will be on company's debt policy.

The description explained above raises a hypothesis, which is:

**$H_4$: Financial leverage has significant influence on company's debt policy.**

# CHAPTER III

# RESEARCH METHOD

## 3.1. Data Source

This research applies secondary data that is gathered from Jakarta Stock Exchange, Business News, Stock Market Journal, Indonesia Capital Market Directory (ICMD) and other sources. Population that is taken as sample in this research has to met some criteria to obtain its validity. The amount of data that is obtained to support this research is 64 data from 32 manufacture companies. The data applied in this research is taken by selecting data based on criteria that that described below:

1. All manufacturing companies listed in Jakarta Stock Exchange that report published comprehensive financial statements in 2000 to 2001 that are 60 companies.
2. Data that is already obtained then reselected based on active trading in Jakarta Stock Exchange in 2000 to 2001 that are 33 companies.
3. Several companies which have only common stocks. To obtain valid data, preferred stocks are not used in this study.

Based on criteria established above, hence there are 32 manufacture companies which become valid data and stated as sample in this research.

### 3.2. Data Collection Method

The data is secondary data from Jakarta Stock Exchange, Business News, Stock Market Journal, and Indonesian Capital Market Directory.

The data are gathered using documentation method or direct quotation from Jakarta Stock Exchange, Internet, and other sources.

### 3.3. Research Variables

To testify the hypothesis, this research will be conducted on the following variables:

1. Dependent variable is Long Term Debt Ratio.
2. Independent variables are systematic risk, financial leverage, fixed asset ratio and firm size.

### 3.4. Operational Definition and Variable Measurement

The followings are operational definition from the variables that will be analyzed:

1. Company's Debt Policy

   Company's debt policy will be reflected with financial leverage that is measured with long-term debt ratio (LR), by dividing long-term debt with total asset.

   This ratio will be calculated by using formula:

$$\text{Long Term Debt Ratio (LR)} = \frac{\text{Total Long Term Liability}}{\text{Total Asset}}$$

Ex: PT. Ades Alfindo, Tbk has long-term debt of Rp 16.666 million and total asset of Rp 219.761 million in 2000.

The debt policy can be calculated as follows:

$$LR = \frac{Rp.16.666}{219.761} = 0{,}076$$

The same calculation can also be applied as well in other companies as stated in the appendic.

2. Systematic Risk

Systematic risk will be measured by BETA. BETA is a measure of volatility (a fluctuation from all returns of a security or portfolio) on market return.

Statistically, it can be formulated as follows:

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

In which:

X = The extent of market profit (Rmt) per day during a year.

Y = The extent of share profit (Rit) per day during a year.

Ex: PT Ades Alfindo, Tbk has calculated returns of market and daily shares for a period of observation in the year of 2000. The result is described as follows:

$\Sigma X$ = -0,31342

$\Sigma Y$ = 1,33053

$\Sigma X^2$ = 0,07766

$\Sigma XY$ = 0,03942

n = 239

Thus, the BETA can be calculated as follows:

$$\beta = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - \left(\sum X\right)^2} = \frac{239(0{,}03942) - (-0{,}313423)(1{,}33053)}{239(0{,}077666) - (-0{,}313423)^2} = 0{,}53284$$

Then, the same calculation can also be applied as well in other companies as stated in the appendic.

3. Firm Size

Firm size shows the size of the asset owned by the company. This company's measurement is obtained by calculating total asset existing in each company.

Ex: PT. Ades Alfindo, Tbk has total assets Rp.219.761 million in 2000. Hence the firm size is calculated as follows:

Firm size (ASSET) = log (219.761) = 5,342

Then, the same calculation can also be applied as well in other companies as stated in the appendic.

4. Fixed Asset Ratio

Fixed asset ratio can be calculated by using comparison between fixed asset and total asset.

This ratio can be calculated by using formula:

$$\text{FAR} = \frac{\text{Fixed Asset}}{\text{Total Asset}}$$

Ex: PT. Ades Alfindo Tbk has fixed asset Rp.191.180 million and total asset Rp.219.761 million in 2000.

Hence, fixed asset ratio (FAR) can be calculated this way:

$$\text{FAR} = \frac{\text{Rp.191.180}}{219.761} = 0{,}870$$

Then, the same calculation can also be applied as well in other companies as stated in the appendic.

5. Financial Leverage

Financial Leverage shows the proportion of loan used to finance the investments. It is a percentage of comparison between total liability and total asset.

The ratio is calculated as follows:

$$\text{Financial Leverage (LEV)} = \frac{\text{Total Liability}}{\text{Total Asset}}$$

Ex: A company named PT. Ades Alfindo, Tbk in 2000 has total liabilities Rp.129,276 million and total asset Rp.219.761 million in 2000.

Thus, the financial leverage (LEV) can be calculated as follows

$$\text{LEV} = \frac{\text{Rp.129,276}}{\text{Rp.219.761}} = 0{,}588$$

Then, the same calculation can also be applied as well in other companies as stated in the appendic.

### 3.5. Statistic Analysis

In this research, the result of multiple regression with dependent variable is company's debt policy, whereas independent variables covering systematic risk, fixed asset ratio, firm size, and financial leverage are used to testify hypothesis. The systematic model is used to explain the influence from all independent variables on dependent variable. This multiple regression model is formulated as follows:

$$\mathbf{LR = \alpha + \beta_1 BETA + \beta_2 FAR + \beta_3 ASSET + \beta_4 LEV + e}$$

whereas:

| | |
|---|---|
| LR | = Company's debt policy |
| $\alpha$ | = Constant |
| $\beta_1 - \beta_4$ | = Regression coefficient from each independent variable |
| BETA | = Independent variable of systematic risk |
| FAR | = Independent variable of fixed asset ratio |
| ASSET | = Independent variable of firm size |
| LEV | = Independent variable of financial leverage |
| e | = Error term |

The influence percentage from all independent variables covered in regression model on dependent variable can be seen through the value of double determination coefficient ($R^2$) in which the amount is 0 – 1. The bigger the value of $R^2$ is, the bigger the influence percentage of independent variables will be on dependent variable. The smaller the value of $R^2$ is, the smaller the influence percentage of independent variables will be on dependent variable.

### 3.5.1. F Test

F test is a test that is conducted simultaneously in order to find out whether all independent variables used in regression model can simultaneously affect the dependent variable. The formula is used by comparing the value of F with the F table on the degree of freedom and certain level of trust. Meanwhile, the significance level is determined 5% or with the degree of freedom 95%.

To simplify the calculation, the research is conducted by using SPSS program. In SPSS, the value of F is obtained from the Regression Mean Square divided by Residual Mean Square.

### 3.5.2. T Test

T test is a test that is conducted individually in the purpose of finding out whether a certain independent variable can influence the dependent variable. To simplify the calculation, this research is conducted by using SPSS program.

### 3.6. Hypothesis Test

To testify the hypothesis, the significant level that will be used is 5%. Meanwhile, another level, 95% will be considered as degree of freedom because there are some factors that cannot be taken into consideration by researcher.

# CHAPTER IV

# RESEARCH FINDINGS, DISCUSSION AND IMPLICATIONS

This chapter will analyze the data that has been collected in this study. Data is collected in the form of financial statement of manufacturing companies that was listed in BEJ in 2000 to 2001. The result of the data processing is in the form of the information to get the empirical evidence on the systematic risk (BETA), financial leverage (LEV), fixed asset ratio (FAR) and firm size (ASSET) influences toward company's debt policy (LR).

Using the purposed model, this research is aimed to prove the examination of hypothesis about the problem and model formulation as stated in previous chapter. Hence, the analysis technique used in this research is to cover the descriptive analysis and statistical analysis. The statistical analysis represents the analysis that is related to calculation of research data in the form of number analyzed constructively computer through SPSS program. Meanwhile, analysis descriptive represents the analysis which explains symptom happens in research variable to support result of statistical analysis.

## 4.1. Descriptive Analysis

The following table 4.1 explains a descriptive study of the data. It explains the data description from all variables that will be formulated into a research model.

**Table 4.1**
**Result of Calculation of Mean and Deviation Standard**
**From Research Variables**

**Descriptive Statistics**

| Variable | N | Mean | Min | Max | St Dev |
|---|---|---|---|---|---|
| y_LR | 64 | 0.196 | 0.001 | 1.110 | 0.224 |
| x1_BETA | 64 | 0.547 | -0.571 | 1.611 | 0.462 |
| x2_FAR | 64 | 0.390 | 0.018 | 0.870 | 0.186 |
| x3_Log_Asset | 64 | 5.841 | 5.056 | 7.129 | 0.519 |
| x4_LEV | 64 | 0.754 | 0.146 | 4.049 | 0.762 |

Source: appendices, 2004

From tables 4.1 above, it can be explained that *Long Term Debt Ratio* (LR), during research period, has the minimum value which is equal to 0,001 owned by Mustika Ratu company in 2001. This number indicates that the long term debt of this company is equal to 0,1 % from total its asset. This minimum value (0,1%) means that Mustika Ratu has almost no long term liabilities. This condition will have a good impact on companies going concern, because no one will ask to pay the long term debt in the future. Its maximum value is 1,110 owned by Davomas Abadi company in 2000 which means that the company's long term liabilities is equal to 111% from its total asset. It indicates that this company has negative equity. This maximum value (111%) highlights that Davomas Abadi company has liabilities that is bigger than company's property. This condition can cause many doubtful for investors because this company has no ability in paying the long term liabilities. However, if liabilities can be used well, hence it can raise production volume, and then company's profit can be predicted that it will progressively raise. Average value of LR from 32 samples of company in this

research is equal to 0,196 in which this value shows that mean of debt company is equal to 19,6% from its assets value. This average value (19,6%) means that manufacture companies listed in BEJ already have sufficient long term liabilities, and agreeable with ability level in paying its company's liabilities. While its deviation standard is equal to 0,224 means that size of data spreading is equal to 0,224 above and below the average. This value is over to average value that is 0,196, hence it means that spreading data of Long Term Debt Ratio (LR) is not homogeneous.

Descriptive analysis to Systematic Risk variable (BETA) shows that the minimum value of BETA is equal to -0,571 owned by Sekar Laut company in 2001. It means that stock return on this company is influenced by market return which is equal to -57,1. It also indicates that return variance obtained by emiten is contrary with gain return variance. This minimum value (–57,1%) means that if market profit rises equal to 1%, hence profit of Sekar Laut company exactly occurs the return declining is equal to 57,1%. This result has bad impact, because company's growth is contrary with stock market growth at BEJ. Maximum value of BETA is equal to 1,611 owned by HM Sampoerna company in 2000 in which its stock return is influenced by market return that is equal to 161,1%. It indicates that this company has return value that has similar direct with market return. The maximum value (161,1%) means that each market return rising is equal to 100%, hence company's profit will rise equal to 161,1%. Although the predicted profit will be great when other parties invest at this company, but this condition has very high risk, because it has systematic risk value above 1. Average value of BETA is

equal to 0,547 which means that 32 samples of company in this research, have mean of systematic risk which is equal to 0,547. It means that mean of sample company has enough low risk value because coefficient BETA is below 1. This average value (0,547) can be explained that each the raising of market profit is equal to 1%, hence the average stock will result profit equals to 0,547%. While deviation standard of BETA is equal to 0,462, which means that the size of spreading of Systematic Risk variable (BETA) is equal to 0,462 above and below the average. This value is not over the average value that is 0,547, hence it means that spreading data of Systematic Risk (BETA) is homogeneous.

Fixed Asset Ratio (FAR) variable has minimum value which is equal to 0,018 owned by Suba Indah company in 2000. This company has the fixed asset that is equal to 1,8% from its total asset. It means that most of the company's assets are in the form of current asset. This minimum value (1,8 %) means that almost all Suba Indah company's properties are in the form of current assets. This condition has good impact for this company because almost all properties are used in production process. Maximum value of FAR is equal to 0,870 owned by Ades Alfindo company in 2000 in which that company has the biggest asset value which is equal to 87% from its total assets. This indicates that most of company's asset in the form of fixed asset. This maximum value (87%) can be explained that Ades Alfindo company is not fully using the whole assets to run its production process. Average value of FAR from 32 samples company in this research is equal to 39%. It means that from most of companies have bigger current assets than fixed assets. This value is included in sufficient category in which most of

company's wealth like cash, receivable, deposit, inventory and down payment, and the rest is fixed assets. While deviation standard of FAR is equal to 0,186 which means that during research period, size of spreading of Fixed Asset Ratio (FAR) is equal to 0,186 above and below the average. This value is still below the average of FAR that is equal to 0,390, so that spreading data of FAR is homogenous.

The minimum value of Firm Size is equal to 5,056 in 2001 at Asia Intiselera company in which logarithm value of company's wealth is equal to 5,056. This minimum value (5,056) is equivalent with Rp.113.816 million and included in small firm size because the minimum value of this company is still below number 1 trillion. Maximum value of this variable from 32 sample companies is equal to 7,129 owned by Gudang Garam company in 2001. This maximum value (7,129) is equivalent with Rp.13.448.124 million and included in big firm size because wealth owned by Gudang Garam company is above Rp.13 trillion. The average value of Firm Size (ASSET) is equal to 5,841 which means that during research period, these 32 sample companies have logarithm value mean of Asset which is equal to 5,841. This average value (5,841) is equivalent with Rp.693.425 million, and included in small firm size because its total firm asset average is below value 1 trillion rupiahs. While deviation standard of Firm Size (ASSET) is equal to 0,519 which means that during this research period, size of spreading from variable of Firm Size is equal to 0,519 above and below the average. This value is lower than mean of firm size that is 5,841, so that it can be stated that spreading data of ASSET is homogenous.

In variable of Financial Leverage (LEV) during research period has the minimum value that is equal to 0,146 owned by Sari Husada company in 2001. This company has total loan value which is equal to 14,6 % from its total asset. It means that company just uses lower loan in financing its investment. The maximum value of LEV is equal to 4,049 owned by Sekar Laut company in 2001 in which the total loan of this company is equal to 404,9 % from its liabilities. This case indicates that this company has solvability problem in which company's liabilities are only guaranteed by less assets (approximately one fourth of its liabilities). The average value of LEV is equal to 0,754 which means that during research period 32 sample companies have mean of loan which is equal to 75,4% from its total asset. This fact shows that most of companies have loans in normal border. While deviation standard of LEV is equal to 0,762 which means size of spreading from variable of Financial Leverage (LEV) is equal to 0,762 above and below the average. This value is higher than average value of LEV that is equal to 0,754, so that it can be stated that spreading data of LEV is not homogenous.

### 4.2. Inferential Analysis

As stated in previous chapter, the examination of hypothesis is aimed to prove the influence of systematic risk, financial leverage, fixed asset ratio and firm size to company's debt policy. In examining the hypothesis, multiple regression analysis is used to figure out the regression calculation from several data that have already provided. Ms-Excel program is also applied to support this research.

The processing result of multiple regression analysis towards the factors that influence company's debt policy to manufacture companies in Jakarta Stock Exchange is explained in table 4.2 as follows:

**Table 4.2**
**Result of Regression Factors Influence Independent Variable to Debt Policy**

| Independent Variable | Regression Coefficient | t-Stat | P-value |
|---|---|---|---|
| Constant | -0,62359 | -1,60804 | 0,11317 |
| BETA | 0,10275 | 1,40846 | 0,16424 |
| FAR | 0,32344 | 2,22929 | 0,02962 |
| Log_ Asset | 0,09989 | 1,51320 | 0,13557 |
| LEV | 0,07178 | 2,01693 | 0,04826 |
| F count | 3,7565 | | |
| Sig F (Probability) | 0,00763 | | |
| F table | 2,5279 | | |
| Multiple R | 0,45480 | | |
| R Square | 0,20685 | | |

Source: appendices, 2004

As stated in previous chapter, that this research applies multiple regression equation which is formulated as follows:

$$\mathbf{LR = \alpha + \beta_1 BETA + \beta_2 FAR + \beta_3 ASSET + \beta_4 LEV + e}$$

### 4.2.1. Result of Simultaneous Regression Test

Table 4.3 represents the result from test F by using program of MS-Excel, that is:

**Table 4.3**
**Result of ANOVA Test**

| | *df* | *SS* | *MS* | *F* | *Significance F* |
|---|---|---|---|---|---|
| Regression | 4 | 0.65243 | 0.16311 | 3.84665 | 0.00763 |
| Residual | 59 | 2.50173 | 0.04240 | | |
| Total | 63 | 3.15416 | | | |

Source: Appendices, 2004

Based on the table 4.3 above, it can be stated that F-stat is equal to 3,84665, with significant level 0,00763. This result indicates that probability value is smaller than established significance level, which is 0,05. Because of Probability value < significance level (0,00763 < 0,05), hence it can be concluded that systematic risk (BETA), fixed asset ratio (FAR), firm size (ASSET) and financial leverage (LEV) have significant influence simultaneously toward the company's debt policy.

Thus, to show how big of long term debt policy is, the four independent variables in table 4.4 below are provided:

**Table 4.4**
**Value of Determination Coefficient, Correlation Coefficient, and Error Standard of Estimate from Result of Regression Analysis**

| ***Regression Statistics*** | |
|---|---|
| Multiple R | 0,45480 |
| R Square | 0,20685 |
| Adjusted R Square | 0,15307 |
| Standard Error | 0,20592 |
| Observations | 64 |

Source: appendices, 2004

Based on table 4.4 above, multiple correlation coefficient (Multiple R) is equal to 0,45480. This value does not tend to numeral 1, so that it can be explained that the relation among independent variables such as systematic risk (BETA), fixed asset ratio (FAR), firm size (ASSET), and financial leverage (LEV) towards company's debt policy is weak which is equal to 45,48%. While the value of determination coefficient ($R^2$) is equal to 0,20685. With the value of determination coefficient which is equal to 0,20685, hence it can be interpreted that 20,685% of company's debt policy is can be explained by four independent variable that consist of the systematic risk (BETA), fixed asset ratio (FAR), ratio of firm size (ASSET) and financial leverage (LEV). The remainder value is equal to 79,315%. This remainder is influenced by other variables which are not included in this research model.

Through the table 4.4, adjusted R Square is equal to 0,15307. This value means that the standard value of the influence of four independent variables to its debt policy is equal to 15,307%.

In the lower column of table 4.4, it can be seen the value of Standard of Error of the Estimate (Standard of Error estimating) is equal to 0,20592. This value is smaller than deviation standard at debt policy that is equal to 0,224 (seen at table 4.1). This condition can explain that regression model is better in acting as predictor of debt policy than mean of debt policy itself, because it has smaller mistake level.

debt policy (LR). Based on table 4.2, the probability value (P-value) of financial leverage is equal to 0,04826. This result indicates that probability value is smaller than established significance level, that is 0,05. Thereby, probability value < significance level (0,04826 < 0,05), hence it can concluded that Financial Leverage (LEV) has significant influence individually toward the company debt policy. Then, the hypothesis that stated financial leverage has significant influence toward company's debt policy is accepted **($H_4$ is accepted)**.

Financial leverage (LEV) has regression coefficient that is equal to 0,07178. It means that Long Term Debt Ratio (LR) will rise equal to 0,07178 unit if LEV rises equal to 1 unit, with assumption that another variables revolve in constant condition.

Considering that coefficient of LEV has positive value, hence it means that there is an unidirectional relation between financial leverage and company's debt policy. Financial leverage that rises progressively will increase the company's debt policy. And if financial leverage that decrease progressively, hence the company's debt policy will also decrease.

Based on probability value, hence P-value obtained is equal to 0,04826 (appendic). This result will indicate that the positive relation obtained between financial leverage (LEV) and the company's debt policy is significant. This is caused by financial leverage which represents the proportion of the use of loans spent in investment. So, if its financial leverage (LEV) rises, hence total loan of company will increase if its liabilities are managed well. This condition of course, will increase the value of company progressively in future.

# CHAPTER V

# CONCLUSIONS AND RECOMMENDATIONS

## 5.1. Conclusions

Based on the result of the analysis and discussion in the previous chapters, there are some conclusions taken in this research, which are:

1. During the research period, this research shows that the systematic risk (BETA), fixed asset ratio (FAR), firm size ratio (ASSET) and financial leverage (LEV) have influenced significantly toward the company's debt policy which is about 20,685%. While the rest which amount is 79,315% influenced by other factors that are not included in this research. In other words, the hypotheses in this research have been proven correctly.
2. Partially, this research explains that the fixed asset ratio (FAR) and financial leverage (LEV) have positively influenced the company's debt policy. Meanwhile, other variables such as systematic risk (BETA) and firm size (ASSET) have positive influence but not significant on the company's debt policy. In other words, only fixed asset ratio (FAR) and financial leverage (LEV) variable from other independent variables that has been proven give influence significantly toward company's debt policy. It indicates that systematic risk (BETA) and firm size variable (ASSET) are less paid attention by the company in determining company's debt policy.

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# APPENDIC 1

## REASEARCH SAMPLE LIST

| No | Code | Company |
|---|---|---|
| 1 | GGRM | Gudang Garam Tbk |
| 2 | HMSP | HM Sampoerna Tbk |
| 3 | INDF | Indofood sukses Makmur Tbk |
| 4 | KLBF | Kalbe Farma Tbk |
| 5 | ADES | Ades Alfindo Tbk |
| 6 | SMAR | SMART Tbk |
| 7 | ULTJ | Ultra Jaya Milk Tbk |
| 8 | SUBA | Suba Indah Tbk |
| 9 | TSPC | Tempo Scan Pasific Tbk |
| 10 | MYOR | Mayora Indah Tbk |
| 11 | KDSI | Kedawung Setia Industrial Tbk |
| 12 | MRAT | Mustika Ratu Tbk |
| 13 | CEKA | Cahaya Kalbar Tbk |
| 14 | DNKS | Dankos Laboratories Tbk |
| 15 | UNVR | Unilever Indonesia Tbk |
| 16 | DAVO | Davomas Abadi Tbk |
| 17 | TBLA | Tunas Baru Lampung Tbk |
| 18 | DVLA | Darya-Varia Laboratoria Tbk |
| 19 | LMPI | Langgeng Makmur Plastic Tbk |
| 20 | AISA | Asia Intiselera Tbk |
| 21 | TCID | Mandom Indonesia Tbk |
| 22 | STTP | Siantar Top Tbk |
| 23 | KICI | Kedaung Indah can Tbk |
| 24 | PSDN | Prasidha Aneka Niaga Tbk |
| 25 | BATI | BAT Indonesia Tbk |
| 26 | SHDA | Sari Husada Tbk |
| 27 | BYSB | Bayer Indonesia SB Tbk |
| 28 | AQUA | Aqua golden Mississi Tbk |
| 29 | SKLT | Sekar Laut Tbk |
| 30 | DLTA | Delta Djakarta Tbk |
| 31 | MWON | Miwon Indonesia Tbk |
| 32 | PGIN | Procter & Gambler Tbk |

# APPENDIC 2

**TABLE OF PROCESSING RESEARCH VARIABLES**

| No | Share Code | Year | Total Liabilities | Long Term Liabilities | Debt | Equity | Fixed Asset | Total Assets | y_LR | x1_BETA | x2_FAR | x3_Log_Asset | x4_LEV |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ADES | 2000 | 129276 | 16,666 | 53,228 | 90,485 | 191,180 | 219,761 | 0.076 | 0.533 | 0.870 | 5.342 | 0.588257243 |
| 2 | ADES | 2001 | 127873 | 54,555 | 48,969 | 79,485 | 173,127 | 207,558 | 0.263 | 1.033 | 0.834 | 5.317 | 0.616083215 |
| 3 | AISA | 2000 | 239658 | 2,045 | -201,431 | -109,444 | 44,113 | 130,214 | 0.016 | 0.064 | 0.339 | 5.115 | 1.840493342 |
| 4 | AISA | 2001 | 264297 | 5,535 | -349,438 | -150,481 | 41,803 | 113,816 | 0.049 | 0.384 | 0.367 | 5.056 | 2.322142757 |
| 5 | AQUA | 2000 | 217244 | 10,878 | 78,850 | 123,774 | 186,353 | 341,018 | 0.032 | 0.289 | 0.546 | 5.533 | 0.637045552 |
| 6 | AQUA | 2001 | 348705 | 16,248 | 111,953 | 164,892 | 289,204 | 513,597 | 0.032 | 0.229 | 0.563 | 5.711 | 0.678946723 |
| 7 | BATI | 2000 | 430947 | 16,372 | 202,365 | 381,519 | 192,506 | 812,466 | 0.020 | 0.120 | 0.237 | 5.910 | 0.530418504 |
| 8 | BATI | 2001 | 327675 | 21,643 | 180,770 | 403,211 | 179,069 | 730,886 | 0.030 | 0.254 | 0.245 | 5.864 | 0.448325731 |
| 9 | BYSB | 2000 | 119621 | 7,474 | 71,442 | 177,382 | 63,769 | 297,003 | 0.025 | 0.102 | 0.215 | 5.473 | 0.402760241 |
| 10 | BYSB | 2001 | 172252 | 33,464 | 90,980 | 192,826 | 72,760 | 365,078 | 0.092 | 0.398 | 0.199 | 5.562 | 0.47182246 |
| 11 | CEKA | 2000 | 64793 | 4,726 | 50,158 | 222,064 | 171,366 | 286,857 | 0.016 | 0.877 | 0.597 | 5.458 | 0.225872124 |
| 12 | CEKA | 2001 | 87030 | 4,246 | 62,157 | 217,261 | 177,091 | 304,201 | 0.014 | 0.762 | 0.582 | 5.483 | 0.286093734 |
| 13 | DAVO | 2000 | 665679 | 665,182 | -73,557 | -66,238 | 362,104 | 599,441 | 1.110 | 0.243 | 0.604 | 5.778 | 1.110499615 |
| 14 | DAVO | 2001 | 299469 | 297,750 | 182,180 | 465,155 | 569,967 | 764,624 | 0.389 | 0.903 | 0.745 | 5.883 | 0.391655245 |
| 15 | DLTA | 2000 | 169665 | 69,526 | 95,191 | 216,860 | 166,578 | 386,524 | 0.180 | 0.023 | 0.431 | 5.587 | 0.438950751 |
| 16 | DLTA | 2001 | 90251 | 18,642 | 66,771 | 256,651 | 160,807 | 346,902 | 0.054 | 0.078 | 0.464 | 5.540 | 0.260162813 |
| 17 | DNKS | 2000 | 321252 | 196,887 | 107,055 | 160,560 | 64,028 | 481,812 | 0.409 | 0.942 | 0.133 | 5.683 | 0.666757989 |
| 18 | DNKS | 2001 | 367048 | 232,879 | 130,071 | 201,464 | 81,548 | 568,511 | 0.410 | 0.729 | 0.143 | 5.755 | 0.645630428 |
| 19 | DVLA | 2000 | 202145 | 50,209 | 92,393 | 170,174 | 94,360 | 372,319 | 0.135 | 0.048 | 0.253 | 5.571 | 0.542934956 |
| 20 | DVLA | 2001 | 216886 | 9,764 | 93,241 | 163,554 | 103,822 | 380,440 | 0.026 | 0.623 | 0.273 | 5.580 | 0.570092524 |
| 21 | GGRM | 2000 | 4732087 | 169,737 | 2,666,953 | 6,111,108 | 1,626,388 | 10,843,195 | 0.016 | 1.122 | 0.150 | 7.035 | 0.436410763 |
| 22 | GGRM | 2001 | 5249932 | 191,400 | 3,200,443 | 8,198,192 | 2,191,965 | 13,448,124 | 0.014 | 1.456 | 0.163 | 7.129 | 0.390383967 |
| 23 | HMSP | 2000 | 4702953 | 2,483,207 | 2,108,437 | 3,821,862 | 1,948,528 | 8,524,815 | 0.291 | 1.611 | 0.229 | 6.931 | 0.551678013 |
| 24 | HMSP | 2001 | 5308973 | 2,406,780 | 2,332,881 | 4,161,567 | 1,942,925 | 9,470,540 | 0.254 | 1.130 | 0.205 | 6.976 | 0.560577644 |
| 25 | INDF | 2000 | 9495917 | 4,901,113 | 2,313,512 | 3,058,713 | 5,203,971 | 12,554,630 | 0.390 | 0.893 | 0.415 | 7.099 | 0.75636773 |
| 26 | INDF | 2001 | 9417521 | 2,603,359 | 2,560,709 | 3,561,580 | 5,595,590 | 13,098,426 | 0.199 | 1.308 | 0.427 | 7.117 | 0.71898112 |
| 27 | KDSI | 2000 | 277738 | 157,350 | 95,247 | 144,958 | 188,914 | 422,696 | 0.372 | 0.403 | 0.447 | 5.626 | 0.657063232 |
| 28 | KDSI | 2001 | 283399 | 18,914 | 87,819 | 127,251 | 208,839 | 410,650 | 0.046 | 1.301 | 0.509 | 5.613 | 0.690122976 |
| 29 | KICI | 2000 | 87674 | 60,536 | 51,277 | 123,518 | 72,697 | 211,192 | 0.287 | 0.203 | 0.344 | 5.325 | 0.415138831 |
| 30 | KICI | 2001 | 83480 | 52,855 | 51,357 | 133,462 | 70,431 | 216,942 | 0.244 | 0.040 | 0.325 | 5.336 | 0.384803311 |
| 31 | KLBF | 2000 | 1569347 | 1,019,031 | 168,282 | 188,494 | 404,428 | 1,757,841 | 0.580 | 1.319 | 0.230 | 6.245 | 0.892769596 |
| 32 | KLBF | 2001 | 1656542 | 1,030,867 | 194,811 | 220,774 | 433,730 | 1,877,316 | 0.549 | 1.036 | 0.231 | 6.274 | 0.882399127 |

# APPENDIC 2

**TABLE OF PROCESSING RESEARCH VARIABLES**

| No | Share Code | Year | Total Liabilities | Long Term Liabilities | Debt | Equity | Fixed Asset | Total Assets | y_LR | x1_BETA | x2_FAR | x3_Log_Asset | x4_LEV |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | LMPI | 2000 | 470574 | 405,041 | 31,576 | 33,847 | 279,618 | 504,421 | 0.803 | 0.723 | 0.554 | 5.703 | 0.932899304 |
| 34 | LMPI | 2001 | 455039 | 759 | 61,328 | 70,881 | 263,760 | 525,919 | 0.001 | 0.332 | 0.502 | 5.721 | 0.865226394 |
| 35 | MRAT | 2000 | 50676 | 5,473 | 41,452 | 227,725 | 49,214 | 278,400 | 0.020 | 0.266 | 0.177 | 5.445 | 0.182025862 |
| 36 | MRAT | 2001 | 45981 | 394 | 38,815 | 249,049 | 52,284 | 295,031 | 0.001 | 0.693 | 0.177 | 5.470 | 0.155851419 |
| 37 | MWON | 2000 | 645295 | 2,543 | -104,755 | -90,124 | 172,090 | 555,170 | 0.005 | 0.006 | 0.310 | 5.744 | 1.162337662 |
| 38 | MWON | 2001 | 670427 | 34,838 | -113,765 | -97,261 | 201,691 | 573,166 | 0.061 | 0.592 | 0.352 | 5.758 | 1.169690805 |
| 39 | MYOR | 2000 | 715653 | 597,910 | 325,299 | 596,386 | 742,830 | 1,312,039 | 0.456 | 0.989 | 0.566 | 6.118 | 0.545451012 |
| 40 | MYOR | 2001 | 697468 | 558,299 | 330,324 | 627,522 | 698,426 | 1,324,990 | 0.421 | 1.231 | 0.527 | 6.122 | 0.526394916 |
| 41 | PGIN | 2000 | 90218 | 6,126 | 43,575 | 84,282 | 52,057 | 174,500 | 0.035 | 0.000 | 0.298 | 5.242 | 0.517008596 |
| 42 | PGIN | 2001 | 97341 | 6,972 | 49,735 | 101,693 | 58,000 | 199,034 | 0.035 | -0.027 | 0.291 | 5.299 | 0.489067195 |
| 43 | PSDN | 2000 | 1353135 | 147,200 | -2,079,696 | -819,764 | 192,856 | 533,372 | 0.276 | 0.085 | 0.362 | 5.727 | 2.536944197 |
| 44 | PSDN | 2001 | 1539585 | 141,305 | -3,455,888 | -1,065,091 | 146,088 | 474,494 | 0.298 | 0.323 | 0.308 | 5.676 | 3.244688026 |
| 45 | SHDA | 2000 | 85123 | 11,648 | 71,775 | 457,744 | 125,853 | 542,867 | 0.021 | 0.189 | 0.232 | 5.735 | 0.156802679 |
| 46 | SHDA | 2001 | 116633 | 12,136 | 99,555 | 679,899 | 252,434 | 796,532 | 0.015 | 0.051 | 0.317 | 5.901 | 0.146426007 |
| 47 | SKLT | 2000 | 452345 | 14,682 | -998,071 | -311,271 | 54,652 | 141,074 | 0.104 | 0.363 | 0.387 | 5.149 | 3.206437756 |
| 48 | SKLT | 2001 | 516239 | 15,488 | -1,573,933 | -388,737 | 47,198 | 127,503 | 0.121 | -0.157 | 0.370 | 5.106 | 4.048838067 |
| 49 | SMAR | 2000 | 3932264 | 2,182,761 | -12,443 | -12,404 | 1,445,552 | 3,919,860 | 0.557 | 0.774 | 0.369 | 6.593 | 1.003164399 |
| 50 | SMAR | 2001 | 4496591 | 2,119,432 | -692,060 | -599,753 | 1,716,686 | 3,896,838 | 0.544 | 0.386 | 0.441 | 6.591 | 1.153907604 |
| 51 | STTP | 2000 | 123474 | 23,915 | -78,667 | -216,783 | 172,995 | 340,257 | 0.070 | 0.381 | 0.508 | 5.532 | 0.362884526 |
| 52 | STTP | 2001 | 165009 | 27,225.00 | 97,623 | 239,051 | 235,587 | 404,060 | 0.067 | 0.121 | 0.583 | 5.606 | 0.408377469 |
| 53 | SUBA | 2000 | 256902 | 180,484 | 146,652 | 341,726 | 10,643 | 598,629 | 0.301 | 1.306 | 0.018 | 5.777 | 0.429150609 |
| 54 | SUBA | 2001 | 215263 | 157,981 | 152,725 | 525,695 | 508,578 | 740,958 | 0.213 | 1.236 | 0.686 | 5.870 | 0.290519841 |
| 55 | TBLA | 2000 | 526928 | 437,029 | 229,982 | 408,101 | 602,189 | 935,029 | 0.467 | 0.512 | 0.644 | 5.971 | 0.563541879 |
| 56 | TBLA | 2001 | 534971 | 374,519 | 229,416 | 401,656 | 691,224 | 936,637 | 0.400 | 0.902 | 0.738 | 5.972 | 0.571161507 |
| 57 | TCID | 2000 | 92117 | 7,065 | 66,679 | 241,455 | 148,987 | 333,582 | 0.021 | 0.318 | 0.447 | 5.523 | 0.276144996 |
| 58 | TCID | 2001 | 92713 | 7,179 | 68,674 | 264,862 | 172,091 | 357,575 | 0.020 | -0.006 | 0.481 | 5.553 | 0.259282668 |
| 59 | TSPC | 2000 | 375023 | 29,809 | 276,556 | 1,053,291 | 262,981 | 1,428,314 | 0.021 | 0.504 | 0.184 | 6.155 | 0.262563414 |
| 60 | TSPC | 2001 | 393343 | 13,906 | 300,359 | 1,270,581 | 282,251 | 1,663,925 | 0.008 | 0.950 | 0.170 | 6.221 | 0.236394669 |
| 61 | ULTJ | 2000 | 230588 | 105,895 | 155,384 | 476,433 | 410,875 | 707,021 | 0.150 | 0.309 | 0.581 | 5.849 | 0.326140242 |
| 62 | ULTJ | 2001 | 463772 | 318,142 | 242,173 | 506,829 | 551,494 | 970,601 | 0.328 | 0.702 | 0.568 | 5.987 | 0.477819413 |
| 63 | UNVR | 2000 | 828078 | 104,689 | 523,808 | 1,425,559 | 505,967 | 2,253,637 | 0.046 | 0.263 | 0.225 | 6.353 | 0.367440719 |
| 64 | UNVR | 2001 | 953231 | 133,806 | 514,364 | 1,728,199 | 676,805 | 2,681,430 | 0.050 | 0.652 | 0.252 | 6.428 | 0.355493524 |

# APPENDIC 3

**TABLE OF RESEARCH VARIABLES**

| No | Share Code | Year | y_LR | x1_BETA | x2_FAR | x3_Log_Asset | x4_LEV |
|---|---|---|---|---|---|---|---|
| 1 | ADES | 2000 | 0.076 | 0.533 | 0.870 | 5.342 | 0.59 |
| 2 | ADES | 2001 | 0.263 | 1.033 | 0.834 | 5.317 | 0.62 |
| 3 | AISA | 2000 | 0.016 | 0.064 | 0.339 | 5.115 | 1.84 |
| 4 | AISA | 2001 | 0.049 | 0.384 | 0.367 | 5.056 | 2.32 |
| 5 | AQUA | 2000 | 0.032 | 0.289 | 0.546 | 5.533 | 0.64 |
| 6 | AQUA | 2001 | 0.032 | 0.229 | 0.563 | 5.711 | 0.68 |
| 7 | BATI | 2000 | 0.020 | 0.120 | 0.237 | 5.910 | 0.53 |
| 8 | BATI | 2001 | 0.030 | 0.254 | 0.245 | 5.864 | 0.45 |
| 9 | BYSB | 2000 | 0.025 | 0.102 | 0.215 | 5.473 | 0.4 |
| 10 | BYSB | 2001 | 0.092 | 0.398 | 0.199 | 5.562 | 0.47 |
| 11 | CEKA | 2000 | 0.016 | 0.877 | 0.597 | 5.458 | 0.23 |
| 12 | CEKA | 2001 | 0.014 | 0.762 | 0.582 | 5.483 | 0.29 |
| 13 | DAVO | 2000 | 1.110 | 0.243 | 0.604 | 5.778 | 1.11 |
| 14 | DAVO | 2001 | 0.389 | 0.903 | 0.745 | 5.883 | 0.39 |
| 15 | DLTA | 2000 | 0.180 | 0.023 | 0.431 | 5.587 | 0.44 |
| 16 | DLTA | 2001 | 0.054 | 0.078 | 0.464 | 5.540 | 0.26 |
| 17 | DNKS | 2000 | 0.409 | 0.942 | 0.133 | 5.683 | 0.67 |
| 18 | DNKS | 2001 | 0.410 | 0.729 | 0.143 | 5.755 | 0.65 |
| 19 | DVLA | 2000 | 0.135 | 0.048 | 0.253 | 5.571 | 0.54 |
| 20 | DVLA | 2001 | 0.026 | 0.623 | 0.273 | 5.580 | 0.57 |
| 21 | GGRM | 2000 | 0.016 | 1.122 | 0.150 | 7.035 | 0.44 |
| 22 | GGRM | 2001 | 0.014 | 1.456 | 0.163 | 7.129 | 0.39 |
| 23 | HMSP | 2000 | 0.291 | 1.611 | 0.229 | 6.931 | 0.55 |
| 24 | HMSP | 2001 | 0.254 | 1.130 | 0.205 | 6.976 | 0.56 |
| 25 | INDF | 2000 | 0.390 | 0.893 | 0.415 | 7.099 | 0.76 |
| 26 | INDF | 2001 | 0.199 | 1.308 | 0.427 | 7.117 | 0.72 |
| 27 | KDSI | 2000 | 0.372 | 0.403 | 0.447 | 5.626 | 0.66 |
| 28 | KDSI | 2001 | 0.046 | 1.301 | 0.509 | 5.613 | 0.69 |
| 29 | KICI | 2000 | 0.287 | 0.203 | 0.344 | 5.325 | 0.42 |
| 30 | KICI | 2001 | 0.244 | 0.040 | 0.325 | 5.336 | 0.38 |
| 31 | KLBF | 2000 | 0.580 | 1.319 | 0.230 | 6.245 | 0.89 |
| 32 | KLBF | 2001 | 0.549 | 1.036 | 0.231 | 6.274 | 0.88 |
| 33 | LMPI | 2000 | 0.803 | 0.723 | 0.554 | 5.703 | 0.93 |
| 34 | LMPI | 2001 | 0.001 | 0.332 | 0.502 | 5.721 | 0.87 |
| 35 | MRAT | 2000 | 0.020 | 0.266 | 0.177 | 5.445 | 0.18 |
| 36 | MRAT | 2001 | 0.001 | 0.693 | 0.177 | 5.470 | 0.16 |
| 37 | MWON | 2000 | 0.005 | 0.006 | 0.310 | 5.744 | 1.16 |
| 38 | MWON | 2001 | 0.061 | 0.592 | 0.352 | 5.758 | 1.17 |
| 39 | MYOR | 2000 | 0.456 | 0.989 | 0.566 | 6.118 | 0.55 |
| 40 | MYOR | 2001 | 0.421 | 1.231 | 0.527 | 6.122 | 0.53 |

# APPENDIC 3

**TABLE OF RESEARCH VARIABLES**

| No | Share Code | Year | y_LR | x1_BETA | x2_FAR | x3_Log_Asset | x4_LEV |
|---|---|---|---|---|---|---|---|
| 41 | PGIN | 2000 | 0.035 | 0.000 | 0.298 | 5.242 | 0.52 |
| 42 | PGIN | 2001 | 0.035 | -0.027 | 0.291 | 5.299 | 0.49 |
| 43 | PSDN | 2000 | 0.276 | 0.085 | 0.362 | 5.727 | 2.54 |
| 44 | PSDN | 2001 | 0.298 | 0.323 | 0.308 | 5.676 | 3.24 |
| 45 | SHDA | 2000 | 0.021 | 0.189 | 0.232 | 5.735 | 0.16 |
| 46 | SHDA | 2001 | 0.015 | 0.051 | 0.317 | 5.901 | 0.15 |
| 47 | SKLT | 2000 | 0.104 | 0.363 | 0.387 | 5.149 | 3.21 |
| 48 | SKLT | 2001 | 0.121 | -0.157 | 0.370 | 5.106 | 4.05 |
| 49 | SMAR | 2000 | 0.557 | 0.774 | 0.369 | 6.593 | 1 |
| 50 | SMAR | 2001 | 0.544 | 0.386 | 0.441 | 6.591 | 1.15 |
| 51 | STTP | 2000 | 0.070 | 0.381 | 0.508 | 5.532 | 0.36 |
| 52 | STTP | 2001 | 0.067 | 0.121 | 0.583 | 5.606 | 0.41 |
| 53 | SUBA | 2000 | 0.301 | 1.306 | 0.018 | 5.777 | 0.43 |
| 54 | SUBA | 2001 | 0.213 | 1.236 | 0.686 | 5.870 | 0.29 |
| 55 | TBLA | 2000 | 0.467 | 0.512 | 0.644 | 5.971 | 0.56 |
| 56 | TBLA | 2001 | 0.400 | 0.902 | 0.738 | 5.972 | 0.57 |
| 57 | TCID | 2000 | 0.021 | 0.318 | 0.447 | 5.523 | 0.28 |
| 58 | TCID | 2001 | 0.020 | -0.006 | 0.481 | 5.553 | 0.26 |
| 59 | TSPC | 2000 | 0.021 | 0.504 | 0.184 | 6.155 | 0.26 |
| 60 | TSPC | 2001 | 0.008 | 0.950 | 0.170 | 6.221 | 0.24 |
| 61 | ULTJ | 2000 | 0.150 | 0.309 | 0.581 | 5.849 | 0.33 |
| 62 | ULTJ | 2001 | 0.328 | 0.702 | 0.568 | 5.987 | 0.48 |
| 63 | UNVR | 2000 | 0.046 | 0.263 | 0.225 | 6.353 | 0.37 |
| 64 | UNVR | 2001 | 0.050 | 0.652 | 0.252 | 6.428 | 0.36 |

# APPENDIC 4

**REGRESSION**

**LR = BETA + FAR + Log Asset + LEV**

**SUMMARY OUTPUT**

| *Regression Statistics* | |
|---|---|
| Multiple R | 0.45480 |
| R Square | 0.20685 |
| Adjusted R Square | 0.15307 |
| Standard Error | 0.20592 |
| Observations | 64 |

**ANOVA**

| | *df* | *SS* | *MS* | *F* | *Significance F* |
|---|---|---|---|---|---|
| Regression | 4 | 0.65243 | 0.16311 | 3.84665 | 0.00763 |
| Residual | 59 | 2.50173 | 0.04240 | | |
| Total | 63 | 3.15416 | | | |

| | *Coefficients* | *Standard Error* | *t Stat* | *P-value* | *Lower 95%* | *Upper 95%* | *Lower 95%* | *Upper 95%* |
|---|---|---|---|---|---|---|---|---|
| Intercept | -0.62359 | 0.38780 | -1.60804 | 0.11317 | -1.39957 | 0.15239 | -1.39957 | 0.15239 |
| x1_BETA | 0.10275 | 0.07295 | 1.40846 | 0.16424 | -0.04323 | 0.24872 | -0.04323 | 0.24872 |
| **x2_FAR** | 0.32344 | 0.14509 | 2.22929 | **0.02962** | 0.03312 | 0.61376 | 0.03312 | 0.61376 |
| x3_Log_Asset | 0.09989 | 0.06601 | 1.51320 | 0.13557 | -0.03220 | 0.23198 | -0.03220 | 0.23198 |
| **x4_LEV** | 0.07178 | 0.03559 | 2.01693 | **0.04826** | 0.00057 | 0.14299 | 0.00057 | 0.14299 |

# Appendic 5

## THE EXAMPLE OF BETA CALCULATION IN ADES ALFINDO COMPANY (2000)

| NO | DATE | Rit (Y) | Rmt (X) | X2 | XY |
|---|---|---|---|---|---|
| 1 | 1/4/2000 | 0.02439 | 0.141887808 | 0.02013215 | 0.003460644 |
| 2 | 1/5/2000 | 0.02381 | -0.020515072 | 0.000420868 | -0.000488464 |
| 3 | 1/6/2000 | -0.02326 | 0.008381586 | 7.0251E-05 | -0.000194956 |
| 4 | 1/11/2000 | -0.04762 | -0.002642764 | 6.9842E-06 | 0.000125848 |
| 5 | 1/12/2000 | 0 | -0.010385376 | 0.000107856 | 0 |
| 6 | 1/13/2000 | -0.025 | -0.002103808 | 4.42601E-06 | 5.25952E-05 |
| 7 | 1/14/2000 | -0.02564 | -0.000136016 | 1.85003E-08 | 3.48744E-06 |
| 8 | 1/17/2000 | -0.05263 | 0.021542876 | 0.000464095 | -0.001133802 |
| 9 | 1/18/2000 | 0.02778 | -0.025585928 | 0.00065464 | -0.000710777 |
| 10 | 1/19/2000 | -0.16216 | -0.038967332 | 0.001518453 | 0.006318942 |
| 11 | 1/20/2000 | 0.03226 | 0.014052279 | 0.000197467 | 0.000453327 |
| 12 | 1/21/2000 | 0.09375 | -0.004270726 | 1.82391E-05 | -0.000400381 |
| 13 | 1/24/2000 | 0 | -0.008750928 | 7.65787E-05 | 0 |
| 14 | 1/25/2000 | 0 | -0.008356744 | 6.98352E-05 | 0 |
| 15 | 1/26/2000 | -0.02857 | -0.015760236 | 0.000248385 | 0.00045027 |
| 16 | 1/27/2000 | 0 | 0.000165419 | 2.73636E-08 | 0 |
| 17 | 1/28/2000 | 0 | -0.016876604 | 0.00028482 | 0 |
| 18 | 1/31/2000 | 0 | 0.010289021 | 0.000105864 | 0 |
| 19 | 2/1/2000 | 0 | -0.030146403 | 0.000908806 | 0 |
| 20 | 2/2/2000 | 0 | -0.027457283 | 0.000753902 | 0 |
| 21 | 2/3/2000 | 0 | 0.015726291 | 0.000247316 | 0 |
| 22 | 2/4/2000 | 0 | 0.034497382 | 0.001190069 | 0 |
| 23 | 2/7/2000 | 0 | -0.001061835 | 1.12749E-06 | 0 |
| 24 | 2/8/2000 | 0.02941 | -0.017949287 | 0.000322177 | -0.000527889 |
| 25 | 2/9/2000 | 0.05714 | -0.006336788 | 4.01549E-05 | -0.000362084 |
| 26 | 2/10/2000 | 0 | 0.006377199 | 4.06687E-05 | 0 |
| 27 | 2/11/2000 | -0.02703 | -0.002274393 | 5.17286E-06 | 6.14768E-05 |
| 28 | 2/14/2000 | 0 | 0.004751409 | 2.25759E-05 | 0 |
| 29 | 2/15/2000 | 0 | 0.003724382 | 1.3871E-05 | 0 |
| 30 | 2/16/2000 | 0 | -0.029289615 | 0.000857882 | 0 |
| 31 | 2/17/2000 | -0.08333 | -0.043478566 | 0.001890386 | 0.003623069 |
| 32 | 2/18/2000 | 0.09091 | -0.005844094 | 3.41534E-05 | -0.000531287 |
| 33 | 2/21/2000 | 0 | -0.015673403 | 0.000245656 | 0 |
| 34 | 2/22/2000 | 0 | -0.01331535 | 0.000177299 | 0 |
| 35 | 2/23/2000 | -0.08333 | -0.001837816 | 3.37757E-06 | 0.000153145 |
| 36 | 2/24/2000 | -0.0303 | -0.014554612 | 0.000211837 | 0.000441005 |
| 37 | 2/25/2000 | 0.0625 | -0.011681323 | 0.000136453 | -0.000730083 |
| 38 | 2/28/2000 | -0.08824 | 0.009819545 | 9.64235E-05 | -0.000866477 |
| 39 | 3/1/2000 | 0.03226 | -0.019626045 | 0.000385182 | -0.000633136 |
| 40 | 3/2/2000 | -0.0625 | -0.026670875 | 0.000711336 | 0.00166693 |
| 41 | 3/3/2000 | 0 | 0.009169031 | 8.40711E-05 | 0 |
| 42 | 3/6/2000 | 0 | 0.030374113 | 0.000922587 | 0 |
| 43 | 3/7/2000 | -0.06667 | -0.00351624 | 1.23639E-05 | 0.000234428 |
| 44 | 3/8/2000 | 0.07143 | 0.006869518 | 4.71903E-05 | 0.00049069 |
| 45 | 3/9/2000 | 0.03333 | 0.030554282 | 0.000933564 | 0.001018374 |

| | | | | | |
|---|---|---|---|---|---|
| 46 | 3/10/2000 | 0.03226 | 0.030711577 | 0.000943201 | 0.000990755 |
| 47 | 3/13/2000 | -0.03125 | -0.016401598 | 0.000269012 | 0.00051255 |
| 48 | 3/14/2000 | 0 | -0.003123791 | 9.75807E-06 | 0 |
| 49 | 3/15/2000 | 0 | -0.001163901 | 1.35467E-06 | 0 |
| 50 | 3/17/2000 | 0.03226 | 0.010472377 | 0.000109671 | 0.000337839 |
| 51 | 3/20/2000 | -0.03125 | -0.005388903 | 2.90403E-05 | 0.000168403 |
| 52 | 3/21/2000 | 0 | -0.016291463 | 0.000265412 | 0 |
| 53 | 3/22/2000 | 0 | 0.019220744 | 0.000369437 | 0 |
| 54 | 3/23/2000 | 0 | -0.000555963 | 3.09095E-07 | 0 |
| 55 | 3/24/2000 | 0 | -0.011770727 | 0.00013855 | 0 |
| 56 | 3/27/2000 | 0 | 0.005591456 | 3.12644E-05 | 0 |
| 57 | 3/28/2000 | 0.03226 | 0.00815769 | 6.65479E-05 | 0.000263167 |
| 58 | 3/29/2000 | 0.09375 | -0.001665717 | 2.77461E-06 | -0.000156161 |
| 59 | 3/30/2000 | -0.05714 | -0.017122475 | 0.000293179 | 0.000978378 |
| 60 | 4/3/2000 | 0 | -0.022551172 | 0.000508555 | 0 |
| 61 | 4/5/2000 | 0 | -0.018671751 | 0.000348634 | 0 |
| 62 | 4/7/2000 | -0.0303 | 0.010296142 | 0.000106011 | -0.000311973 |
| 63 | 4/10/2000 | 0 | -0.005480988 | 3.00412E-05 | 0 |
| 64 | 4/11/2000 | 0 | 0.005526851 | 3.05461E-05 | 0 |
| 65 | 4/12/2000 | 0 | -0.010276692 | 0.00010561 | 0 |
| 66 | 4/13/2000 | 0 | 0.004121895 | 1.699E-05 | 0 |
| 67 | 4/14/2000 | 0 | -0.013388171 | 0.000179243 | 0 |
| 68 | 4/17/2000 | -0.0625 | -0.045965968 | 0.00211287 | 0.002872873 |
| 69 | 4/18/2000 | 0 | 0.000391171 | 1.53015E-07 | 0 |
| 70 | 4/19/2000 | -0.03333 | -0.006073262 | 3.68845E-05 | 0.000202422 |
| 71 | 4/20/2000 | 0 | 0.005716964 | 3.26837E-05 | 0 |
| 72 | 4/24/2000 | 0 | 0.003653705 | 1.33496E-05 | 0 |
| 73 | 4/25/2000 | 0 | -0.018840544 | 0.000354966 | 0 |
| 74 | 4/26/2000 | 0.10345 | 0.010167429 | 0.000103377 | 0.001051821 |
| 75 | 4/27/2000 | 0 | 0.001539466 | 2.36995E-06 | 0 |
| 76 | 4/28/2000 | 0 | 0.015103671 | 0.000228121 | 0 |
| 77 | 5/1/2000 | 0 | -0.002781572 | 7.73715E-06 | 0 |
| 78 | 5/2/2000 | -0.03125 | 0.012485971 | 0.000155899 | -0.000390187 |
| 79 | 5/3/2000 | 0 | 0.012136377 | 0.000147292 | 0 |
| 80 | 5/4/2000 | 0 | 0.009623283 | 9.26076E-05 | 0 |
| 81 | 5/5/2000 | -0.09677 | 0.010321202 | 0.000106527 | -0.000998783 |
| 82 | 5/8/2000 | 0.03571 | 0.01751048 | 0.000306617 | 0.000625299 |
| 83 | 5/9/2000 | 0 | -0.002444039 | 5.97333E-06 | 0 |
| 84 | 5/10/2000 | 0 | 0.003010033 | 9.0603E-06 | 0 |
| 85 | 5/11/2000 | 0 | -0.03705111 | 0.001372785 | 0 |
| 86 | 5/12/2000 | 0 | 0.00231118 | 5.34155E-06 | 0 |
| 87 | 5/15/2000 | 0 | -0.012898331 | 0.000166367 | 0 |
| 88 | 5/16/2000 | 0 | -0.031424273 | 0.000987485 | 0 |
| 89 | 5/17/2000 | 0 | 0.020717427 | 0.000429212 | 0 |
| 90 | 5/19/2000 | 0 | -0.005434018 | 2.95286E-05 | 0 |
| 91 | 5/22/2000 | 0 | -0.020981638 | 0.000440229 | 0 |
| 92 | 5/23/2000 | 0 | -0.011322999 | 0.00012821 | 0 |
| 93 | 5/24/2000 | 0 | -0.002182281 | 4.76235E-06 | 0 |
| 94 | 5/25/2000 | 0 | -0.006741979 | 4.54543E-05 | 0 |
| 95 | 5/26/2000 | 0 | -0.016314854 | 0.000266174 | 0 |

| 96 | 5/29/2000 | 0 | -0.035797062 | 0.00128143 | 0 |
|---|---|---|---|---|---|
| 97 | 5/30/2000 | 0 | 0.011013518 | 0.000121298 | 0 |
| 98 | 5/31/2000 | 0 | -0.040554712 | 0.001644685 | 0 |
| 99 | 6/2/2000 | 0 | -0.016018091 | 0.000256579 | 0 |
| 100 | 6/5/2000 | -0.13793 | 0.021354017 | 0.000455994 | -0.00294536 |
| 101 | 6/6/2000 | 0.04 | -0.003712732 | 1.37844E-05 | -0.000148509 |
| 102 | 6/7/2000 | 0 | 0.024439133 | 0.000597271 | 0 |
| 103 | 6/8/2000 | -0.03846 | 0.033878065 | 0.001147723 | -0.00130295 |
| 104 | 6/9/2000 | 0 | 0.001848084 | 3.41541E-06 | 0 |
| 105 | 6/12/2000 | 0 | -0.002891173 | 8.35888E-06 | 0 |
| 106 | 6/13/2000 | 0.08 | -0.009525843 | 9.07417E-05 | -0.000762067 |
| 107 | 6/14/2000 | 0 | 0.01175467 | 0.000138172 | 0 |
| 108 | 6/16/2000 | 0 | 0.008618165 | 7.42728E-05 | 0 |
| 109 | 6/19/2000 | 0 | 0.011800422 | 0.00013925 | 0 |
| 110 | 6/20/2000 | 0 | -0.00618363 | 3.82373E-05 | 0 |
| 111 | 6/21/2000 | 0 | 0.015017065 | 0.000225512 | 0 |
| 112 | 6/22/2000 | 0 | 0.008914869 | 7.94749E-05 | 0 |
| 113 | 6/23/2000 | 0 | 0.008468638 | 7.17178E-05 | 0 |
| 114 | 6/26/2000 | 0 | 0.011388769 | 0.000129704 | 0 |
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| 122 | 7/6/2000 | 0 | 0.001267759 | 1.60721E-06 | 0 |
| 123 | 7/7/2000 | 0 | -0.01231845 | 0.000151744 | 0 |
| 124 | 7/10/2000 | 0 | -0.001488711 | 2.21626E-06 | 0 |
| 125 | 7/11/2000 | 0 | 0.011016317 | 0.000121359 | 0 |
| 126 | 7/12/2000 | -0.11111 | -0.008241848 | 6.79281E-05 | 0.000915752 |
| 127 | 7/13/2000 | 0 | -0.004369951 | 1.90965E-05 | 0 |
| 128 | 7/14/2000 | -0.08333 | -0.003717071 | 1.38166E-05 | 0.000309744 |
| 129 | 7/17/2000 | 0 | 0.004821906 | 2.32508E-05 | 0 |
| 130 | 7/18/2000 | 0 | -0.000256929 | 6.60124E-08 | 0 |
| 131 | 7/19/2000 | -0.02727 | 0.014325389 | 0.000205217 | -0.000390653 |
| 132 | 7/20/2000 | 0 | -0.00723317 | 5.23187E-05 | 0 |
| 133 | 7/21/2000 | 0.18692 | -0.00870188 | 7.57227E-05 | -0.001626555 |
| 134 | 7/24/2000 | 0.06299 | -0.003911603 | 1.53006E-05 | -0.000246392 |
| 135 | 7/25/2000 | -0.05185 | -0.012681341 | 0.000160816 | 0.000657528 |
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| 141 | 8/2/2000 | 0.048 | 0.001502928 | 2.25879E-06 | 7.21405E-05 |
| 142 | 8/3/2000 | 0.0229 | 0.001586918 | 2.51831E-06 | 3.63404E-05 |
| 143 | 8/4/2000 | 0.01493 | 0.008059794 | 6.49603E-05 | 0.000120333 |
| 144 | 8/7/2000 | -0.03676 | -0.00543274 | 2.95147E-05 | 0.000199708 |
| 145 | 8/8/2000 | 0 | -0.01478116 | 0.000218483 | 0 |

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| 146 | 8/9/2000 | 0.03817 | -0.006712521 | 4.50579E-05 | -0.000256217 |
| 147 | 8/10/2000 | 0.01471 | 0.011181225 | 0.00012502 | 0.000164476 |
| 148 | 8/11/2000 | 0 | 0.029779109 | 0.000886795 | 0 |
| 149 | 8/14/2000 | 0 | 0.000943985 | 8.91107E-07 | 0 |
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| 151 | 8/16/2000 | 0 | -0.009243733 | 8.54466E-05 | 0 |
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| 162 | 9/1/2000 | 0 | 0.006513805 | 4.24296E-05 | 0 |
| 163 | 9/4/2000 | 0.03448 | 0.012871492 | 0.000165675 | 0.000443809 |
| 164 | 9/5/2000 | 0 | 0.00819723 | 6.71946E-05 | 0 |
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| 170 | 9/13/2000 | 0 | -0.025657895 | 0.000658328 | 0 |
| 171 | 9/18/2000 | -0.03472 | -0.071021674 | 0.005044078 | 0.002465873 |
| 172 | 9/19/2000 | 0.07914 | 0.023494364 | 0.000551985 | 0.001859344 |
| 173 | 9/20/2000 | 0.11333 | -0.008471864 | 7.17725E-05 | -0.000960116 |
| 174 | 9/21/2000 | 0.1497 | -0.016943728 | 0.00028709 | -0.002536476 |
| 175 | 9/22/2000 | -0.08854 | -0.026291156 | 0.000691225 | 0.002327819 |
| 176 | 9/25/2000 | -0.08571 | 0.01014629 | 0.000102947 | -0.000869639 |
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| 190 | 10/13/2000 | -0.11504 | 0.004449984 | 1.98024E-05 | -0.000511926 |
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| 193 | 10/18/2000 | -0.07908 | -0.001036776 | 1.0749E-06 | 8.19882E-05 |
| 194 | 10/19/2000 | 0.08033 | 0.026066043 | 0.000679439 | 0.002093885 |
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| 196 | 10/23/2000 | -0.05 | -0.015632188 | 0.000244365 | 0.000781609 |
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| 202 | 11/1/2000 | 0.05882 | 0.013502379 | 0.000182314 | 0.00079421 |
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| 206 | 11/7/2000 | 0.12987 | 0.018474661 | 0.000341313 | 0.002399304 |
| 207 | 11/8/2000 | -0.02299 | 0.010227508 | 0.000104602 | -0.00023513 |
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| 209 | 11/10/2000 | 0.02353 | 0.011834028 | 0.000140044 | 0.000278455 |
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| 218 | 11/23/2000 | -0.03922 | 0.002082462 | 4.33665E-06 | -8.16741E-05 |
| 219 | 11/24/2000 | -0.02041 | 0.007629314 | 5.82064E-05 | -0.000155714 |
| 220 | 11/27/2000 | -0.04167 | -0.00653564 | 4.27146E-05 | 0.00027234 |
| 221 | 11/28/2000 | -0.03261 | -0.013669153 | 0.000186846 | 0.000445751 |
| 222 | 11/29/2000 | -0.01124 | -0.00299853 | 8.99118E-06 | 3.37035E-05 |
| 223 | 11/30/2000 | 0.34091 | 0.007470672 | 5.58109E-05 | 0.002546827 |
| 224 | 12/1/2000 | 0 | -0.002851293 | 8.12987E-06 | 0 |
| 225 | 12/4/2000 | -0.15254 | 0.010343901 | 0.000106996 | -0.001577859 |
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| 229 | 12/8/2000 | 0.01 | -0.012295839 | 0.000151188 | -0.000122958 |
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| 232 | 12/13/2000 | -0.01053 | 0.021538067 | 0.000463888 | -0.000226796 |
| 233 | 12/14/2000 | -0.01064 | 0.003787769 | 1.43472E-05 | -4.03019E-05 |
| 234 | 12/15/2000 | -0.02151 | 0.023690113 | 0.000561221 | -0.000509574 |
| 235 | 12/18/2000 | 0.05495 | -0.015600316 | 0.00024337 | -0.000857237 |
| 236 | 12/19/2000 | 0 | -0.000955247 | 9.12496E-07 | 0 |
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| 239 | 12/22/2000 | -0.02128 | -0.002076773 | 4.31299E-06 | 4.41937E-05 |
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| | | |
|---|---|---|
| nSXY | 9.42134 | |
| SXSY | -0.41702 | |
| | | 9.838360319 |
| nSX^2 | 18.56211 | |
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| | | 18.46388 |
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