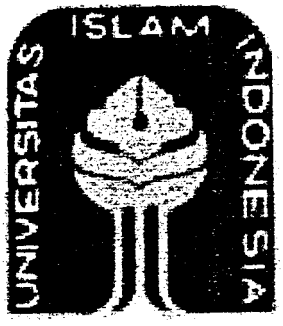
# CAPITAL STRUCTURE OR DEBT TAX SHIELDING RATIO? AN EMPIRICAL INVESTIGATION FOR INDONESIA FIRMS

## A THESIS

Presented as partial Fulfillment of the requirements
to obtain the **Bachelor Degree** in Accounting Department

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## ABSTRACT

So far research on capital Structure choice has yielded little support for the tradeoff theory of capital structure choice. Berens and Cunny (1995) argue that most of the existing research is not suited for investigating the relevance of this theory, as firms can avoid tax payments completely without being fully debt financed. It would therefore be more appropriate to consider the extent to which firms avoid taxes, their so-called debt tax shielding ratio, rather than their leverage. It could then also be argued that the theoretical determinants of capital structure choice should explain firms' debt tax shielding ratios. In this thesis writer investigate whether the tradeoff theory can explain the variance in debt tax shielding by Indonesian Firms. The results provide supports for the tradeoff theory than traditional research on the determinants of capital structure.



Keywords: Capital structure, tradeoff theory, tax shielding

## ABSTRAK

Sejauh ini penelitian mengenai pilihan struktur modal hanya menghasilkan dukungan yang lemah atas teori pilihan struktur modal (capital structure choice). Berens and Cunny (1995) berpendapat bahwa rata – rata dari penelitian yang ada tidaklah cocok untuk menelusuri relevansi dari teori ini, dikarenakan perusahaan dapat menghindari pembayaran pajak sepenuhnya tanpa harus dibiayai secara penuh dengan hutang.Hal ini kemudian akan lebih tepat untuk mempertimbangkan tingkat dimana perusahaan menghindari pajak, kemudian hal itu dikenal sebagai rasio perlindungan pajak dengan menggunakan hutang atau debt tax shielding ratio, dibandingkan dengan menggunakan pengaruhnya. Hal ini kemudian dapat dikatakan bahwa penentu teoritis dari pilihan struktur modal haruslah dapat menjelaskan rasio perlindungan pajak dengan menggunakan hutang. Dalam skripsi ini penulis menelusuri apakah tradeoff theory dapat menjelaskan varian atau perbedaan perlindungan pajak dengan menggunakan hutang pada perusahaan di indonesia. Hasilnya lebih mendukung atas tradeoff theory dibandingkan dengan penelitian tradisional pada penentu dari struktur modal.



Kata kunci: struktur modal, tradeoff theory, perlindungan pajak.

# CHAPTER I

# INTRODUCTION

## 1.1 Study Background

Modern theory of capital finance identifies the discipline that the external financial market is imposed on the financial affairs of the firms. On the capital structure choice subject many researches that have been done only yield little support for the tradeoff theory of capital structure choice.

There are two major concept of capital structure theory that commonly recognized, those are traditional approach and modern approach of capital structure theory that is revolutionary represent by the Modigliani Miller proposition. According to the traditional approach to capital structure, a moderate degree of financial leverage can lower the firm's weighted average cost of capital – as cheaper debt is substituted for more expensive equity – and thereby increase the total value of the firm.

Thus, "the traditional position implies that the value of the firm is not independent of its financing mix and that there exist an optimal capital structure even in the absence of taxes" (Shapiro and Balbirer, 2000).

In 1958 Modigliani and Miller argues some theory against the traditional ones. Modigliani and miller (MM) demonstrated that capital structure doesn't matter in a world without taxes, transaction cost, or other market imperfections. There are two propositions that MM over to us. The first proposition is:" the value of the firm is independent of its capital structure", so a firm cannot create value by choosing a specifics capital structure. Meanwhile the other propositions are: " the cost of equity capital for a levered firms equals the constant overall cost of capital plus a risk premium that equals the spread between the overall cost of capital and the cost of debt multiplied by the firm's debt-equity ratio".

As Berens and Cunny (1995) argued: "Investigating leverage ratios are not an appropriate method to determine the relevance of the trade - off theory". Indeed, the firms can avoid tax payments completely without being fully debt financed".

Therefore they offer an alternative instrument to find out the relevance of tradeoff theory, viz. the debt tax shielding ratio. This ratio measures to what extent or limit of application the firms avoid tax payment by the use of the debt financing. If a firm can avoid all tax payment and gets their tax advantage, its debt tax shielding ratio is equal to one.

It can be argued that in the absence of costs of financial distress or agency conflicts between shareholders and creditor firms would fully shield their income. In practice these aspect may lower the debt tax-shielding ratio the firm chooses.

"The tradeoff theory states that this is a consequence of several imperfections. As interest payments are tax deductible and dividend payments are not, debt financing is associated with a high tax advantage" (Modigliani and Miller, 1963).

Than someone would then expect the firms to be (nearly) fully debt financed, in order to get higher tax advantage. This result in general, is not supported with sufficient evidence. The increase in expected costs of financial distress with which additional debt financing is associated (see e.g. DeAngelo and Masulis, 1980) would explain why this became the case".

Firms could balance the costs and benefits of debt financing and choose the debt level where the marginal cost of debt financing equals to its marginal benefit. The result of this policy is the existence of an optimal capital structure.

In this thesis the writer will investigate whether the tradeoff theory of capital structure can explain differences in debt tax shielding ratios.

## 1.2 Problem Identification

Theoretically company can avoid tax or in another words company can maximize their tax advantage by using debt financing, however in the real world we have never seen a big firms that earn a lot of profit are also having a lot of debt, even they seems trying to push their leverage ratio in the low level.

One possibility is that the personal tax disadvantages of the debt negate and deny the existence of its corporate tax advantage. According to Merton Miller (1977), "the value of the corporate tax shield will be entirely offset by personal taxes, making the value of the firms independent of its capital structure even with taxes"

Therefore this study focuses on the investigating whether the tradeoff theory can explain the variance in debt tax shielding by Indonesia firms and whether the theoretical concepts influence firms in order making their decision of the capital structure choice.

## 1.3 Problem Formulation

Based on the problem identification, the problems can be formulated as follows:

1. Do the firms use debt financing as their capital structure choice to have the tax advantage from the tax deduction that caused by the interest payments?
2. Do the firms with more profitability use more debt financing as the tax gain for the firms?
3. Do the firms with more growth opportunities have lower debt financing, to protect their growth opportunities?
4. Do the firms with bigger size have higher debt financing as the tax gain for the firms?

## 1.4 Limitation of Research Area

For maintaining the focus of this study, several limitations should be acknowledged. In this study the writer make some limitation in the investigation, whether the modern theory represent by tradeoff theory of capital structure can be proven in the real world or not. In this case we did this on Indonesian company with some scope limitation, which are:

1. The company's financial statement that was available for each year of the 1997 – 2001 periods
2. The Writer only chooses the most important Indonesia non-financial company financial statement for 1997 – 2001 periods for the data.

## 1.5 Research Objectives

The objectives of this research are as follows:

1. To provide empirical evidence to the tradeoff theory, whether it determines capital structure choice of a firm or not.
2. To identify empirical evidence of the capital structure choice behavior of a company with more profitability and growth or not.
3. To identify whether the firms with more volatile earning have lower debt capacities or not.

## 1.6 Research Contributions

This research is about tradeoff theory of capital structure on the Indonesia firm. It could give several contributions. First, for the researcher, this research can change the writer perspective toward the role of capital structure in a company, so that the writer can finally

realize that some aspect can motivate the capital structure choice of a company. This thesis case is about the motives to get some tax advantage by managing their debt and equity so they can reach optimum combination between those.

Second, for the new investors, company's management, scholars, and other parties who are new in this field, this research can contribute one important consideration whenever they want to set their capital structure for a company. Especially in considering the effect of the debt financing in order to avoid the tax payment. Then for a financial manager this study will help them to have some consideration in making optimum formula of capital structure.

Finally, for the government who needs some consideration in making economics policy especially about investment policy and tax policy of a company can make some rule of order to controls the economic equilibrium in the country carefully.

## 1.7 Definitions of Terms

The terms used in this study are described as follows:

1. Capital structure: "The combination of debt and equity used by a company to finance the purchase of its assets" (Shapiro And Balbirer, 2001)

2. Trade - off theory: "A consequence of several imperfections. As interest payments are tax deductible and dividend payments are not, debt financing is associated with higher tax advantage" (Modigliani Miller, 1963).

3. Tax shielding: "The value of the savings associated with a permissible tax deduction. Depreciation and interest expense are the two most important tax shields dealt with in corporate finance" (Shapiro and Balbirer, 2001).

4. Agency cost: "The sum of all costs associated with having managers make decision on behalf of the owners. These costs include the costs of monitoring and control procedures, as well as the loss in value when manager do not make decisions in the best interest of owners" (Shapiro and Balbirer, 2001).

5. Agency conflicts: conflict of interest that arises when corporate decisions are delegated to agents (the managers) who work on behalf of the owners. (Shapiro and Balbirer, 2001)

6. Financial distress: a situation that occurs when a company has difficulty in meeting its contractual obligations. (Shapiro and Balbirer, 2001)

# CHAPTER II

# REVIEW OF RELATED LITERATURE

## 2.1 Introduction

This chapter presents the reality and concepts behind the capital structure choice. The first part presents basic concept of capital structure of the firms and debt tax shielding and also the effect of tax. The second part is related to the review of some previous studies. This part presents several investigation and research done by expert and scholar in the capital structure research. The last part of the chapter will show us the hypothesis formulation of the problem base on the capital structure theory.

## 2.2 Basic Concepts of Capital Structure

Capital structure is an important element in a firms finance even it is a necessity for the finance manager to understand about it, because this element will have significant impact to the company's value. As Emery and Finnerty (1997:463) said that:

"How a firm financed, it is called its Capital Structure. In simple terms, capital structure refers to the firm's proportion of debt financing, its leverage ratio. The choice of capital structure is pure risk return - trade off. We then showed that this is equivalent to saying that leverage does not affect the cost of capital – in a perfect capital market environment."

The capital structure puzzle is analogy for the question about the effects of capital structure on firm's value in real capital market. And puzzle is a particularly appropriate term, because our understanding has evolved in much the same way in which puzzle is pieced together, pieces are still being added, and we still don't have the complete picture.

In practice, capital structure mattes if for no other reason than that firms behave as though it does. The empirical evidence shows consistent patterns of leverage ratios. These patterns occur both across industries and for individual firms over time. This suggests that

managers have definite reasons for following certain policies. Some argue that firms are simply following certain policies. So we argues that firms are simply following the behavioral principle of finance – just copying each other – and that these patterns are "neutral mutations" that do not affect firm value but, once started, continued from habit and imitation. We believe this interpretation is to simplistic.

Optimal capital structure for each company are not the same and it cannot be copied exactly likes others company capital structure. This differences happen, caused the experience and condition for each company are different and it is involving many aspect includes government policy's about tax and capital, because in the early of modern theory of capital structure there was a proposition offered by Professors Franco Modigliani and Professors Merton Miller. They mention about the tax absence that can be made by the government only, as Brigham, Gapenski, Daves (1999) said on their book that:

> Modern capital structure theory began in 1958, when Professors Franco Modigliani and Merton Miller (hereafter MM) published what has been called the most influential finance article ever written. MM proved, but under a very restrictive set of assumptions, that a firm' s value is unaffected by its capital structure. Thus, MM's results suggest that it does not a matter how a firm finances its operations, because, at least under their assumptions, capital structure is irrelevant. One of the assumptions needed by MM to derive their results was the absence of taxes, both corporate and personal. With zero taxes, the increase in the return to stockholders is just commensurate with the risk assumed; hence there is no net benefit in using financial leverage. Despite the unrealistic assumptions, MM's irrelevance result is extremely important. By indicating the condition under which capital structure is irrelevant, MM also provided us with some clues about what is required for capital structure to be relevant and hence to affect a firm's value.

That is why this optimal capital structure theory matter still becomes great puzzle for people and an interesting phenomena to be studied and completed. When this matter is (nearly) found it would be such great contribution to the business environment.

### 2.2.1. The Target of Capital Structure

As the writer mentioned before, for a company it is not a simply duplicating matter or adopting others company policy of capital structure, financial manager must consider many aspects to determine their capital structures policy. As Brigham and Ehrhardt (2002) said that:

Firms should first analyze a number of factors, and then establish a target of capital structure. This target may change over time as conditions change, but at any given moment, management should have a specifics capital structure in mind. If the actual debt ratio is above the target, equity should generally be issued.

Capital structure policy involves a trade off between risk and return:

- Using more debt raises the risk borne by stockholders.
- However, using more debt generally leads to a higher expected rate of return on equity, ROE.

Higher risk tends to lower a stock's price, but a higher expected ROE raises it. Therefore, the optimal capital structure must strike a balance between risk and return so as to maximize the firm's stock price.

Brigham and Ehrhardt (2002), also give in their book five primary factors influence capital structure decisions.

1. Business risk or the risk inherent in the firms operations
2. The firm's tax position.
3. Financial flexibility.
4. Managerial conservatism or aggressiveness.
5. Growth opportunities.

These five points largely determine the optimal target capital structure, but operating conditions can cause the actual capital structure to vary from the target. For example, X Company has a target debt ratio of about 45 percent, but large looses associated with a new investment, forced it to write down its common equity, and that raised the debt ratios above the target level. The company then had to get its equity back up to the target level.

Those factors actually can become manager consideration for making their capital structure. So when they want to replicate others company policy that relatively betters then

them, they are not trapped into duplicating it only because surely there are differences between those companies.

### 2.2.2. Modigliani and Miller Theory

Likes we mentioned above MM are proposing such different proposals about capital structure concepts that influence many scientists. That is why their proposition becomes the beginning of modern capital structure era. As Ross, Westerfield and Jafe (2002:395:396; 397; 399) said:

Modigliani and Miller (MM) have a convincing argument that a firm cannot change the total value of its outstanding securities by changing the proportions of its capital structure. In other words, the value of the firms is always the same under different capital structures. In still other words, no capital structure is any better or worse than any other capital structure for the firm's stockholders. This rather pessimistic result is the famous **MM propositions I. MM proposition** I (No Taxes): the value of the levered firms is the value of the levered firms. This is perhaps the most important result in all corporate finance. In fact, it is generally considered the beginning point of modern managerial finance. Before the MM, the effect of leverage on the value of the firm was considered complex and convoluted. Modigliani and Miller show blindingly simple result: if levered firms are priced too high, rational investors will simply borrow on their personal accounts to buy shares in not levered firms. This substitution is oftentimes called *homemade leverage*. As long as individuals borrow (and lend) on the same terms as the firms, they can duplicate the effects of corporate leverage on their own.

Since levered equity has greater risk, it should have a greater expected return as compensation this type of reasoning allows us to develop **MM propositions II**. Here MM argue that the expected return on equity is positively related to leverage, because the risk to equity holders increases with leverage. To develop this position, the firm's weighted average cost o capital, $r_{wacc}$, can be written as:

$$\frac{B}{B+S} \text{ X } r_B + \frac{S}{B+S} \text{ X } r_S$$

Where

$r_B$ *is the* interest *rate, also called the* cost *of debt*

$r_S$ *is the* expected *return on equity or stock, also called the* cost *of equity or the required return on equity*

$r_{WACC}$ *is the firm's weighted average* cost *of capital*

$B$ *is the value of the firm's debt or bonds*

$S$ *is the value of the firm's stock or equity*

This formula is quite intuitive. It simply says that a firm's weighted average cost of capital is a weighted average of its cost of debt and its cost of equity. The weight applied to debt is the proportion of debt in the capital structure, and the weight applied to equity is the proportion of equity in the capital structure.

Proposition II states the expected return of equity, $r_s$ in terms of leverage. The exact relationship derived by setting $r_{wacc} = r_o$ and the rearranging formula

MM Proposition II

$$r_s = r_o + \frac{B}{S}(r_o - r_B)$$

This equation implies that the required return on equity is a linear function of the firm's debt to equity ratio.

### 2.2.3. Leverage or Debt Tax Shielding

The subtitle above gives the real picture about the dilemmas of the company in determining their debt policy. Likes Berens and Cunny (1995) argued:

"Growing firms may achieve complete tax shielding without being fully debt finance". This is especially the case if leverage is measured in terms of markets value. Indeed, the market value of equity already accounts for future growth opportunities, although it is not yet necessary to shield income from future investments.

Thus the debt ratio does not fully capture the firm's tax shielding. One should rather look at the amount of taxes the firm pays or rather does not pay. Berens and Cunny propose an alternative instrument: the debt tax shielding ratio (TSR):"the fraction of the (...) tax rate times income not actually paid as tax (...) with each component summed across years". Such a ratio measures the tax payments avoided by the use of interest bearing debt financing.

We will use this approximation:

$$TSR = \frac{\sum_t \tau_C^t \, X \, Fiscal Income Before Indebtedness Expenses^t - \sum_t Taxes}{\sum_t \tau_c^t \, X \, Fiscal Income Before Indebtedness Expenses^t}$$

In this approximation $\tau^t_c$ is the corporate tax rate for year t.

### 2.2.4. The Effect of Taxes

Likes writer mentioned before there is some aspects that financial manager should consider about in determining the company's capital structure. Those aspects are having significant influence with the condition of company especially about company's tax position, because these aspects are directly giving some impacts with company's profit.

Modiglianni and Miller (1963) published in their follow up paper in which they relaxed that there are no corporate taxes. The tax code allows corporations to deduct interest payments as an expense, but dividend payments to stockholders are not deductible. This differential treatment encourages corporations to use debt in their capital structures. Indeed, MM demonstrated that if all their assumptions hold, this differential treatment leads to a situation that calls for 100 percent debt financing.

Several years latter, Merton Miller makes his new statement, (this time without Modigliani) when he brought in the effects of personal taxes. He noted that all of the income from bonds is generally interest, which is taxed as a persona, income at rates going up to 39.6 percent, while income from stocks, generally comes partly from dividends and partly from capital gains. Further, long term capital gains are taxed at a rate of 20 percent, and this is tax deferred until the stock is sold and the gain realized. If stock is kept until the owner dies, no capital gain tax whatever must be paid. So on average, returns on stocks are taxed at lower effective rates than returns on debt.

Because of the tax situation Miller argued that investor are willing to accept relatively low before tax returns on stock relative to the before tax returns on bonds. For example, an investor might require a return of 10 percent on Strasburg's Bonds, and if stock income were taxed at the same rate as bond income, the required rate of return on Strasburg's stock might be 16 percent because of the stock's greater risk. However, in view of the favorable treatment of income on the stock, investors might be willing to accept a before tax return of only 14 percent on the stock.

Thus, as Miller pointed out (1) the deductibility of interest favor the use of debt financing, but (2) the more favorable tax treatment of income from stock lowers the required rate of return on stock and thus favors the use of equity financing. It is difficult to say what

the net effect of these two factors is. Most observers believe that interest deductibility has the stronger effect, hence that our tax system still favors the corporate use of debt. However, that effect is certainty reduced by the lower long-term capital gains tax rate.

One can observe changes in corporate financing patterns following major changes in tax rates. For examples, in 1993 the top personal tax rate on interest and dividends was raised sharply, but the capital gains tax rate was not increased. This could be expected to result in greater reliance on equity financing, especially through retained earnings, and that has indeed been the case. The lowering of the long-term capital gains tax rate in 1997 continued this trend.

### 2.2.5 The Effect of Bankruptcy Costs

On MM's proposition the results also depend on the assumption that there are no bankruptcy costs. However, bankruptcy can be quite costly. Bankruptcy often make a Firms in bankruptcy have a hard times to retain their customers, suppliers, and employees, and it makes them have to make very high legal and accounting expenses. Moreover, bankruptcy often forces a firm to liquidate and to sell assets for less than the current value of the assets it self. It is because assets such as plant and equipment are often illiquid because they are configured and set up to a company's individual needs, and also because they are difficult to disassemble and move. So it makes the prices of the assets sold, are below their real value if the firms continue to operate.

Another Problem is that, the threat of bankruptcy, not just bankruptcy per se, brings about problems. Key employees jump ship, suppliers refuse to grant credit, customers move to other supplier that more stable, and Creditors demand higher interest rates or even refuse to extend credit.

Bankruptcy related problems are most likely to arise when the composition of firms debt are bigger than the other components in the capital structure. Therefore, potential bankruptcy costs discourage firms from stressing their use of debt to excessive levels.

As Brigham, Gapenski, Daves (1999) said," Bankruptcy related cost depend on three things: (1) the probability of bankruptcy, (2) the costs the firm that will incur if financial distress arises, and (3) the adverse effects that the potential for bankruptcy has on current operations. Firms whose earnings are more certain, all else equal, face a greater chance of bankruptcy and, therefore, should use less debt than more stable firms." A firm whose value primarily is due to growth opportunities and not to assets in place suffers from both a high cost of financial distress and from adverse effect on current operations. Consider a software developer versus a hotel chain. In the event of distress or liquidation, the hotel chain a raise funds by selling property. In contrast, the software developer cannot sell its assets, which consist primarily of its employees' intellectual capital. To avoid defaulting on loans, the software developer must reduce expenses, either by lying off employees or by cutting R&D. but both these actions have significant negative impacts on the value of the company, making bankruptcy even more likely. As this example shows, potential financial distress is an especially serious situation for high tech companies.

This is in line with the earlier statement that firms with a high degree of operating leverage, and thus greater business risk, should limit their use of financial leverage. Likewise, firms, which would face high cost in the event of financial distress, should rely less heavily on debt. For example, firms whose assets are illiquid and thus would have to be sold at "fire sale" prices should limit their use of debt financing.

### 2.2.6. Trade Off Theory of Capital Structure

Shapiro and Balbirer (2000) were said that there are two strands of thought about capital structure. One says that capital structure is irrelevant: Firm value is determined by the yield on the company's real assets, and juggling the claims on those assets doesn't change their total value. The second strand of thought is that because of taxes and other factors, an optimal degree of financial leverage – the ratio of debt to equity – does exist, and firms can boost their market value by adding debt to the capital structure up to certain point.

These other factors include the adverse incentives that shareholders may have to undertake risky projects when financed primarily with debt (an agency problem), the harmful effects of financial distress on company sales and costs, and the potential loss of financial flexibility if heavily leveraged. On the other hands, there are also beneficial effects associated

with the use of debt for certain types of firms, because of the extraordinary performance of many leveraged buyouts

"The tradeoff theory of finance states that this is a consequence of several imperfections. As interest payment is tax deductible and dividend payment are not debt financing is associated with a high tax advantage" (Modigliani and Miller, 1963).

Logically we can have high tax advantage through (nearly) fully debt financed. But in the real world, there is insufficient evidence that can confirm these logics. Firms could balance the cost and benefits of debt financing and choose the debt level where the marginal cost of debt financing equals its marginal benefit. This would result in the existence of an optimal capital structure. Once the optimal capital structure is reached, the tax advantage of additional debt is offset by the increase in the cost of financial distress.

"Including the agency theoretical aspect in this tradeoff framework is a quite common now. As debt financing causes monitoring by lenders and reduces the free cash flow, debt can be used as an instrument to align the interests of managers and shareholders" (Jensen and Meckling (1976), Jensen (1986)

It tends a firms with more shareholders–management conflicts would thus to use more debt financing. Even we know that debt-financing can also makes conflicts of interest between shareholders and creditors. Firms that are vulnerable to this type of conflicts would use less debt financing.

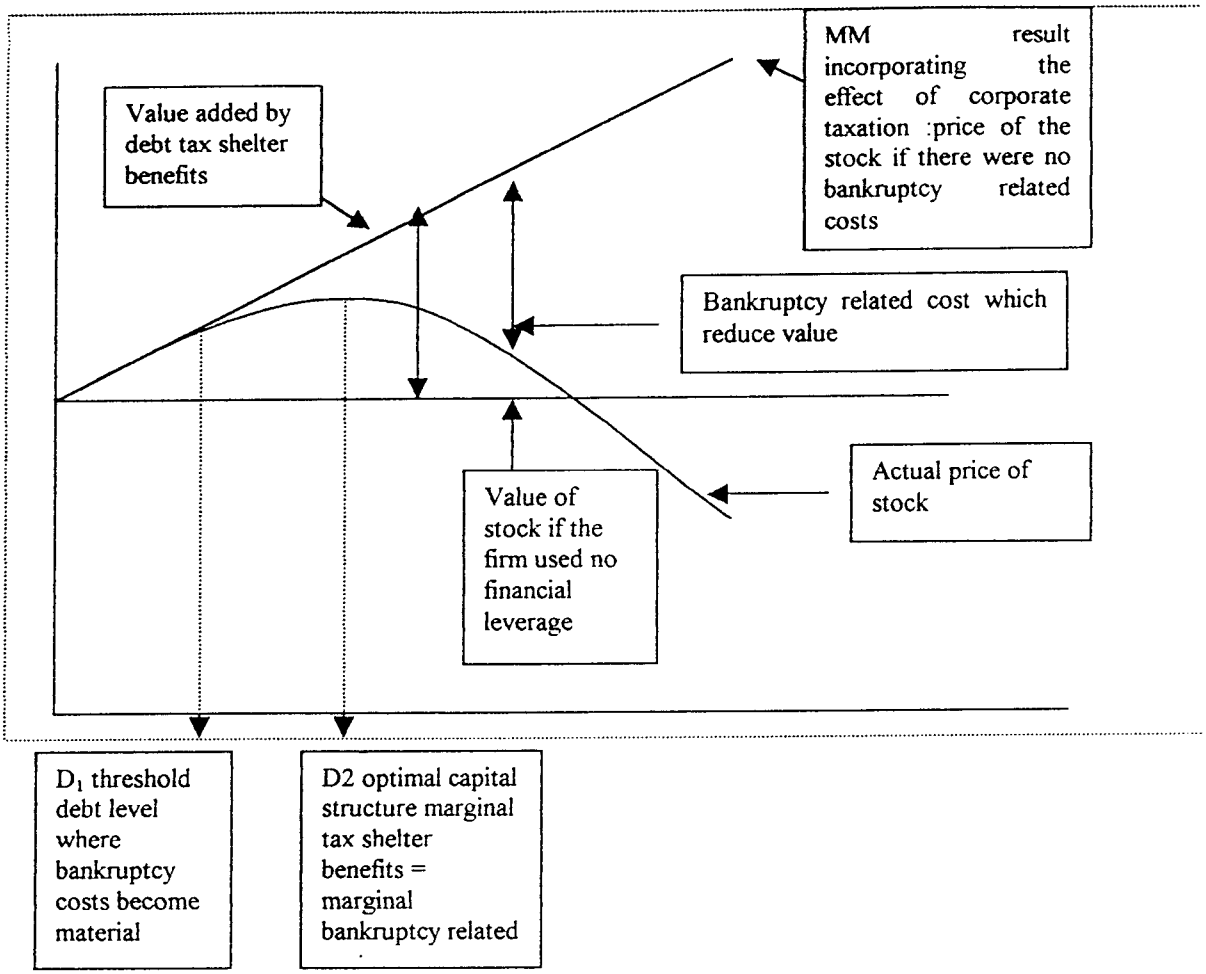
As Brigham, Gapenski, Daves (1999:376) said:

Research following the MM papers has led to a "trade off theory leverage," in which firm's trade off the benefits of debt financing (favorable corporate tax treatment) against higher interest rates and bankruptcy costs. A summary of the trade off theory is expressed graphically in next figure. Here are some observations about the figure:

1. The fact that interest is deductible makes debt less expensive than common or preferred stocks. In effect, the government pays part of the cost of debt capital, or to put it another way, debt provides tax shelter benefits. As a result, using debt causes more of the firm's operating income (EBIT) to flow through to investors, so the more debt a company uses, the higher its value and stock price. Under the MM assumptions, when corporate taxes are considered, a firm's stock price will be maximized if it uses 100 percent debt. The line labeled "MM results incorporating the effects of corporate taxation" in the figure expresses this relationship.

2. In the real world, firms rarely use 100 percent debt. One reason is because of the favorable personal tax treatment of income from stocks. However, the primary reason is that firms limit their use of debt to reduce the probability of financial distress (bankruptcy). Also, the interest rate on debt becomes prohibitively high at high debt levels.
3. There is some threshold level of debt, labeled $D_1$ in the figure, below which the probability of bankruptcy is so low as to be immaterial. Beyond $D_1$, however, bankruptcy related costs and rising interest rates become increasingly important, and they reduce the tax benefits of debt at an increasingly important, and they reduce the tax benefits of debt at an increasing rate. In the range from $D_1$ to $D_2$, bankruptcy related costs reduce but do not completely offset the tax benefits of debt, so the firm's stock price rises (but at a decreasing rate) as its debt ratio increases. However, beyond $D_2$, bankruptcy related cost exceed the tax benefits, so from this point on increasing the debt ratio lowers the value of the stock. Therefore, $D_2$ is the optimal capital structure.
4. Although it is not shown in the figure, there is a relationship between the firm's stock price and its weighted average costs of capital. As a firm uses more and more debt, its weighted average costs of capital first decreases, then reaches a minimum, and eventually begins to rise. Moreover, the minimum weighted average cost of capital occurs where the stock price is maximized – at point $D_2$ in the figure. Thus, the same capital structure that maximizes the stock price also minimizes the overall cost of capital.
5. Both theoretical and empirical evidence support the preceding discussion. However, statistical problems prevent us from precisely identifying Points $D_1$ and $D_2$. So, while theoretical and empirical works supports the general shape of the curves in the figure, these curves must be taken as approximations, not as precisely defined functions. It is worth nothing, however, that many theoretical models show that the maximum value of an optimally levered firm is from 10 to 20 percent greater than a not levered firm. These models also indicate that the optimal amount of leverage is from 30 to 60percent. These results contrast sharply with the case in which bankruptcy cost are ignored, in which the optimal leverage is 100 percent and the value o the levered firm can be more than 70 percent greater than an not levered firm (depending on corporate tax rates and the firm's ROIC).
6. A disturbing empirical contradiction to capital structure theory as expressed in the figure is the fact that many large, successful firms such as Intel and Microsoft use far less debt than the theory suggests. This point led to the development of the signaling theory, which is discussed next.

Figure 2.1




### 2.2.7. Signaling Theory of Capital Structure

Naturally human being have their own interest, and a company actually is an organization likes, that consist of human being who have the same goal, to have profit. But in here actually even they have the same goals it might have different intense and interest that influence their action in the daily operational. This condition actually having some latent problem if a management did not notice about it. In firms the writer can define those groups that might have different interest which are management, and investor, and also stakeholder likes creditor and employee. Why the writer needs to notice that, because in capital structure theory that condition are also having impacts with the capital structure decisions. Because every single policy's that comes out from a company having a signal or picture of the company conditions. So a management especially for finance manager should be careful in

making decisions of capital structure based on signaling theory of capital structure, as Brigham, Gapenski, Daves (1999) said:

> One of MM's assumptions is that investors and manager have exactly the information about a firm's prospects – this is called ***asymmetric information.*** However, managers often have better information than outside investors. This is called asymmetric information, and it has an important effect on capital structure.
> To see why, consider two situation, one in which the managers know that the future looks bad

Now, suppose firm O's (stand for the Outstanding firms) R&D labs have just discovered a no patent able cure for the Avian Influenza. They want to keep the new product a secret as long as possible to delay competitor's entry into market firm. Firm O must develop plants to make the new product, so capital must be raised. How should firm O's management raise the needed capital? If the firm sells stock, then, when profits from the new product start flowing in, the price of the stock would rise sharply, and the purchasers of the new stock would make a bonanza. The current stockholders (including the managers) would also do well, but not as well as they would have done in the company had not sold stock before the price increased, because then they would not have had to share the benefits of the new product with the new stock holders. Therefore, one would expect a firm with very favorable prospects to try to avoid selling stock and, rather, to raise any required new capital by using debt beyond the normal optimal capital structure.

Now let's consider the worse firm, firm W. Suppose its managers have information that new orders are off sharply because a competitor has installed new technology which has improved its product's quality. Firm W must upgrade its own facilities, at a high cost, just to maintain its current sales. As a result, its return on investment will fall (but not by as much as if it took no action, which would lead to a 100 percent loss through bankruptcy). How should firm W raise the needed capital? Here the situation is just the reverse of the facing firm O.

Firm W, because of its unfavorable prospects, would want to sell stock, which would a mean bringing in new investors to share the losses!

Brigham, Gapenski, and Daves (1999) than concludes (1) that firms with extremely good prospect prefer to finance with debt, whereas (2) firms with poor prospects like to finance with stock. How should you as an investor, as an investor, react to this conclusion? You ought to say, "If I see that a company plans to issue stock, this would worry me. I know that management would not want to issue stocks if future prospects looked good, but it would want to issue stock if things looked bad. Therefore, I should lower my estimate of the firm's value, other things held constant, if it announces a stock offering." The negative reaction should be stronger if the stock sale were by a large, established company such as GM or IBM, which has many financing options, than if it were by a small, unlisted company such as GeneSplicer. For GeneSplicer, a stock sale might signify truly extraordinary investment opportunities that cannot exploit without raising new equity.

If you agree with that answer, your opinion are in line with those of sophisticated portfolio managers of institutions such as Morgan Guaranty Trust, Fidelity Investment, Prudential Insurance, and so forth. So, in short, if a mature firm issuing the new stock offering even they have another financing alternatives is taken as a signal that the firm's prospects as seen by its management are not bright.

What is the implication of signaling theory for capital structure decisions? The answer is that firms should, in normal times, maintain a reserve borrowing capacity, which can be used in the event that some especially good investment opportunity comes along. This means that firms should, in normal times, use less debt than is suggested by the tax benefit/ bankruptcy cost tradeoff model expressed in the figure above.

### 2.2.8. Using Debt To Constrain Managers

Because of asymmetric information that own by the manager a company should constrain the managers, "One answer is greatly expanding leverage, by issuing large amounts of debt and using the proceeds either to pay a big dividend or to buy back stocks" Shapiro and Balbirer (2001). Because the value of equity equals the value of the firms less the value of its debt, using excess cash to make debt payments effectively returns this cash to shareholders.

That is why management is committed to using corporate cash flows for principal an interest payment. Any expansion must henceforth be financed with new capital; subjecting management's investment plans to the exacting discipline of the market.

But why should managers take on such large amounts of debt and reduce their discretion over free cash flow when they were previously unwilling to return the cash directly to the shareholders a price of their shares that exceeds the current market price and still make money by running the company more efficiently.

As Brigham, Gapenski, Daves (1999:376) said:

Agency problem may arise if managers and shareholder have different objectives. Such conflicts are particularly likely when the firm's manager have too much cash at their disposal. Then managers can use this cash to finance pet projects or for perquisites such as nicer offices, corporate jets, and ticket to sporting events, all of which may do little to raise stock prices. By contrast, managers with constrain on free cash flow, such as commitments to make interest and principal payments, are less able to make expenditures. This is called " bonding" the free cash flow.

Firms can reduce obligation, or bond, free cash flow in many of ways. One way is to turn it over to shareholders through gives higher dividends or stock repurchases. Another alternative is to change the capital structure toward more debt in the hope that higher debt service requirements will force managers to become more disciplined. If debt is not serviced as required, the firm will be forced into bankruptcy, in which case its managers would likely lose their jobs. Therefore, a manager is less likely to buy that expensive but not really necessary new corporate jet or does not want buy sport even ticket that there is no direct return to the core of business, if the firm has large debt service requirements.

Brigham, Gapenski, Daves (1999) Said that:

Leveraged buyouts (LBOs) bond free cash flow. In an LBO, debt is used to finance the purchase of a company's shares, after which the firm " goes private." Many leveraged buyouts, which were especially common during the late 1980's, were structured specifically to reduce corporate waste. Of course, increasing debt to bond free cash flow has a downside: It increases the risk of bankruptcy, which can be costly. One observer has argued that adding debt to a firm's capital structure is like putting a dagger pointing at the driver into the steering wheel of your car. The danger motivates you to drive more carefully, but you may get stabbed if someone runs into you, even if you are being careful. The analogy applies to corporations in

the following sense: higher debt forces managers to be more careful with shareholders' money, but even well run firms could face bankruptcy (get stabbed) if some event beyond their control occurs. To continue the analogy, the capital structure decisions comes down to deciding how big a dagger stockholders should employ to keep managers in line.

## 2.3 Previous studies

The previous studies that serve as a base of this research are:

1. Ilse Verschueren from department of Micro economics, Vrije Universiteit Brussels in VOB Money and Finance Working Paper 26 September, 2001, write a paper with title " Capital structure or Debt Tax Shielding Ratio? An Empirical Investigation for Belgian Firms". He did some study of 958 of large Belgian firms in 1990 – 1996 periods, in order to find whether the theoretical determinants of capital structure influence the firms' debt tax shielding ratios.

He used a sample of large non-financial Belgian firms to test whether the trade off theory and agency theory can explain the variation in debt tax shielding across firms. The results of the analysis provide hardly more support for the trade off and agency theories of capital structure choice than classic research on the determinants of capital structure do. The hypothesis that firms for which the tax advantage of debt financing is higher have higher debt tax shielding ratios get only meagre support: more profitable firms have lower debt tax shielding ratios. Only the results concerning depreciation and shot term debt are consistent with this expectation.

Although there is some support for the idea that firms with higher costs of financial distress will have lower debt tax shielding ratios – larger firms have higher debt tax shielding ratios, firms that shrinks more have lower ones – the evidence is not conclusive, as the variability of profit does not have the predicted impact. He finds

no indications that avoiding agency conflicts of any type plays a significant role in the determination of debt tax shielding.

After all, the results of the analysis are quite close to those of both international and Belgian research on the determinants of capital structure choice and provide only limited support for the trade of theory of capital structure choice.

2. Publish by Gajah Mada International Journal of Business in January 2002. Vol.4.pp 31-43, Eduardus Tandelin and Turyasingura Wilberforce did some study on several veins of research, with a title "Can debt and Dividend Policies Substitute Insider Ownership in Controlling Equity agency conflict?" By simultaneously modeling the relations between insider ownership, debt policy, and dividend policy it was possible to analyze the existence of the substitution effect between the three-agency control mechanisms. This study focuses on how insider ownership relates to debt policy and dividend policy. It was found that the use of high debt ratios substitutes for the use of insider ownership in resolving the conflict between external stockholders and managers. However contrary to the widely held view that high insider ownership leads into low levels of dividend payout ratio this study documents a monotonic relationship between the two institutional ownership was revealed as a major determinant of both the levels of insider ownership and dividend policy, which have a negative and a positive relationship respectively.

3. Sidharta Utama (2003) in Gajah Mada International Journal of Business vol.5. pp. 57-77, conducted some study about empirical test of the impact of the 1986 Tax reforms Act on the change in dividend payout ratios of corporations. This study took a title "Tax Cost and Corporation Dividend Policy (evidence from the 1986 U.S. Tax Reforms acts) ". The results of the tests are consistent with Scholes and Wolfson's

assertion that corporation have experienced increased incremental tax costs relative to partnership after 1986.

The study empirically shows that there is an inverse relationship between the change in tax wedge and the change in dividend payout payouts ratios. The degree of the relationship is stronger for firms with longer average holding periods. In addition, dividend payout ratios tend to increase for firms that do not experience an increase in incremental tax costs and have low payout ratios. There is some evidence that the increase in dividend payout ratios is strongest for firms with short average holding period. These firms increased their payout ratios because there is no more tax advantage from with holdings earnings. Lastly the study reveals that the lower bound and the upper bound tax wedges are subject to measurement bias. The lower bound tax wedge tends to understate the increase of the tax wedge while the opposite conclusion holds for the upper bound tax wedge.

The results seem to have several contributions to researchers. First, since the finding indicate that corporation act to minimize the tax that shareholders paid on dividends, they support the tax disadvantages theory of dividends and show that dividend policies are relevant for minimizing organizational costs. Second the finding that the relation between the changes in tax wedge depends on the investments horizon of shareholders implies that corporations do act in the interest of their shareholders. Third the results provide empirical evidence for predictions by Scholes and Wolfson regarding the increase in relative tax cost after the 1986 tax reform act. Fourth, the study provides alternatives measurement of the incremental tax costs.

The following are some extensions for future research. First, the study only examines the impact of the tax change on dividend policies of corporations. Stronger evidence

stockholders is positive. Second, share participation rates in Dividend Reinvestment Plan increased dramatically during 1982 – 1985, the effective period of the tax provision. Third, during the same period, equity capital raised through Dividend Reinvestment plan became a more significant source of external financing for qualifying firms was reduced, significantly decreasing their relative reliance on debt financing.

## 2.4. Hypothesis formulation

A company relates capital structure choice of a company with the funding decision that determines. This study will try to focus only in investigate the empirical evidence for trade off theory. Considering the results of previous studies hypothesis will be tested following this research:

- Variability

The writer use variability of income as a proxy for the probability of distress. It is measured by the standard deviation of profitability over the 1997 – 2001 period. Considering that, the first hypothesis will be: *variability should be positively affects, Tax shielding ratio (TSR).*

- Growth Opportunities (GO)

According to Myers (1977)," firms with more growth opportunities should borrow less debt, as a higher debt ratio might cause the loss of growth opportunities. Such firms should thus also have lower tax shielding ratio". Considering that, second hypothesis will be: *the growth opportunities should be negatively affects, the Tax Shielding Ratio (TSR)*

- Size

Larger firms are often supposed to experience economies of scale as far as cost of financial distress are concerned. Those firms are having more chance to have access to the financial markets as well as stock exchange, means those firms are having more flexibility and ability to have more funds. Considering that, third hypothesis will be: *Size of the company should be positively the Tax Shielding Ratio (TSR)*

- Profitability

If firms use debt as a means of reducing tax payments, firms with higher profits should have higher debt ratios. Such firms would than also have higher tax shielding ratio. Considering that, the fourth hypothesis will be*: the profitability of the firms should be positively affects Tax Shielding Ratio (TSR).*

- Assets

In order to account for the differences in the nature of assets among firms in our sample, the writer include the ratio of current assets to total assets and the ratio of fixed assets. Fixed financial assets are shares in other (mainly affiliated) firms, intended to contribute to the activities of the firm that holds them, by establishing a lasting and specific relationship, and loans that were granted with the same purpose. For some firms such assets are significant part of their total assets. Previous capital structure research for Belgian firms (Deloof and Verschueren (1998) showed that both the current assets ratio and the fixed financial assets ratio have a significant influence on capital structure. Considering that, the fifth and sixth hypothesis will be*: the current and fixed assets ratio of the firms should be positively affect the Tax Shielding Ratio (TSR).*

# CHAPTER III

# RESEARCH METHOD

## 3.1. Introduction

This chapter is aimed at giving a view of the research conducted by the researcher. The view will cover several important things such as the type of the study, the subject of the study, research instruments, research variables, and research procedures. Finally, as the most important thing before data analysis, this chapter presents the technique of the data analysis

## 3.2. Data

Data collection was obtained by compiling the secondary data that was available and quoting properly from data sources in the Faculty of economics library in Islamic University of Indonesia, Jogjakarta, and the Jakarta Stock Exchange corner. Data collection and the sources of the data are described as follows:

1. Company that listed on the Jakarta Stock Exchange and
   Announced their financial statement for the period 1997 until
   2001
2. Corporate tax rate level of the firms that use corporate finance for
   The period considered

## 3.3. Research Variables

Siegel and Morgan (1996:20) argued that, "a variable is any observable characteristic of the case. Variables used in this study were recognized into two, which are dependent variable and explanatory variable. Dependent variables are a variable that dependently change cause of a condition. Meanwhile an explanatory variable is a variable that explain the change

of the condition on the dependent variables. Both variables were measured from the financial statement of the company each period of the year considered.

### 3.3.1. Dependent Variables

Dependent variables in this study were the sum of accounting earning before taxes and indebtedness expenses and capitalized interest, and also the sum of the amount of taxes divided by the corporate tax rate and the indebtedness expenses, corrected for interest subsidies and capitalized interest. Those variables were measured based on the following approximation for the fiscal results before indebtedness expenses:

As Ilse Verschueren (2001) said that "if one wants to determine how much tax a firms avoids, by using debt financing, the calculation of the debt tax-shielding ratio should be based on tax revenue before indebtedness expenses."

However, that knowledge is not a public knowledge. The writer has used several approximations for the fiscal revenue before indebtedness expenses. Most approximations based on accounting earnings seem to overestimate tax shielding, because tax-exempt revenue cannot be separated from taxable income.

The writer will report the results for two dependent variables, based on the following approximations for the fiscal result before indebtedness expenses:

1. Ilsche Verschueren (2001) ***"The sum of accounting earning before taxes and indebtedness expenses corrected for interest subsidies and capitalized interes***t."

The result of this measure is that true fiscal income may differ substantially from this proxy if a large amount of the expenses are non tax deductibles (such as e.g. fines and some capital losses) and/or if a large part of revenue "franked" definitely taxed income (such as dividends received, under certain restrictions).

$$EBT = EBIT - Interest$$

2. Ilsche Verschueren (2001)***"The sum of the amount of taxes divided by the corporate tax rate and the indebtedness expenses, corrected for interest subsidies and capitalized interest"***.

An advantage of this measure over the previous one is that it accounts for non-tax deductibles and franked taxed income. A possible result of this measure is that some of the firms in the sample may have enjoyed a lower actual tax rate in some of the years. Even more, the interpretation is tricky, fiscal profits cannot be made if the firm did not pay taxes, as distinction between looses and zero. It should also be noted that part of the tax payment may relate to previous years and that this measure may be distorted if the firm builds up provisions.

Thus we can obtain an approximation for the TSR, by substitutes the proxies for the fiscal results before the indebtedness expenses into the mentioned equation, adapted for the data used in the present thesis:

$$TSR = \frac{\sum_{t=1997}^{t=2001} \tau_c^t \times fiscal\ income\ before\ indebtedness\ expenses^t - \sum_{t=1997}^{t=2001} Taxes^t}{\sum_{t=1997}^{t=2001} \tau_c^t \times Fiscal\ income\ before\ indebtedness\ expenses^t}$$

It should be noted that these measures do not account for the total tax saving caused by debt financing.

### 3.3.2. Explanatory variables

Explanatory variables used in this study were profitability, variability, size, total assets growth during 1997 -2001 period, ratio of current assets to total assets and the ratio of fixed financial assets to total assets. Those variables were measured as follows:

As Ilse Verschueren (2001) said," we expect the traditional determinants of the capital structure choice to influence the firm's TSR. If firms use debt as a means of reducing tax payments, firm with higher profits should have higher debt ratios. Such firms would then also have higher Tax Shielding Ratio".

***Profitability is calculated as income before taxes, interest expenses and extraordinary items, expressed as a proportion of total assets.***

***Profit Margin*** profit margin is computed by dividing profits by total operating revenue and thus they express profits as a percentage of total operating revenue. The most important margin is the net profit margin.

$$Net\ profit\ margin = \frac{net\ income}{total\ operating\ revenue}$$

$$Gross\ profit\ margin = \frac{EBIT}{total\ operating\ revenues}$$

***Return on Assets***. One common measure of managerial performance is the ratio of income to average total assets, both before tax and after tax.

$$Net\ return\ on\ assets = \frac{net\ income}{average\ total\ assets}$$

$$gross\ return\ on\ assets = \frac{EBIT}{average\ total\ assets}$$

***Return on equity***. This ratio (ROE) is defined as net income (after interest and taxes) divided by average common stockholder's equity.

$$ROE = \frac{Net\ income}{Average\ stockholders\ equtity}$$

It is customarily assumed that higher expected costs of financial distress reduce the optimal debt ratio. If the writer transposes this argument, the writer would expect firms with higher expected costs of financial distress to have lower TSRs. The writer use ***variability of income as a proxy for the probability of distress. It is measured by the standard deviation of profitability over the 1997 – 2001.***

$$S = \sqrt{S^2} = \frac{\sum_{i=1}^{n}(y_i - \bar{y})^2}{n-1}$$

Larger firms are often supposed to experience economies of scale as far as costs of financial distress are concerned. ***Size is measured as the natural logarithm of sales.***

According to Myers (1977), "firms with more growth opportunities should borrow less as a higher debt ratio might cause the loss of growth opportunities." Such firms should thus also have lower TSRs.

The writer therefore use the average percentage rate of ***total assets growth during the 1997 – 2001 periods as the proxy for investment opportunities.***

$$Cuurent\ assets\ ratio = \frac{Current\ assets}{total\ assets}$$

$$Fixed\ assets\ ratio = \frac{Fixed\ assets}{total\ assets}$$

Finally in order to account for the differences in the nature of assets among firms in the sample, the writer include ***the ratio of current assets to total assets and the ratio of fixed financial assets to total assets.*** Fixed financial assets are shared in other (mainly affiliated) firms, intended to contribute to the activities of the firm that holds them, by establishing a lasting and specific relationship, and loans that were granted with the same purpose. For some firms such assets are significant part of their total assets. Previous capital structure research for Belgian firms (Deloof and Verschueren (1998) showed that both current assets ratio and the fixed financial assets ratio have a significant influence on capital structure.

Firms with more non-debt tax shields should require less debt to minimize tax payments. The writer uses the fraction of depreciation over total assets as a proxy for non-debt tax shields. As the use of trade debt may also lower tax payments, the writer also use the fraction of trade debt over total assets as an explanatory variable.

For comparison purposes, the writer defines total debt as all liabilities. Long Term debt is the sum of all debt due in more than one year and the current portion of long-term debt; short-term debt is all debt due in all less than one year less the current portion of long term debt.

All explanatory variables except the variability measures are calculated as average over the 1997 – 2001 periods.

## 3.4. Research Procedures

In order to answer the research problem, it is imperative to constant research procedures. The procedures were arranged as follows.

1. Doing the statistical test to find out whether there was a significant variation in the relationships among the variables.
2. Analyzing and interpreting data
3. Deriving conclusion and any other findings.

## 3.5. Technique of Data Analysis

### 3.5.1. Population and Sample

The population from which a sample was taken for this study referred to all companies that were listed in Jakarta Stock Exchange from the period of 1997 – 2001. The samples of the study must meet some following requirements.

1. Firms financial statement must be available for the period of 1997 until 2001period.
2. The companies that not include in some specifics nature of their activities such As, energy and Water Company finance and banking company, services

Company.

3. Firms with only have complete data in the period considered

4. Firms that not reports zero sales during the period considered

5. Firms for which sales growth or total assets growth was not more than 100%.

In order to retain the largest sample possible, the writer work with the analysis for TSR based on a sample of firms for which TSR is positive but smaller than 1.

### 3.5.2 The Period of Observation

The time observations for this research are on per 31 December each year on the period considered, when the company published their annual report.

### 3.5.3 Analysis Steps

The analysis steps to organize this research were described as follows:

1. Obtaining the data of the announcement of yearly financial statement that consist Of assets and the liabilities of the firms.

2. Making descriptive statistics and makes statistical comparison between median and average of the TSR.

Thus we can obtain for the Approximations for the Tax Shielding Ratio, TSR, by substituting the proxies for the fiscal results before indebtedness expenses into fore mentioned equation, adapted for the data used in the present paper:

$$TSR = \frac{\sum_{t=1997}^{t=2001} \tau_c^t \times Fiscal\ Income\ Before\ Indbtedness\ Expenses^t - \sum_{t=1997}^{t=2001} Taxes^t}{\sum_{t=1997}^{t=2001} \tau_c^t \times Fiscal\ Income\ Before\ Indebtedness\ Expenses^t}$$

TSR = Tax Shielding Ratio

$\tau_c^t$ = corporate tax rate for year t.

3. Making correlation between the TSR measures and the debt ratios and explanatory variables.

4. Making regression for all the variables, in order to account the heteroscedascity.

To examine the hypothesis the multiple regression analysis was used. This method was used to examine all hypotheses.

The regression models used here was

$$\hat{Y} = \beta_o + \beta_1 \chi_{i.1} + \beta_2 \chi_{i.2} + \beta_3 \chi_{i.3} + \beta_4 \chi_{i.4} + \beta_5 \chi_{i.5} + \beta_6 \chi_{i.6} + \beta_7 \chi_{i.7i}$$

$\hat{Y}$ = *Tax shielding ratio*

$\chi_{i.1}$ = *the value of the size in the i trial*

$\chi_{i.2}$ = *the value of the profitability in the i trial*

$\chi_{i.3}$ = *the value of the variability in the i trial*

$\chi_{i.4}$ = *the value of the growth in the i trial*

$\chi_{i.5}$ = *the value of the current assets in the i trial*

$\chi_{i.6}$ = *the value of the short term debt in the i trial*

$\beta o$ = *first parameter of the regression in equation*

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$ = *indicates the slope of the regression on line*

### 3.5.4. Hypothesis Testing

The analysis step of hypothesis testing to the coefficient of regression will be as follows:

a. Determine the null hypothesis (Ho) and alternative hypothesis (Ha).

Ho1 = the variability does not affects the Tax Shielding Ratio (TSR)

Ha1 = the variability positively affects Tax Shielding Ratio (TSR).

Ho2 = size of the company does not affect the Tax Shielding Ratio (TSR).

Ha2 = size of the company positively affects the Tax Shielding Ratio (TSR).

Ho3 = Profitability of the company does not affects the Tax Shielding Ratio (TSR).

Ha3 = profitability of the company positively affects the Tax Shielding Ratio (TSR)

Ho4= Short term Debt of the company does not affects the Tax Shielding Ratio (TSR).

Ha4= Short term Debt of the company positively affects the Tax Shielding Ratio (TSR)

Ho5= Current assets of the company does not affects the Tax Shielding Ratio (TSR).

Ha5= Current Asset of the company positively affects the Tax Shielding Ratio (TSR)

Ho6 = growth opportunities of the companies does not affects the Tax Shielding Ratio (TSR).

Ha6 = growth opportunities negatively affects the Tax Shielding Ratio (TSR).

b. Testing for significance of the multiple regression model

In order to determine whether there is a significant relationship between the dependent variable and the set of explanatory variable. Because there is more than one explanatory variable, the null and the alternative hypotheses are set up as follows:

$H_O : \beta_1 = \beta_2 = \beta_3 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = ... = \beta_k = 0$

(No linear relationship between the dependent variables and explanatory variables.)

$H_a : at\ least\ one = \beta_j \neq 0$

(Linear relationship between the dependent variable and at least one of the explanatory variable.)

$F$ test for entire regression model in multiple regression

the $F$ statistics is equal to the regression mean square (MSR) divided by the error mean square (MSE).

$$F = \frac{MSR}{MSE}$$

where

$k$ = *number of explanatory variables in the regression model*

$F$ = *test statistic from an F distribution with* $n-k-1$ *degress of freedom*

| Source | Degrees of freedom | Sums of squares | Mean square (variance) | $F$ |
|---|---|---|---|---|
| Regression | $k$ | $SSR$ | $MSR = \frac{SSR}{k}$ | $F = \frac{MSR}{MSE}$ |
| Error | $n-k-1$ | $SSE$ | $MSR = \frac{SSE}{n-k-1}$ | |
| Total | $n-1$ | $SST$ | | |

The decision rules is

Reject $H_O$ at the level of significance if $F > F_{U(k,n-k-1)}$;otherwise do not reject $H_O$

c. Inferences concerning the population regression coefficients

Test of hypothesis

These tests are mean to know the significance the impact of each explanatory variable partially to the dependent variable. This test is done if only the test of $F$ test give the significant result, the tests are:

Ho1: $b1 \leq 0$ the explanatory variables (Variability) is not significantly affects the dependent variable (TSR).

Ha1: $b1 > 0$ the explanatory variables (Variability) is positively significant affects the dependent variable (TSR).

Ho2: $b1 \leq 0$ the explanatory variables (SIZE) is not significantly affects the dependent variable (TSR).

Ha2: $b1 > 0$ the explanatory variables (SIZE) is positively significant affects the dependent variable (TSR).

Ho3: $b1 \leq 0$ the explanatory variables (Profitability) is not significantly affects the dependent variable (TSR).

Ha3: $b1 > 0$ the explanatory variables (Profitability) is positively significant affects the dependent variable (TSR).

Ho4: $b1 \leq 0$ the explanatory variables (Current Assets) is not significantly affects the dependent variable (TSR).

Ha4: $b1 > 0$ the explanatory variables (Current Assets) is positively significant affects the dependent variable (TSR).

Ho5: $b1 \leq 0$ the explanatory variables (Short term Debt) is not significantly affects the dependent variable (TSR).

Ha5: $b1 > 0$ the explanatory variables (Short term debt) is positively significant affects the dependent variable (TSR).

Test criteria:

If the observed t value$\geq$ t table, than Ho = rejected, Ha = failed to be rejected.

If the observed t value$<$ t table, than Ho = failed to be rejected, Ha = rejected.

Ho6: b1=0 the explanatory variables (GO) is not significantly affects the dependent variable (TSR).

Ha6: b1<0 the explanatory variables (GO) is negatively significant affects the dependent variable (TSR).

Test criteria:

If the observed t statistic value≤ t table, than Ho = rejected, Ha = failed to be rejected.

If the observed t statistic value> t table, than Ho = failed to be rejected, Ha = rejected.

T tables comes from the tables of distribution of t with n-k-1 degrees of freedom (k= mount of explanatory variables = 7), with the α = 5% (0.05).

t statistic were count with formula:

$$t = \frac{b_i}{Sb_i}$$

$b_i$ = *coefficient regression of* explanatory variables ($X_i$)

$Sb_i$ = Standard error of coefficient regression ($b_i$)

# CHAPTER IV

# DATA ANALYSIS

## 4.1 Introduction

This chapter presents the technical details of data analysis presented in previous chapter. The basic purpose of this chapter is to describe the data collection process, research findings, discussions, and implications of the variables used in this research. All the results explained here were obtained by applying the analysis step that have been determined and explained in the previous chapter.

## 4.2 Research description

### 4.2.1 Research Preparation

In this study, the writer collects several relevant sources such as journal, whether it is in printed form or download journal. The data collections are from The Jakarta Stock Exchange corner as the representatives of Jakarta Stock Exchange (JSX) in Islamic University of Indonesia, and The Stock Exchange Reference Center Jakarta Stock Exchange (Pusat Referensi Pasar Modal Bursa Efek Jakarta) in Jakarta.

### 4.2.2 Research Process

Several samples must be selected first and to be obtained based on the data requirement mentioned in previous chapter, and than the obtained data will become the data variables in this research. There are 189 manufacturing companies listed on JSX from 1997-2001 periods that would be taken. This

company's data can be obtained at Indonesian Capital Market Directory in the period considered before.

These 189 manufacturing companies are then selected based on the research variable requirements. Finally this research takes 113 companies as the valid data sources. The sample of this research can be seen in the appendix.

Several data that have been taken from the companies are:

Taxes, fiscal income before indebtedness expenses, fiscal income after indebtedness expenses, ROE, NPM, GPM, fixed assets, current assets, total assets, cash on hands or banks or in other way we say it as liquid reserves, short term debt, net sales, and stock holders' equity. Those data are taken from Indonesian Capital Market Directory in the period considered.

Those data actually needs to be processed first until it can be used as the data variables analyzed. They are Tax shielding ratio, Size, Growth, ROA, and variability, current assets ratio, liquid reserves ratio, short term debt ratio (as variable control), except the NPM, GPM, and ROE because they have already been in the form of percentage.

## 4.3 Research Findings and Discussions

### 4.3.1 Regression Analysis

A. Descriptive statistic

The average tables are given in Table 4.1. The average firms seem to be able to shield off about 93% of their profits.

Table 4.1

| VARIABLE | MEAN |
|---|---|
| TSR | 0.91953280798364 |
| SIZE | 12.10765381971 |
| ROA | 0.053496923 |
| VARIABILITY | 0.12755000966359 |
| GROWTH | 0.14113026913051 |
| CURRENT ASSET | 0.4948337097609 |
| LIQUID RESERVES | 0.10352619327288 |
| TOTAL DEBT | 0.55823036289703 |
| SHORT TERM DEBT | 0.096781509 |
| NPM | 0.1430 |
| GPM | 0.2366 |
| ROE | 0.096447865 |

The average of total debt ratio is quite high, about 55% of the total asset is financed with debt. However the liabilities that comes up is in the form of Long Term liabilities, because the average short terms debt is only 9.6% from the total assets, and 49% of it is in the form of current assets.

Determination coefficients is one of statistical value that can be used to find out whether there is any relationship between variables of all independent variables with the dependent variable.

Table 4.2

| R | R Square |
|---|---|
| 0.171 | 0.029 |

In table 4.2 the $R^2$ is 2.9%. It means all independent variables can only explain the change on dependent variables on about 2.9% only. And the correlation coefficient between those variables is not quite close. It can be seen on the R column that shows only 17% coefficient correlation.

Table 4.3

| Model | Sum of squares | Df | Mean square | F | Sig |
|---|---|---|---|---|---|
| 1.Regression | 0.508 | 11 | 0.04619 | 0.254 | 0.992[a] |
| Residual | 16.938 | 93 | 0.182 | | |
| Total | 17.446 | 104 | | | |

Table 4.3 statistically proved that all independent variable (simultaneously) have no significant effect on the dependent variable. Cause the P value is more than $\alpha$=5%, or Ho excepted.

B. Hypothesis test

This test is aimed to find out the significant effect between each independent variable with the dependent variables. The result is shown in table 4.4

Table4.4

| Model | T | Sig |
|---|---|---|
| (Constant) | -0.237 | 0.813 |
| SIZE | 1.086 | 0.280 |
| ROA | 0.085 | 0.933 |
| Variability | 0.450 | 0.654 |
| Growth | 0.163 | 0.871 |
| Current asset ratio | -0.013 | 0.989 |
| Liquid reserves | 0.295 | 0.769 |
| Total Debt | -0.0155 | 0.877 |
| Short term debt | 1.032 | 0.305 |
| NPM | 0.457 | 0.648 |
| GPM | 0.076 | 0.940 |
| ROE | 0.539 | 0.591 |

a. Dependent Variable:TSR

In the table 4.4, P value for every independent variable is more than $\alpha$=5%. It means the writer will accept the Ho, because for each independent

variable that have been tested are not significantly influence the dependent variable.

### 4.3.2 Classical Assumption Test for Regression

The result of the classical assumption will be describe the data that is used in this research.

A. Multicollinearity Test

Since this study used multiple regressions, multicollinearity test must be conducted in this research. The purpose of Multicollinearity test is to find out whether there is correlation between each independent variable or not.

Multicollinearity test among independent variable can be seen by VIF (Variance Inflation Factor) and Tolerance. The multicollinearity on the table 4.5 shows that the VIF are less than 5 and the Tolerance are around 1 or nearly 1.or there is no multicolinearity.

Table 4.5

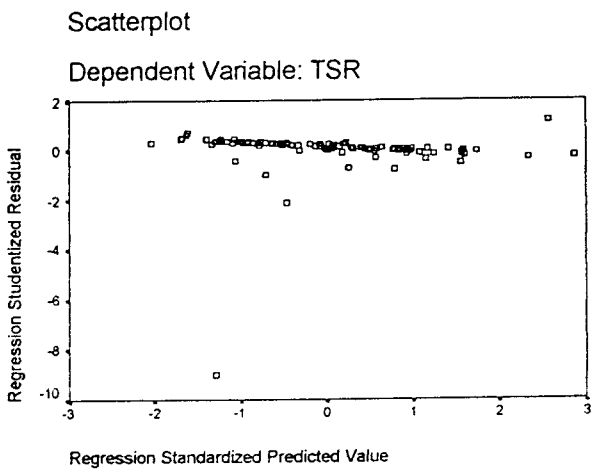
| Variable | Collinearity Statistics | |
|---|---|---|
| | Tolerance | VIF |
| (constant) | | |
| SIZE | 0.943 | 1.061 |
| ROA | 0.349 | 2.861 |
| Variability | 0.979 | 1.022 |
| Growth | 0.976 | 1.024 |
| Current Asset | 0.741 | 1.349 |
| Liquid reserves | 0.797 | 1.255 |
| Total debt | 0.755 | 1.324 |
| Short term debt | 0.770 | 1.299 |
| NPM | 0.601 | 1.664 |
| GPM | 0.684 | 1.462 |
| ROE | 0386 | 2.591 |

B. Heterocedasticity

Heterocedasticity test is a test in regression model, to find out the different variants from residual from one observation to another. To check the model function, the writer use scatter plot diagram of the variants of the variable that already being standardized. It is shown on graph 4.1

From the graph 4.1 below, when the points make some particular pattern, and they do not randomly spread, it means that there is some heterocedasticity happen.

Graph 4.1




## 4.4 Research Implication

### 4.4.1 Standard Specification

The results for the simple models are given in table 4.6, regressions. If TSR is used as the dependent variable, the size will not have the expected positive impact on the TSR. It is contrary with the idea that larger firms experience economies of scale concerning cost of financial distress. It is also in line with the results for Total Debt reported in Table 4.6.

Table 4.6.

| | | | TSR |
|---|---|---|---|
| Spearman rho | TSR | Correlation coefficient<br>Sig(2-tailed)<br>N | 1.000<br>.<br>111 |
| | SIZE | Correlation coefficient<br>Sig(2-tailed)<br>N | 0.034<br>0.723<br>111 |
| | ROA | Correlation coefficient<br>Sig(2-tailed)<br>N | -0.146<br>0.126<br>111 |
| | Variability | Correlation coefficient<br>Sig(2-tailed)<br>N | 0.238*<br>0.012<br>111 |
| | Growth | Correlation coefficient<br>Sig(2-tailed)<br>N | 0.005<br>0.962<br>111 |
| | Current assets | Correlation coefficient<br>Sig(2-tailed)<br>N | -0.032<br>0.739<br>111 |
| | Liquid Reserves | Correlation coefficient<br>Sig(2-tailed)<br>N | -0.122<br>0.203<br>111 |
| | Total Debt | Correlation coefficient<br>Sig(2-tailed)<br>N | 0.179<br>0.060<br>111 |
| | Short Term Debt | Correlation coefficient<br>Sig(2-tailed)<br>N | 0.152<br>0.110<br>111 |
| | NPM | Correlation coefficient<br>Sig(2-tailed)<br>N | -0.47<br>0.624<br>109 |
| | GPM | Correlation coefficient<br>Sig(2-tailed)<br>N | -0.175<br>0.072<br>107 |
| | ROE | Correlation coefficient<br>Sig(2-tailed)<br>N | -0.017<br>0.857<br>110 |
| | Trade debt | Correlation coefficient<br>Sig(2-tailed)<br>N | 0.022<br>0.521<br>113 |
| | Depreciation | Correlation coefficient<br>Sig(2-tailed)<br>N | 0.07<br>0.944<br>113 |

It is obvious that from the spearman's test the writer knows that there is no significant influence caused by the independent variable. It can be seen from the coefficient correlation parts from the test, which says that all the number is below 0.5 or less than 50% influence. In general Ho are accepted (there is no significant relationship) because the Probability value from the test are below $\alpha$ or below 5%, while for the variability, the Ho are rejected. The result is in line with the statement, which says that variability should be positively affects, the Tax Shielding Ratio.

By the result of the test, the writer can answer the problem mentioned before in chapter I. It is different with the theory of capital theory and the logical idea that company can increase the tax advantage through debt financing. The result of the research is that there is actually no significant relationship between the behaviors of the company in making their leverage increased with the idea of increasing companies tax advantage.

The second problem is whether the firms with more profitability use more debt financing, as the tax gain. Belgian researches in the Determination of Capital Structure Deloof and Verschueren (1998) said that the sign for profitability in regression is negative: more profitable firms make less use of a debt tax shield. This is contrary to the idea that more profitable firms would use more debt financing, as the tax gain for such firms would be higher. Furthermore, as the expected costs of financial distress should be lower for those firms, their debt capacity should be higher. On the other hand, it seems that shielding off large profits would require too much debt, while larger the profits, the higher the

probability that they stem from unforeseen exceptional revenues. Given the fact that the profitability measure is quite closely related to cash flow, agency conflicts between management and shareholders do not seem to play an important role either

Variability does not seem to influence the TSR. This is a surprise as in previous research Deloof and Verschueren (1998) proved that Variability does influence the capital structure. There is also a strong theoretical argument that says that firms with more volatile earnings should have higher expected costs of financial distress and therefore lower debt capacities.

Third problem is whether the firms with growth opportunities have lower debt financing to protect their growth opportunities. The growth in the table 4.6 does not influence the dependent variable different with the opinion which says that the Firms that experience stronger growth have a lower TSR. This result is contrary with Myers' (1977) prediction that firms for which growth is more important will borrow less.

Although firms with fewer current assets have lower leverage, they have a lower TSR. All in all, the results are generally different with those of both International and Belgian research on capital structure choice, and thus provide only weak support for the tradeoff theory.

Last problem is whether the firms with bigger size have higher debt financing as the tax gain for such firms. The answer is no. There is no significant relationship between the quantities of size with the company's capital structure choice behavior in determining the mount of their debt.

### 4.4.2 Alternative Specifications

A. Short term trade debt

It was stated above that a shortcoming of the TSR does not account for tax savings due to the use of the trade debt. Firms with more trade debt could thus be supposed to have a lower TSR. It can also be argued that, if there is something like a debt capacity, the more trade debt a firm uses, the lower the TSR will be.

Therefore regressions are estimated with the inclusion of ST credit. The results are given in table 4.6; both TSR measures are positively related to the use of ST trade debt even not so significant.

B. Non-Debt tax shields

In order to account for the presence of non - debt tax shields, a variable "depreciation" is included in the basic model regressions. As predicted by the tradeoff theory, firms with more non – debt tax shields make less use of a debt tax shields.

Depreciation, current assets and fixed financial assets are all expressed as a fraction of total assets. They may be heavily related and the equation is estimated without fixed financial asset. The results for the other variables remain unchanged, by using the fraction of tangible assets, instead of depreciation result in non significance for this variable.

C. Current assets and liquidity

It would be argued that the firms with more liquid reserves should have higher debt tax shielding ratios. First, for such firms expected costs of financial distress should be lower, as more liquid reserves reduce the probability that the

creditors will not be paid in full. Second, firms with more liquid reserves may be more vulnerable from the conflicts of the "management – shareholders" type, as the amount of funds that can be abused is higher.

A regression model however, as in the leverage regressions. The coefficients for the amount of liquid reserves are not significantly negative. These results are therefore not supportive for the tradeoff theory.

# CHAPTERV

# CONCLUSIONS AND RECOMMENDATIONS

## 5.1 Research Conclusions

There are some conclusions drawn from the statistical test analysis described in the previous chapter. The writer used an alternative method to verify the relevance's of the tradeoff theory of capital structure, named Shielding Ratio (TSR). The writer try to examine whether the theoretical theory of capital structure influence the behavior of the company in choosing their capital structure choice (use debt tax shielding ratio) or in other words, how they influence the tax saving due to the interest bearing debt financing. The writer used a sample of large Indonesia manufacturing companies to test whether the tradeoff theory and agency theory can explain the variation in debt tax shielding across the firms.

From the statistical test analysis that have been described in the previous chapters, there are:

a. In general, all null hypotheses are accepted empirically. It means there is no significance influence caused by all independent variables to the dependent variable or TSR.

b. There is no empirical prove that company can protect their income or increased their tax advantage through debt financing.

c. Companies with higher profitability are not proven using the debt financing to protect their profitability.

d. Companies tend to ignore the composition of amount of debt financing on their capital structure, because statistically the growth of variables does not influence the companies behavior in using debt finance.

e. There is no significant relationship between the quantities of size with the company's capital structure choice behavior in determines the mount of their debt.

Based on the conclusion derived, it can be stated that there is no significant support for the tradeoff theory influencing on companies' capital structure choice.

**5.2 Research recommendation**

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

a. The limitation of sample amount causes bias in this research. So it is better to have larger samples to avoid bias.
b. The model to verify the influences of capital structure theory is Tax Shielding Ratio. The result might be different if the research uses different alternatives.
c. It is recommended to use sample data collected from the primary data.

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# APPENDICES

| | Comp. Name |
|---|---|
| 1. | Central Proteinaprima Tbk |
| 2. | Charoen Pokphand IndonesiaTbk |
| 3. | Aneka Tambang Tbk |
| 4. | Medco Energi Corporation tbk |
| 5. | Tambang Timah Tbk |
| 6. | Petrosea Tbk |
| 7. | Ades Alfindo Putrasetia Tbk |
| 8. | Aqua Golden Mississippi Tbk |
| 9. | Cahaya Kalbar Tbk |
| 10. | Davomas Abadi Tbk |
| 11. | Delta Djakarta Tbk |
| 12. | Fast Food Indonesia Tbk |
| 13. | Indofood Sukses Makmur Tbk |
| 14. | Mayora Indah Tbk |
| 15. | Multi Bintang Indonesia Tbk |
| 16. | Sari Husada Tbk |
| 17. | Siantar TOP Tbk |
| 18. | Suba Indah Tbk |
| 19. | Ultrajaya Milk Indiustry & Trading Company Tbk |
| 20. | BAT Indonesia Tbk |
| 21. | Gudang Garam Tbk |
| 22. | Hanjaya Mandala Sampoerna Tbk |
| 23. | Argo Pantes Tbk |
| 24. | Century Texteile industry (CENTEX) Tbk |
| 25. | Eratex Djaja Limited Tbk |
| 26. | Panasia Filament Inti Tbk |
| 27. | Roda Vivatex Tbk |
| 28. | Sunson Textille Manufacturer Tbk |
| 29. | Teijin Indonesia Fiber Tbk |
| 30. | APAC Citra Centertex Corporation Tbk (PT. APAC INTI CORPORA) |
| 31. | Ever Shine Textille Industry Tbk |
| 32. | Great River International Tbk |
| 33. | Indorama Synthetics Tbk |
| 34. | Karwell Indonesia Tbk |
| 35. | Pan Brother Tex Tbk |
| 36. | Sarasa Nugraha Tbk |
| 37. | Sepatu bata Tbk |
| 38. | Daya Sakti Unggul Corporation Tbk |
| 39. | Fajar Surya Wisesa Tbk |

| | |
|---|---|
| 40. | Indah Kiat pulp & pape Corporation Tbk |
| 41. | Suparma Tbk |
| 42. | Budi Acid Jaya Tbk |
| 43. | Lautan Luas Tbk |
| 44. | Unggul Indah Corporation Tbk |
| 45. | Duta Pertiwi nusantara Tbk |
| 46. | Ekadharma Tape Industries Tbk |
| 47. | Intan Wijaya Chemical Industry Tbk |
| 48. | Kurnia Kapua Utama Glue Industries Tbk |
| 49. | Asahimas Flat Glass Co. Ltd |
| 50. | Berlina co.ltd.Tbk |
| 51. | Dynaplast Tbk |
| 52. | Igarjaya Tbk |
| 53. | Langgeng Makmur Plastic industry Tbk |
| 54. | Trias Sentosa Tbk |
| 55. | Indocement Tunggal Prakarsa Tbk |
| 56. | Semen gresik Tbk |
| 57. | Alumindo Light Metal industry Tbk |
| 58. | Citra Tubindo Tbk |
| 59. | Indal Alumunium Industry Tbk |
| 60. | Jaya Pari Steel Corp. Ltd Tbk |
| 61. | Lion Metal Works Tbk |
| 62. | Lionmesh Prima Tbk |
| 63. | Tembaga Mulia Semanan Tbk |
| 64. | Tira Austenite Tbk |
| 65. | Komatsu Indonesia tbk |
| 66. | Iki Indah Kabel Indonesia Tbk |
| 67. | Jembo Cable Company Tbk |
| 68. | Kabelindo Murni Tbk |
| 69. | Supreme Cable manufacturing Tbk |
| 70. | Astra Graphia Tbk |
| 71. | Metrodata Electronics tbk |
| 72. | Multi Polar Corporation Tbk |
| 73. | Trafindo perkasa Tbk |
| 74. | Astra International tbk |
| 75. | Branta Mulia Tbk |
| 76. | Goodyear Indonesia Tbk |
| 77. | Hexindo adiperkasa Tbk |
| 78. | Indospring Tbk |
| 79. | Intraco Penta Tbk |

| | |
|---|---|
| 80. | Nippres tbk |
| 81. | Prima Alloy Steel Universal Tb |
| 82. | Selamat Sempurna Tbk |
| 83. | Tunas Ridean Tbk |
| 84. | United Tractors tbk |
| 85. | Modern Photo Film Company Tbk |
| 86. | Perdana Bangun Pusaka Tbk |
| 87. | Bayer Indonesia Tbk |
| 88. | Dankos Laboratories Tbk |
| 89. | Darya Varia Laboratoria Tbk |
| 90. | Kalbe farma Tbk |
| 91. | Merck Indonesia Tbk |
| 92. | Squibb indonesia Tbk |
| 93. | Tempo Scan Pacific tbk |
| 94. | Procter&Gamble Indonesia Tbk |
| 95. | Tancho Indonesia tbk |
| 96. | Unilever Indonesia Tbk |
| 97. | Itamaraya Gold industry Tbk |
| 98. | Kedaung indah Can Tbk |
| 99. | kedawung Setia industrial Tbk |
| 100. | Mustika Ratu Tbk |
| 101. | Surya TOTO indonesia Tbk |
| 102. | Indonesian Stelite Corporation ( INDOSAT) Tbk |
| 103. | Telekomunikasi Indonesia (Telkom)Tbk |
| 104. | Enseval Putra Megatrading Tbk |
| 105. | Hero Supermarket Tbk |
| 106. | Matahari Putra Prima Tbk |
| 107. | NVPD Soedarpo Corporation Tbk |
| 108. | Ramayana Lestari Sentosa Tbk |
| 109. | Tigaraksa Satria Tbk |
| 110. | Toko Gunung Agung Tbk |
| 111. | Bakrie & brothers Tbk |
| 112. | Bimantara Citra Tbk |
| 113. | Indomobil Sukses international Tbk |

# Regression

**Descriptive Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| TSR | ,91953280798364 | ,40957436569604 | 105 |
| SIZE | 12,10765381971 | ,52976364464414 | 105 |
| ROA | 5,3496923E-02 | 9,2925716733198E-02 | 105 |
| Variability | ,12755000966359 | ,18044931303966 | 105 |
| GROWTH | ,14113026913051 | ,98034841380120 | 105 |
| current assets ratio | ,49483337097609 | ,19853331084222 | 105 |
| LIQUID RESERVES | ,10352519327288 | ,11132513039848 | 105 |
| TOTAL DEBT | ,55823036289703 | ,24816242669909 | 105 |
| Short termdebtratio | 9,6781509E-02 | ,12557008864970 | 105 |
| Net profit margin | ,1430 | ,2450 | 105 |
| Gross profit margin | ,2366 | ,1424 | 105 |
| ROE | 9,6447865E-02 | ,24510774841989 | 105 |

**Variables Entered/Removed**[b]

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | ROE, Variability, GROWTH, SIZE, TOTAL DEBT, current assets ratio, Gross profit margin, LIQUID RESERVES, Short termdebtratio, Net profit margin, ROA[a] | | Enter |

a. All requested variables entered.

b. Dependent Variable: TSR

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | -,235 | ,990 | | -,237 | ,813 | | |
| | SIZE | 8,832E-02 | ,081 | ,114 | 1,086 | ,280 | ,943 | 1,061 |
| | ROA | 6,448E-02 | ,762 | ,015 | ,085 | ,933 | ,349 | 2,861 |
| | Variability | ,105 | ,234 | ,046 | ,450 | ,654 | ,979 | 1,022 |
| | GROWTH | 7,024E-03 | ,043 | ,017 | ,163 | ,871 | ,976 | 1,024 |
| | current assets ratio | -3,24E-03 | ,245 | -,002 | -,013 | ,989 | ,741 | 1,349 |
| | LIQUID RESERVES | ,124 | ,421 | ,034 | ,295 | ,769 | ,797 | 1,255 |
| | TOTAL DEBT | -3,01E-02 | ,194 | -,018 | -,155 | ,877 | ,755 | 1,324 |
| | Short termdebtratio | ,392 | ,380 | ,120 | 1,032 | ,305 | ,770 | 1,299 |
| | Net profit margin | ,101 | ,220 | ,060 | ,457 | ,648 | ,601 | 1,664 |
| | Gross profit margin | 2,696E-02 | ,355 | ,009 | ,076 | ,940 | ,684 | 1,462 |
| | ROE | ,148 | ,275 | ,089 | ,539 | ,591 | ,386 | 2,591 |

a. Dependent Variable: TSR

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | ,171[a] | ,029 | -,086 | ,42676646660363 |

a. Predictors: (Constant), ROE, Variability, GROWTH, SIZE, TOTAL DEBT, current assets ratio, Gross profit margin, LIQUID RESERVES, Short termdebtratio, Net profit margin, ROA

b. Dependent Variable: TSR

**ANOVA[b]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | ,508 | 11 | 4,619E-02 | ,254 | ,992[a] |
| | Residual | 16,938 | 93 | ,182 | | |
| | Total | 17,446 | 104 | | | |

a. Predictors: (Constant), ROE, Variability, GROWTH, SIZE, TOTAL DEBT, current assets ratio, Gross profit margin, LIQUID RESERVES, Short termdebtratio, Net profit margin, ROA

b. Dependent Variable: TSR

**Coefficient Correlations**[a]

| Model | | | ROE | Variability | GROWTH | SIZE | TOTAL DEBT | current assets ratio | Gross profit margin | LIQUID RESERVES | Short termdebtratio | Net profit margin | ROA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Correlations | ROE | 1,000 | ,027 | ,016 | ,039 | -,090 | ,179 | ,047 | -,031 | ,107 | ,559 | -,581 |
| | | Variability | ,027 | 1,000 | -,035 | ,029 | ,012 | -,001 | ,081 | ,006 | -,070 | ,067 | -,063 |
| | | GROWTH | ,016 | -,035 | 1,000 | ,061 | -,058 | ,011 | ,013 | ,063 | ,031 | ,043 | -,077 |
| | | SIZE | ,039 | ,029 | ,061 | 1,000 | -,093 | -,116 | ,046 | ,021 | ,150 | -,087 | ,025 |
| | | TOTAL DEBT | -,090 | ,012 | -,058 | -,093 | 1,000 | -,050 | -,042 | ,244 | -,268 | -,001 | ,198 |
| | | current assets ra | ,179 | -,001 | ,011 | -,116 | -,050 | 1,000 | ,055 | -,105 | -,144 | ,289 | -,380 |
| | | Gross profit marg | ,047 | ,081 | ,013 | ,046 | -,042 | ,055 | 1,000 | -,119 | ,067 | ,025 | -,395 |
| | | LIQUID RESERV | -,031 | ,006 | ,063 | ,021 | ,244 | -,105 | -,119 | 1,000 | ,033 | -,031 | -,081 |
| | | Short termdebtra | ,107 | -,070 | ,031 | ,150 | -,268 | -,144 | ,067 | ,033 | 1,000 | -,089 | ,080 |
| | | Net profit margin | ,559 | ,067 | ,043 | -,087 | -,001 | ,289 | ,025 | -,031 | -,089 | 1,000 | -,294 |
| | | ROA | -,581 | -,063 | -,077 | ,025 | ,198 | -,380 | -,395 | -,081 | ,080 | -,294 | 1,000 |
| | Covariances | ROE | 552E-02 | 722E-03 | 925E-04 | 797E-04 | -4,791E-03 | 1,204E-02 | 4,629E-03 | -3,542E-03 | 1,114E-02 | 388E-02 | -,122 |
| | | Variability | 722E-03 | 494E-02 | 3,54E-04 | 465E-04 | 5,293E-04 | -4,320E-05 | 6,771E-03 | 5,927E-04 | -6,207E-03 | 481E-03 | 1,12E-02 |
| | | GROWTH | 925E-04 | 3,54E-04 | 866E-03 | 130E-04 | -4,837E-04 | 1,115E-04 | 2,016E-04 | 1,149E-03 | 5,014E-04 | 085E-04 | 2,53E-03 |
| | | SIZE | 797E-04 | 465E-04 | 130E-04 | 619E-03 | -1,466E-03 | -2,311E-03 | 1,323E-03 | 7,246E-04 | 4,636E-03 | 1,57E-03 | 531E-03 |
| | | TOTAL DEBT | 1,79E-03 | 293E-04 | 4,84E-04 | 1,47E-03 | 3,766E-02 | -2,379E-03 | 2,890E-03 | 1,992E-02 | -1,979E-02 | 2,51E-05 | 931E-02 |
| | | current assets ra | 204E-02 | 4,32E-05 | 115E-04 | 2,31E-03 | -2,379E-03 | 5,995E-02 | 4,754E-03 | -1,085E-02 | -1,342E-02 | 558E-02 | 7,10E-02 |
| | | Gross profit marg | 629E-03 | 771E-03 | 016E-04 | 323E-03 | -2,890E-03 | 4,754E-03 | ,126 | -1,779E-02 | 9,052E-03 | 979E-03 | -,107 |
| | | LIQUID RESERV | 3,54E-03 | 927E-04 | 149E-03 | 246E-04 | 1,992E-02 | -1,085E-02 | -1,779E-02 | ,177 | 5,208E-03 | 2,85E-03 | 2,60E-02 |
| | | Short termdebtra | 114E-02 | 6,21E-03 | 014E-04 | 636E-03 | -1,979E-02 | -1,342E-02 | 9,052E-03 | 5,208E-03 | ,144 | 7,49E-03 | 329E-02 |
| | | Net profit margin | 388E-02 | 481E-03 | 085E-04 | 1,57E-03 | -2,505E-05 | 1,558E-02 | 1,979E-03 | -2,847E-03 | -7,486E-03 | 857E-02 | 4,94E-02 |
| | | ROA | -,122 | 1,12E-02 | 2,53E-03 | 531E-03 | 2,931E-02 | -7,097E-02 | -,107 | -2,596E-02 | 2,329E-02 | 4,94E-02 | ,580 |

a. Dependent Variable: TSR

Correlations

| | | TSR | SIZE | ROA | Variability | GROWTH | current assets ratio | LIQUID RESERVES | TOTAL DEBT | Short termdebtratio | Net profit margin | Gross profit margin | ROE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pearson Correlation | TSR | 1,000 | ,095 | ,038 | ,047 | ,009 | ,025 | ,033 | ,002 | ,079 | ,034 | ,015 | ,030 |
| | SIZE | ,095 | 1,000 | -,076 | -,042 | -,064 | ,050 | -,049 | ,082 | -,063 | ,106 | -,074 | -,112 |
| | ROA | ,038 | -,076 | 1,000 | ,026 | ,080 | ,396 | ,346 | -,334 | -,308 | -,201 | ,541 | ,640 |
| | Variability | ,047 | -,042 | ,026 | 1,000 | ,043 | ,037 | -,012 | ,003 | ,064 | -,066 | -,059 | ,021 |
| | GROWTH | ,009 | -,064 | ,080 | ,043 | 1,000 | ,024 | -,048 | ,036 | -,030 | -,069 | ,027 | ,070 |
| | current assets ratio | ,025 | ,050 | ,396 | ,037 | ,024 | 1,000 | ,196 | -,072 | -,003 | -,260 | ,173 | ,220 |
| | LIQUID RESERVES | ,033 | -,049 | ,346 | -,012 | -,048 | ,196 | 1,000 | -,345 | -,191 | -,069 | ,281 | ,223 |
| | TOTAL DEBT | ,002 | ,082 | -,334 | ,003 | ,036 | -,072 | -,345 | 1,000 | ,344 | ,041 | -,194 | -,178 |
| | Short termdebtratio | ,079 | -,063 | -,308 | ,064 | -,030 | -,003 | -,191 | ,344 | 1,000 | ,174 | -,227 | -,314 |
| | Net profit margin | ,034 | ,106 | -,201 | -,066 | -,069 | -,260 | -,069 | ,041 | ,174 | 1,000 | -,106 | -,547 |
| | Gross profit margin | ,015 | -,074 | ,541 | -,059 | ,027 | ,173 | ,281 | -,194 | -,227 | -,106 | 1,000 | ,333 |
| | ROE | ,030 | -,112 | ,640 | ,021 | ,070 | ,220 | ,223 | -,178 | -,314 | -,547 | ,333 | 1,000 |
| Sig. (1-tailed) | TSR | . | ,168 | ,349 | ,316 | ,464 | ,400 | ,369 | ,493 | ,213 | ,365 | ,439 | ,380 |
| | SIZE | ,168 | . | ,220 | ,334 | ,257 | ,308 | ,311 | ,202 | ,261 | ,141 | ,227 | ,127 |
| | ROA | ,349 | ,220 | . | ,398 | ,210 | ,000 | ,000 | ,000 | ,001 | ,020 | ,000 | ,000 |
| | Variability | ,316 | ,334 | ,398 | . | ,331 | ,353 | ,453 | ,489 | ,257 | ,253 | ,274 | ,415 |
| | GROWTH | ,464 | ,257 | ,210 | ,331 | . | ,402 | ,315 | ,357 | ,382 | ,242 | ,393 | ,240 |
| | current assets ratio | ,400 | ,308 | ,000 | ,353 | ,402 | . | ,023 | ,233 | ,489 | ,004 | ,039 | ,012 |
| | LIQUID RESERVES | ,369 | ,311 | ,000 | ,453 | ,315 | ,023 | . | ,000 | ,025 | ,242 | ,002 | ,011 |
| | TOTAL DEBT | ,493 | ,202 | ,000 | ,489 | ,357 | ,233 | ,000 | . | ,000 | ,337 | ,024 | ,035 |
| | Short termdebtratio | ,213 | ,261 | ,001 | ,257 | ,382 | ,489 | ,025 | ,000 | . | ,038 | ,010 | ,001 |
| | Net profit margin | ,365 | ,141 | ,020 | ,253 | ,242 | ,004 | ,242 | ,337 | ,038 | . | ,141 | ,000 |
| | Gross profit margin | ,439 | ,227 | ,000 | ,274 | ,393 | ,039 | ,002 | ,024 | ,010 | ,141 | . | ,000 |
| | ROE | ,380 | ,127 | ,000 | ,415 | ,240 | ,012 | ,011 | ,035 | ,001 | ,000 | ,000 | . |
| N | TSR | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 |
| | SIZE | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 |
| | ROA | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 |
| | Variability | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 |
| | GROWTH | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 |
| | current assets ratio | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 |
| | LIQUID RESERVES | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 |
| | TOTAL DEBT | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 |
| | Short termdebtratio | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 |
| | Net profit margin | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 |
| | Gross profit margin | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 |
| | ROE | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 |

**Collinearity Diagnostics**

| Model | Dimension | Eigenvalue | Condition Index | Variance Proportions | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | (Constant) | SIZE | ROA | Variability | GROWTH | current assets ratio | LIQUID RESERVES | OTAL DEB | Short termdebtratio | Net profit margin | Gross prof margin |
| 1 | 1 | 6,593 | 1,000 | ,00 | ,00 | ,00 | ,01 | ,00 | ,00 | ,01 | ,00 | ,00 | ,00 | ,00 |
| | 2 | 1,764 | 1,933 | ,00 | ,00 | ,03 | ,00 | ,01 | ,00 | ,01 | ,00 | ,04 | ,05 | ,00 |
| | 3 | ,984 | 2,589 | ,00 | ,00 | ,00 | ,01 | ,90 | ,00 | ,01 | ,00 | ,00 | ,00 | ,00 |
| | 4 | ,738 | 2,988 | ,00 | ,00 | ,02 | ,28 | ,06 | ,00 | ,04 | ,00 | ,06 | ,20 | ,01 |
| | 5 | ,588 | 3,350 | ,00 | ,00 | ,01 | ,66 | ,00 | ,00 | ,02 | ,01 | ,14 | ,07 | ,00 |
| | 6 | ,420 | 3,963 | ,00 | ,00 | ,11 | ,00 | ,01 | ,00 | ,59 | ,00 | ,01 | ,16 | ,00 |
| | 7 | ,373 | 4,202 | ,00 | ,00 | ,08 | ,01 | ,00 | ,00 | ,12 | ,04 | ,65 | ,01 | ,01 |
| | 8 | ,234 | 5,308 | ,00 | ,00 | ,16 | ,00 | ,00 | ,03 | ,08 | ,01 | ,00 | ,29 | ,11 |
| | 9 | ,157 | 6,475 | ,00 | ,00 | ,13 | ,01 | ,00 | ,16 | ,00 | ,00 | ,04 | ,00 | ,71 |
| | 10 | ,407E-02 | 8,372 | ,00 | ,00 | ,30 | ,00 | ,00 | ,24 | ,10 | ,72 | ,02 | ,05 | ,02 |
| | 11 | ,315E-02 | 11,138 | ,01 | ,01 | ,16 | ,02 | ,00 | ,55 | ,02 | ,21 | ,02 | ,17 | ,12 |
| | 12 | ,965E-04 | 85,759 | ,99 | ,99 | ,00 | ,00 | ,00 | ,00 | ,00 | ,00 | ,02 | ,00 | ,01 |

a. Dependent Variable: TSR

**Casewise Diagnostics[a]**

| Case Number | Std. Residual | TSR |
|---|---|---|
| 31 | -8,908 | -2,9724691259 |

a. Dependent Variable: TSR

**Residuals Statistics** [a]

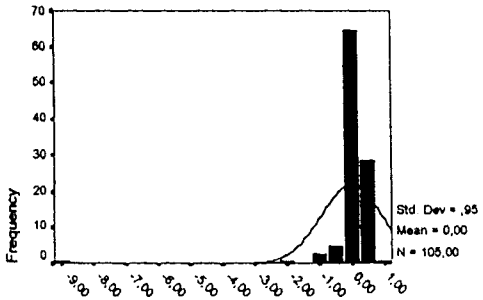
| | Minimum | Maximum | Mean | Std. Deviation | N |
|---|---|---|---|---|---|
| Predicted Value | ,77683222293854 | 1,11999320983887 | ,91953280798364 | 6,9894588562E-02 | 105 |
| Std. Predicted Value | -2,042 | 2,868 | ,000 | 1,000 | 105 |
| Standard Error of Predicted Value | 6,98905140E-02 | ,41666027903557 | ,13511241831069 | 5,0833629288E-02 | 105 |
| Adjusted Predicted Value | ,67736405134201 | 2,33516955375671 | ,92785194386018 | ,16063535957393 | 105 |
| Residual | -3,80160403251648 | ,46379223465919 | 1,2645968928E-15 | ,40356648464054 | 105 |
| Std. Residual | -8,908 | 1,087 | ,000 | ,946 | 105 |
| Stud. Residual | -9,036 | 1,177 | ,000 | ,967 | 105 |
| Deleted Residual | -3,91135406494141 | ,54399883747101 | -8,3191358765E-03 | ,44361973801033 | 105 |
| Stud. Deleted Residual | -25,716 | 1,179 | -,160 | 2,546 | 105 |
| Mahal. Distance | 1,799 | 98,142 | 10,895 | 11,661 | 105 |
| Cook's Distance | ,000 | ,938 | ,012 | ,093 | 105 |
| Centered Leverage Value | ,017 | ,944 | ,105 | ,112 | 105 |

a. Dependent Variable: TSR

## Charts

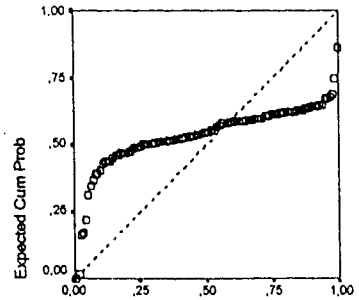
Histogram

Dependent Variable: TSR



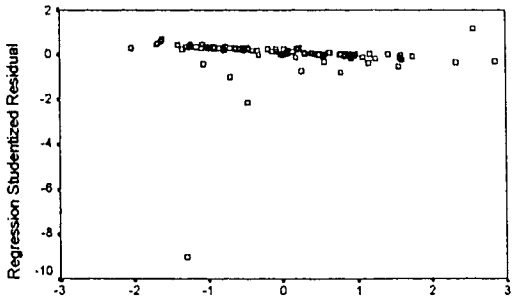

Normal P-P Plot of Regression Stanc

Dependent Variable: TSR




Scatterplot

Dependent Variable: TSR



# Nonparametric Correlations

Correlations

| | | | TSR | SIZE | ROA | Variability | GROWTH | current assets ratio | LIQUID RESERVES | TOTAL DEBT | Short termdebtratio | Net profit margin | Gross profit margin | ROE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Spearman's rho | TSR | Correlation Coefficient | 1,000 | ,034 | -,146 | ,238* | ,005 | -,032 | -,122 | ,179 | ,152 | -,047 | -,175 | -,017 |
| | | Sig. (2-tailed) | . | ,723 | ,126 | ,012 | ,962 | ,739 | ,203 | ,060 | ,110 | ,624 | ,072 | ,857 |
| | | N | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 109 | 107 | 110 |
| | SIZE | Correlation Coefficient | ,034 | 1,000 | -,047 | -,043 | ,003 | ,058 | -,116 | ,066 | ,003 | ,050 | -,122 | -,083 |
| | | Sig. (2-tailed) | ,723 | . | ,618 | ,651 | ,977 | ,539 | ,223 | ,486 | ,975 | ,604 | ,210 | ,385 |
| | | N | 111 | 113 | 113 | 113 | 113 | 113 | 113 | 113 | 113 | 110 | 108 | 112 |
| | ROA | Correlation Coefficient | -,146 | -,047 | 1,000 | ,111 | ,279** | ,366** | ,395** | -,458** | -,349** | ,195* | ,449** | ,803** |
| | | Sig. (2-tailed) | ,126 | ,618 | . | ,244 | ,003 | ,000 | ,000 | ,000 | ,000 | ,041 | ,000 | ,000 |
| | | N | 111 | 113 | 113 | 113 | 113 | 113 | 113 | 113 | 113 | 110 | 108 | 112 |
| | Variability | Correlation Coefficient | ,238* | -,043 | ,111 | 1,000 | ,059 | ,133 | ,064 | ,009 | -,084 | -,031 | -,025 | ,114 |
| | | Sig. (2-tailed) | ,012 | ,651 | ,244 | . | ,532 | ,160 | ,501 | ,927 | ,379 | ,751 | ,793 | ,231 |
| | | N | 111 | 113 | 113 | 113 | 113 | 113 | 113 | 113 | 113 | 110 | 108 | 112 |
| | GROWTH | Correlation Coefficient | ,005 | ,003 | ,279** | ,059 | 1,000 | ,285** | -,010 | ,024 | ,065 | -,081 | ,064 | ,266** |
| | | Sig. (2-tailed) | ,962 | ,977 | ,003 | ,532 | . | ,002 | ,913 | ,803 | ,495 | ,399 | ,510 | ,005 |
| | | N | 111 | 113 | 113 | 113 | 113 | 113 | 113 | 113 | 113 | 110 | 108 | 112 |
| | current assets ratio | Correlation Coefficient | -,032 | ,058 | ,366** | ,133 | ,285** | 1,000 | ,238* | -,080 | ,027 | -,220* | ,143 | ,329** |
| | | Sig. (2-tailed) | ,739 | ,539 | ,000 | ,160 | ,002 | . | ,011 | ,397 | ,781 | ,021 | ,141 | ,000 |
| | | N | 111 | 113 | 113 | 113 | 113 | 113 | 113 | 113 | 113 | 110 | 108 | 112 |
| | LIQUID RESERVES | Correlation Coefficient | -,122 | -,116 | ,395** | ,064 | -,010 | ,238* | 1,000 | -,207* | -,343** | ,038 | ,283** | ,365** |
| | | Sig. (2-tailed) | ,203 | ,223 | ,000 | ,501 | ,913 | ,011 | . | ,028 | ,000 | ,691 | ,003 | ,000 |
| | | N | 111 | 113 | 113 | 113 | 113 | 113 | 113 | 113 | 113 | 110 | 108 | 112 |
| | TOTAL DEBT | Correlation Coefficient | ,179 | ,066 | -,458** | ,009 | ,024 | -,080 | -,207* | 1,000 | ,371** | -,173 | -,229* | -,107 |
| | | Sig. (2-tailed) | ,060 | ,486 | ,000 | ,927 | ,803 | ,397 | ,028 | . | ,000 | ,071 | ,017 | ,264 |
| | | N | 111 | 113 | 113 | 113 | 113 | 113 | 113 | 113 | 113 | 110 | 108 | 112 |
| | Short termdebtratio | Correlation Coefficient | ,152 | ,003 | -,349** | -,084 | ,065 | ,027 | -,343** | ,371** | 1,000 | -,108 | -,274** | -,222* |
| | | Sig. (2-tailed) | ,110 | ,975 | ,000 | ,379 | ,495 | ,781 | ,000 | ,000 | . | ,262 | ,004 | ,019 |
| | | N | 111 | 113 | 113 | 113 | 113 | 113 | 113 | 113 | 113 | 110 | 108 | 112 |
| | Net profit margin | Correlation Coefficient | -,047 | ,050 | ,195* | -,031 | -,081 | -,220* | ,038 | -,173 | -,108 | 1,000 | ,213* | ,034 |
| | | Sig. (2-tailed) | ,624 | ,604 | ,041 | ,751 | ,399 | ,021 | ,691 | ,071 | ,262 | . | ,028 | ,729 |
| | | N | 109 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 107 | 109 |
| | Gross profit margin | Correlation Coefficient | -,175 | -,122 | ,449** | -,025 | ,064 | ,143 | ,283** | -,229* | -,274** | ,213* | 1,000 | ,384** |
| | | Sig. (2-tailed) | ,072 | ,210 | ,000 | ,793 | ,510 | ,141 | ,003 | ,017 | ,004 | ,028 | . | ,000 |
| | | N | 107 | 108 | 108 | 108 | 108 | 108 | 108 | 108 | 108 | 107 | 108 | 107 |
| | ROE | Correlation Coefficient | -,017 | -,083 | ,803** | ,114 | ,266** | ,329** | ,365** | -,107 | -,222* | ,034 | ,384** | 1,000 |
| | | Sig. (2-tailed) | ,857 | ,385 | ,000 | ,231 | ,005 | ,000 | ,000 | ,264 | ,019 | ,729 | ,000 | . |
| | | N | 110 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 109 | 107 | 112 |

*. Correlation is significant at the .05 level (2-tailed).

**. Correlation is significant at the .01 level (2-tailed).