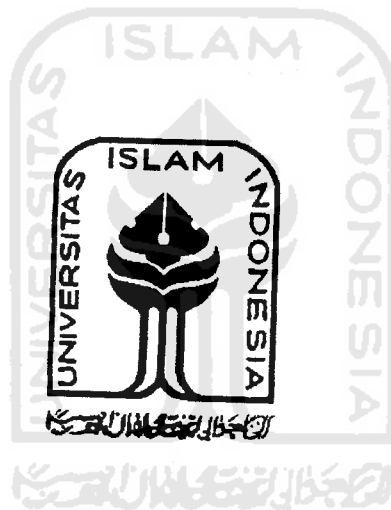


**CAPITAL STRUCTURE AND MARKET POWER
INTERACTION: EVIDENCE FROM FOOD AND BEVERAGE
COMPANIES LISTED IN JAKARTA STOCK EXCHANGE
(JSX)**

A THESIS

Presented as Partial Fulfilment of the Requirements
to Obtain the Bachelor Degree in Management
Department



By

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YOGYAKARTA
2004

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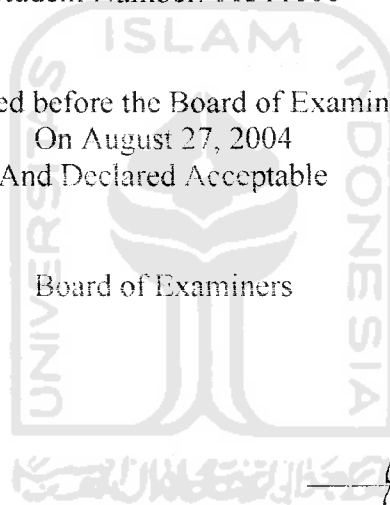
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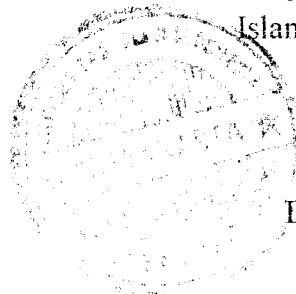
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All praises go to Allah for the blessings, guidance, protections and chances so the thesis can be accomplished. *Shalawat* and *salaam* for the prophet Muhammad SAW, the greatest inspiration of all.

The topic of the thesis is the interaction between capital structure and market power. The thesis is intended to find out whether the relationship between capital structure and market power is cubicle or not. Hopefully, by the accomplishment of the thesis, it can bring additional information and contribution to decision maker for taking better action in implementing the strategies. The writer also hopes that the thesis can give inspiration and contribution for anyone doing their thesis.

The writer realizes that this thesis is far from perfection, therefore, the writer welcomes any constructive critics and discussions.

In this opportunity, the writer would like to express sincere gratitude and appreciation to individuals who have already provided significant contribution; hence the thesis can be accomplished:

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Yogyakarta, August 4, 2004



The writer

Andriani Pervitasari

Follow Your Dreams

Hold fast to dreams,

For if dreams die

Life is a broken winged,

Bird that cannot fly

Hold fast to dreams,

For when dreams go

Life is a barren field,

Frozen with snow

(Langston Hughes)

To

*My beloved parents;
Sri Handayani and Afandi Munandar*

*My dearest brother;
Andriyanto Mahendro*

My alterego,

*Thanks for the greatest love and support, the warmest
cares and comfortable shelter....*

To

Ariefandy Hidayat,

*Thanks for the patience, understanding, time,
discussions, inspiration, support and everything...*

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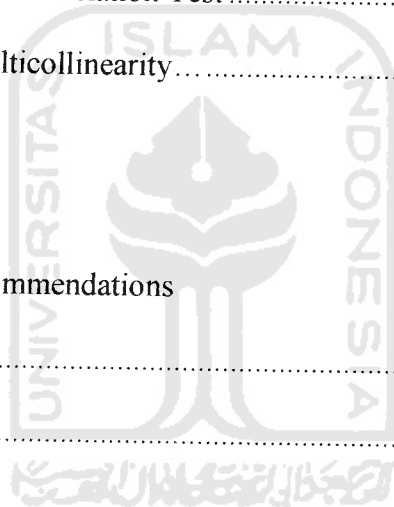
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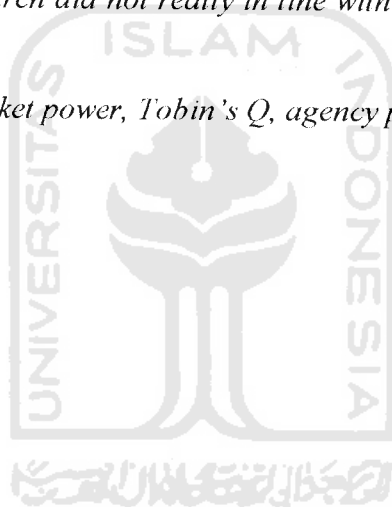


Abstract

Pervitasari, Andriani. *Capital Structure and Market Power Interaction: Evidence from Food and Beverage Companies Listed in Jakarta Stock Exchange (JSX)*. 2004. International Program Fakultas Ekonomi Universitas Islam Indonesia. Yogyakarta.

This thesis explained the phenomena about the relationship between capital structure and market power in Food and Beverage companies listed in Jakarta Stock Exchange (JSX). The writer used Tobin's Q as a measurement for indicating the market power. The writer predicted that the relation between capital structure and market power is cubicle. When q is small, firms use excessive debt. Meanwhile, in the case of the condition that the q begin to rise, firms reducing their debts. Firms will use excessive debt policy again when the q is big enough. This unique relation is caused by the complex interaction between market condition, agency problem and bankruptcy cost. However, is this prediction proved in Food and Beverage companies? After all, the result of the analysis carried out in this research did not really in line with the prediction previously made.

Keyword: *capital structure, market power, Tobin's Q , agency problem, bankruptcy cost, trade-off theory, pecking order.*

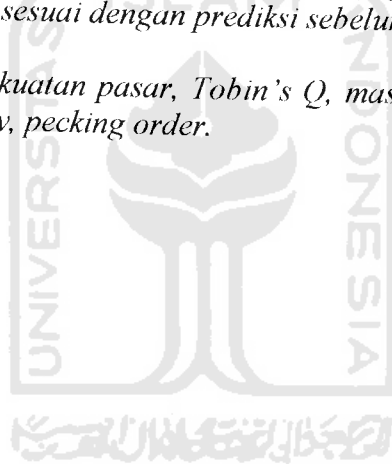


Abstrak

Pervitasari, Andriani. *Capital Structure and Market Power Interaction: Evidence from Food and Beverage Companies Listed in Jakarta Stock Exchange (JSX)*. 2004. International Program Fakultas Ekonomi Universitas Islam Indonesia. Yogyakarta.

Skripsi ini menjelaskan fenomena yang terjadi antara struktur modal dan kekuatan pasar pada perusahaan makanan dan minuman yang terdaftar di Bursa Efek Jakarta (BEJ). Penulis menggunakan Tobin's Q sebagai ukuran dalam mengindikasikan kekuatan pasar. Di dalam hubungan ini, penulis memprediksikan bahwa hubungan antara struktur modal dan kekuatan pasar bersifat kubik. Ketika q rendah, perusahaan menggunakan lebih banyak hutang. Sementara itu, pada saat q mulai meningkat, perusahaan mulai mengurangi penggunaan hutang. Perusahaan akan menggunakan hutang kembali untuk pembiayaan ketika q cukup tinggi. Hubungan unik ini disebabkan oleh interaksi yang rumit antara kondisi pasar, masalah peragenan/ agency (agency problem) dan biaya kepailitan (bankruptcy cost). Akan tetapi, apakah prediksi ini akan terbukti pada perusahaan makanan dan minuman di BEJ? Bagaimanapun juga, hasil yang ditunjukkan oleh analisis penelitian ini tidak sesuai dengan prediksi sebelumnya.

Kata Kunci: *struktur modal, kekuatan pasar, Tobin's Q, masalah peragenan/ agency, biaya kepailitan, trade-off theory, pecking order.*



CHAPTER I

INTRODUCTION

1.1. Background of the Study

Recently, corporate finance becomes one of the most important issues in finance. In corporate finance, the pioneer works in capital structure analysis was carried out by Modigliani and Miller (M&M). They begin with a set of idealized market assumptions (Scritz and Ellison, 1999):

1. Perfect capital market exist: investors are rational; information is freely available to all; securities are infinitely divisible; there are no transaction cost for investors buying and selling securities and no fluctuation costs for companies issuing securities.
2. There are no income taxes.
3. Firms can be divided into risk classes and each firm within a risk class has the same amount of business risk.
4. The future operating earnings of the firm is random variable and all investors agree about the expected value of the probability distributions.
5. There is no bankruptcy.
6. Corporations and individuals can borrow and lend at the same market interest rate. In the absence of bankruptcy risk, this rate is a risk free rate.

Modigliani and Miller (M&M) concluded that the value of the firm was unaffected by capital structure choice. In this field of study (corporate finance), the academic contribution of Modigliani and Miller about capital structure

irrelevance and tax shield advantage-paved way for the development of alternative theories and a series empirical research on capital structure (Pandey, 2002). The three most influential theories explain capital structure by taxes (trade-off theory), asymmetric information (pecking order theory) and by the effect of capital structure on incentives (the agency theory) (Guriev and Kvasov, 2004). Among those theories, there is still no consensus on which theory outperforms the other when taken to the data, but there is certain evidence that each is empirically relevant (Myers, 2000). All of these theories have been subjected as an extensive empirical research. Myers and Majluf (1984) focus their study on the pecking order theory of finance. Other research Boot and Thakor (1993) do their study to the presence of asymmetric information.

Most of the studies about capital structure, usually accomplished in the framework of United States of America (USA). The evidence is largely taken from the USA firms because the USA is considered as developed country. Only few that study international comparison of capital structure determinants, one of them is Rajan and Zingales (1995). Several studies provide evidence about capital structure from the market of South- East Asia (Pandey, 2002).

There is relatively little evidence on the research or study about the interaction between capital structure and product market structure. Some of the researchers already looking for this interaction. There are Brander and Lewis (1986), Bolton and Scharfstein (1990), Maksimovich (1988) and Ravid (1988) that offer theoretical framework for the linkage between capital structure and market structure (Pandey, 2002). Harris and Raviv (1991) and Phillips (1995)

provide surveys of the theoretical and empirical research on the relationship between capital structure and market structure (Pandey, 2002). All of those research or studies establish linear relationship, either positive or negative relationship between capital structure and market power. However there is Pandey (2002) that argues about the relationship between capital structure and market power that is cubic.

Firms in oligopoly condition sustain its aggressive production and high-income strategy by employing higher level of debt. Shareholders gain in term of increased wealth. In adverse market conditions, the limited liability provides protection to shareholders against the risky production decision lenders would suffer. Therefore, a firm's debt level will increase as it gains market power reflected by its Q. Meaning to say that the relation between capital structure and market power is positive relationship.

On the other hand, as debt increases, there are significant costs in terms of increased probability of bankruptcy and financial distress. This cost would emphasize the behavior of no or low-debt firms with "deep purses". They would resort to predatory price behavior and lead their rivals into bankruptcy. This argument suggests a negative relationship between capital structure and market power. These two opposing effects point out the possibility of a non-linear relationship between capital structure and market power. As firms start gaining its market dominance, it will increase debt to increase its production and income. Therefore, as their market power increases, they will employ more debt in order to pursue their output maximization strategy. Furthermore, it will attract rivals firms

to intensify competition by cutting price or/and output. At the intermediate level of market dominance when competition intensifies through price cut, higher cost of debt squeezes profitability of highly levered firms and their chances of financial distress and bankruptcy cost increase. Levered firms react by reducing its debt or increase production through improved assets utilization. However, after strengthening their position, firms with higher level of market dominance once again leverage the use of debt in expanding their production. Firms with strong profitability and reserve fund and high market dominance adopt high-risk production strategy and use more debt (Pandey, 2002). Hence, in line with Pandey (2002) it can be predicted that the relationship between capital structure and market power is cubic.

Based on the study background above, the writer is interested in investigating the interaction of capital structure and market power focused in food and beverage companies since the previous researches are focused in manufacturing companies. The investigation will be accomplished at Jakarta Stock Exchange (JSX) as a developing market. Therefore, the writer would like to entitle the thesis “**Capital Structure and Market Power Interaction: Evidence from Food and Beverage Companies Listed in Jakarta Stock Exchange (JSX)**”.

1.2. Problem Identification

The main issue of this research is to uncover whether the relationship between capital structure and market power is cubic.

1.3. Problem Formulation

In this study, the writer will uncover the relationship between capital structure and market structure power as measured by Tobin's Q. It is due to the interaction of the market conditions, agency problems and bankruptcy costs. Therefore, this study will attempt to answer the following question:

Is the relation between capital structure and market power cubicle?

1.4. Problem Limitation

In order to restrict and give more focus on topic of the research, the research will be accomplished on:

1. Sample used are food and beverage companies that are listed in Jakarta Stock Exchange/Bursa Efek Jakarta (JSX/BEJ). Criteria for this sample among others: all emitters must be listed before December 31st, 1997 and are consistent through December 31st, 2002. Sample had also publicized audited financial statement from 1998-2002. The writer excludes companies with negative equity and zero sales.
2. Other events occur, either political or economical, and they are assumed as having no effect and will be ignored.

1.5. Research Objectives

The main concern of the study is to analyze whether the interaction between capital structure and market power of food and beverage companies that listed in JSX is cubicle.

1.6. Research Contribution

The research is expected to give contribution to:

1. The Investors

The study will give contribution in making decisions or set long- term investment. Contribute insights and suggestions in deciding their financing policy, especially the proposition of debt and equity.

2. The Companies

This research is expected to give contribution in supporting opinions and give inputs also as material of consideration of the companies to make decision in the future.

3. Academicians

The research is expected to give some contribution in conducting further research especially about capital structure and market power relations.

1.7. Definition of Terms

- Capital structure is the mix of the various debt and equity capital maintained by a firm. It is also called as financial structure. In other words, capital structure is the firm's mix of different securities. In a simple definition, capital structure is firm's mix of long-term financing.
- Market power signifies the degree of control that a single firm or small number of firms has over the price and production decisions in an industry.
- Tobin's Q is the ratio of market value of assets. A Tobin's Q ratio which is greater than 1 indicates that the firm has done well with its investment decisions.
- Pecking order theory is theory in which firms prefer to issue debt rather than equity if internal finance is insufficient.
- Trade-off theory is theory which debt levels are chosen to balance interest tax shields against the cost of financial distress.
- Asset substitution is where shareholders of highly leveraged firms may transfer value to themselves from bondholders by choosing riskier activities.
- Agency cost is the sum of all costs associated with manager's decision making on behalf of the owners. These costs include the costs of monitoring and control procedures, also the loss in value when managers do not make decisions in the best interest of the owners.

1.8. Thesis Outline

This thesis is designed and presented in five chapters:

Chapter I : Introduction

Introduction explains about the background of study, problem statement, problem formulation, problem limitation, research objective, research contribution, definition of terms and thesis outline

Chapter II : Review of Related Literature

Review of related literature includes materials derived from theories, related previous research.

Chapter III : Research Method

Research method provides description about research object, variables, research period, data selection and sampling, and data analysis technique and hypothesis formulation.

Chapter IV : Analysis and Discussion

Analysis and discussion represent the result of the analysis and means to test the hypothesis, discussion about analysis result, qualitatively and quantitatively, and result interpretation.

Chapter V : Conclusions and Recommendation

Conclusions will be obtained from data analysis in previous chapters, limitation and recommendation for future research will also be given.

CHAPTER II

REVIEW OF RELATED LITERATURE

Review of related literature provides explanations about the relevant theories toward research and reconsidering previous study. Review of related literature serves theoretical review and theoretical framework of the study. Parts of this research will elaborate more about capital structure, market power, theories that linked between them and the empirical study or previous study of capital structure.

2.1. Capital Structure

There are no companies that do not need capital. Moreover if it is a new business, it will require more capital. Capital is one of the most important elements in running business. It is needed to fund daily operation business and many other activities done by companies. The required funds can come from many different sources and take many different forms. Without sufficient capital, company may lose good opportunity and may eventually lose in competition.

As Brealey, Myers and Marcus point out (2001), a firm's basic financial resources are the stream of cash flows produced by its assets and operation. When the firm is financed entirely by common stock, all those cash flows belong to the stockholders. When it issues both, debt and equity, the firm splits cash flows into two streams, that goes to the debt holders which is a relatively safe stream and

more risky when goes to the stockholders. The firm's mix of securities is called as capital structure.

Capital structure represents the major claim to a corporation's assets. It is include publicly issued securities, private placements, bank debt, trade debt, leasing contracts, tax liabilities, deferred compensation to management and employees, performance, guarantee, product warranties and other contingent liabilities. However, all capital can be classified into two basic types- debt and equity. Raising capital as debt has several advantages. First, interest is tax deductible, meaning that the more debt used will reduce the tax because company issuing debt will pay interest. Therefore, interest lowers the effective cost of debt. Second, debt holders are limited to a fixed return, so stockholders do not have to share profits if the business does exceptionally well. Finally, debt holders do not have voting rights, so stockholders can control a business with less money. That would otherwise be required.

However, financing with debt also has disadvantages. First, the higher the debt ratio, the greater the risk and thus the higher chance to be bankrupt. At some point, rising interest rates overwhelm or overcome the tax advantage of debt. Second, if a company falls on hard times and if its operating income is insufficient to cover interest charge, then stockholders will have to make up the shortfall, and if they can not, it will lead them to financial distress then the company may be forced into bankruptcy.

In generating external funding, companies use either debt or equity capital, creating a major corporate question as to whether or not there is an optimal mix of

debt and equity that firm should seek. Searching for the optimal capital structure has been a major preoccupation of corporate finance. As stated by Harris and Raviv (1999) in Brigham, Gapenski, and Daves (1999), there are four (4) categories of the determinants of capital structure deriving from the desire to:

- Ameliorate conflict of interest among groups with claims to the firm's resources, including managers (agency approach).
- Convey private information to capital markets or mitigate/ ease adverse selection effects (pecking order approach).
- Influence the nature of production or competition in the product or input market.
- Affect the outcome of corporate control.

2.1.1. Traditional Approach

The traditional approach to capital structure and valuation assumes that there is an optimal capital structure and that management can increase the total value of the firm through the judicious or thoughtful use of financial leverage (Van Horne and Wachowicz, 1995). This approach suggests that the firm can initially lower its cost of capital and raise its total value of the firm through increasing leverage. Therefore, the traditional approach to capital structure implies that the cost of capital is dependent on the capital structure of the firm and there is an optimal capital structure.

2.1.2. Modigliani and Miller (MM) Approach

Modern capital structure theory began in 1958 when Professors Franco Modigliani and Merton Miller (known as MM) published what has been called as the influential finance article ever written. They proved, however under a very restrictive set of assumptions, that a firm's value is unaffected by its capital structure. As a result, they suggest that it does not matter how a firm finance its operations, because, at least under their assumptions, capital structure is irrelevant. One of the assumptions needed by MM in order deriving their results was the absence of taxes, both corporate and personal. With zero taxes, the increase in the return of stockholders resulting from the use of leverage is exactly compensated or balanced by the increase of the risk. As a result, at any level of debt, the return to stockholders is just proportionate with the risk assumed; consequently there is no net benefit to using financial leverage.

Regardless of its unrealistic assumptions, MM's irrelevance result is enormously important, because MM's study as the basic understanding and development of modern capital structure. Through indicating the conditions under which capital structure is irrelevant, MM also provide some clues about what is required for capital structure to be relevant and hence to affect a firm's value.

2.2. Capital Structure Theories

2.2.1. Trade off/ Balanced Theory, Pecking Order Theory and Agency Theory

In corporate finance, there are three most influential theories that explain about capital structure. Those are trade- off theory, agency theory, and pecking order theory. There is still no consensus on which theory outperforms the other when taken to the data but there is a certain evidence that each is empirically relevant (Myers, 2000). All of these theories have been subjected as an extensive empirical research. Rajan and Zingales (1995) study international comparison of capital structure determinants. Guriev and Kvasov (2004), Myers and Majluf (1984) focus their study on the pecking order theory of finance. Other research Boot and Thakor (1993) do their study to the presence of asymmetric information.

Capital structure suggests that firms determine what is often referred to as a target debt ratio, which is based on various tradeoffs between the costs and benefits of debt versus equity (Kayhan and Titman, 2003). A large body of empirical research provides evidence that supports the view that firms do choose a capital structure that includes debt and equity and that there is a significant amount of commonality in capital structures (regarding the choice of financial leverage) of firms operating in the same industry (Kare and Price, 1990).

Corporate finance theory assuming that firm's objective is maximizing shareholder's wealth and it shows that market structure affects

capital structure by influencing the competitive behavior and strategies of firms. In applying strategies, firms will consider the structure of the market whether it is oligopoly, monopoly or competitive market, also the economic condition (favorable or unfavorable). It is necessary because an appropriate strategy will determine the maximization of profitability.

According to Brander and Lewis (1986) in Pandey (2002), firms in oligopolistic market will follow the strategy of maximizing their output for improving profitability in favorable economic conditions. In contrast to competitive market, the oligopoly firms would employ higher levels of debt to produce more when opportunities to earn higher profits arise (Pandey, 2002a). It implied prediction of the output maximization hypothesis that capital structure and market power have a positive relationship (Pandey, 2002b).

The agency theory supports the use of high debt, and it is consistent with the prediction of the output maximization theory. Agency considerations broaden to the maturity as well as the amount of debt. A key consideration is the possibility of risky assets substitution, the borrowing of money for one implied purpose. Short and intermediate term debt requires the company to frequently return to the lenders so that asset substitution can be monitored (Sceitz and Ellison, 1999: 585). As the percentage of external (outside) debt or equity in the capital structure of a firm rise, so do the agency cost.

By recognizing the risk of assets substitution, it can help the company to reduce the agency costs. In terms of product- market decisions, the inference of the agency theory is that firms would borrow more money in order to pursue an aggressive production policy that would be benefit to shareholders (Pandey, 2002).

Beside agency theory, another theory of corporate finance that give explanation for the use of high debt is the tax- shield theory (trade- off theory). Trade- off theory is a theory in which capital structure is based on a trade- off between tax savings and distress cost of debt. This trade- off theory shows the benefit of debt financing against higher interest rate and bankruptcy costs. In favor of profitable firms, the use of high debt or borrow more money can reduce their interest taxes. Under trade- off theory, high profits should mean more debt- servicing capacity and more taxable income to shield and therefore should give higher debt ratio (Brealey, Myers, and Marcus, 2001: 445).

According to Pandey (2002), the output maximization by oligopoly firms is believed to be able to increase their profitability. Therefore, both agency theory and tax- shield theory (trade- off theory) would predict positive relationship between capital structure and market power.

Other theory, besides agency theory and trade- off theory, is pecking order theory (asymmetric theory). Pecking order theory is a theory stating that firms prefer to issue debt rather than equity if internal finance is insufficient. It describes management's preference for internal versus

external finance and debt versus external equity. In a firm, there are two kinds of source of funds, internal and external financing. Firms would like to have external financing when they lack of internal financing or funds. If external finance is required, firms issue debt first and issue equity is only used as the last resort. On the other hand, firms prefer internal finance since these funds are raised without sending any adverse signals that may lower the stock price. Less profitable firms issue debt because they do not have sufficient internal funds for their capital investment program and also because debt is first in the pecking order for external finance.

The pecking order explains why the most profitable firms generally borrow less; it is not because they have low target of debt ratios but it is because they do not need outside money. Furthermore, preferences for internal finance will reduces transaction costs and the problems associated with asymmetric information. According to MM assumptions, investors and managers have the same information about a firm's prospects (symmetric information), however in the real world managers often have better information than outside investors (asymmetric information). What the managers have about the information of the company may differ than what the investors have. Those may lead into an agency problem. Agency problems may arise when the manager and shareholders have different objectives. In addition, the investors do not know the true value of the firm because they have less information about the company than the managers. This asymmetric problem may be overcome through signaling mechanism.

Therefore, pecking order/ asymmetric information theory predicts negative relationship between capital structure and market power.

There are alternatives constraining managers so they will have discipline in running the business. According to Brigham, Gapenski and Daves (1999), one of the alternatives is to shift the capital structure toward more debt. Hoping by using higher debt service requirements will force the managers becomes more discipline. If debt is not serviced as required, the firm will be forced into bankruptcy and that is mean the manager will lose the job. By applying this alternative, it will force the managers to be more careful with the shareholder's money, because, even well- run company could face bankruptcy if some event occur beyond their control. In other word, it will make the managers keep in line.

2.2.2. Financial Distress and Bankruptcy

There is an assumption that corporate finance increases likelihood of financial distress and bankruptcy. Here, financial distress occurs when there is a difficulty of the firms in fulfilling their debt. At moderate debt levels, the probability of financial distress is trivial or insignificant. Therefore, the tax advantages of debt are dominates (Brealey, Myers, and Marcus, 2001a). However, at some points, the probability of financial distress increases rapidly with additional borrowing and the potential costs of distress begin to take substantial or significant bite out of firm value (Brealey, Myers, and Marcus, 2001b). Therefore, bankruptcy can be quite costly. Since firms in

bankruptcy have very high legal and accounting expenses, and they will also have a hard time retaining their customers, suppliers and employees. Moreover, bankruptcy often forces a firm to liquidate and sell its assets for less than they would be worth if the firm was about to continue its operation.

Bankruptcy- related problems are most likely to arise when a firm has a lot of debt in its capital structure. Therefore, potential bankruptcy costs discourage firms from pushing their use of debt to excessive levels. Bankruptcy- related costs of a firm depend on three (3) things (Brigham, Gapenski and Daves; 1999): the probability of bankruptcy, the costs of the firm will incur if financial distress arises and the adverse effects that potential for bankruptcy has on current operation. However, firm with large reserve funds will be relatively have less chance of bankruptcy. Unlevered firm with high profitability and large reserve of funds will have great competitive advantage. This kind of firm not only survives but also gains profit by driving their competitor into bankruptcy. By increasing their output, this firm will drive and put their competitors into bankruptcy. Empirically, Pandey (2002) predicts negative relationship between capital structure and market power.

Firms, which have more uncertain earnings, will face a greater chance of bankruptcy than stable firms. Therefore, they should use less debt than thus stable firms. Since stable firms that does not use debt (unlevered firm) with high profitability and large reserve funds would have great competitive advantage. That is why, a firm with greater business risk and

operating leverage should limit the use of financial leverage. Furthermore, firms that face high cost of financial distress should less its use of debt.

2.3. Market Power

In theory there are two extremes of market structure, perfect competition and complete monopoly, eventhough in reality these two extremes are rarely exist. Monopolistic competition and oligopoly are some of the market structure that falls between thus two extremes.

Perfect competition is found when a large number of firms produce an identical product. Monopolistic competition occurs when a large number of firms produce lightly differentiated products, while oligopoly is an intermediate form of imperfect competition in which an industry is dominated by a few firms. Monopoly is when a single firm produces the entire output of an industry (Samuelson and Nordhaus, 2001). The characteristic of concentration and strategic interactions between these market structures are very different.

In monopoly firm, it is relatively easy influencing the price and quantity to be sold, while on the other hand, in a perfect competition all producers are price taker. They have minimum –or no- power in influencing the price and quantity sold. Market power indicating the degree of control that a single firm or a small number of firms has over the price and production decision in an industry.

Most common measure of market power is the concentration ratio for an industry. The four-firm concentration ratio is defined as the percent of total industry production (or shipments) that is accounted for by the largest four firms.

Similarly, the eight-firm concentration ratio is the percent of output shipped by the top eight firms. In a pure monopoly these ratios would be 100% because only one firm that produces all the output, while for perfect competition, both ratios will be close to zero because even the largest producer only takes small fraction of total output.

An alternative to measure market power is using the Herfindahl-Hirschman Index (HHI). It is calculated by summing the squares of the percentage market shares of all participants in a market. Perfect competition would have an HHI of near zero, while complete monopoly has an HHI of 10,000. Market power can be measured by using Lerner index, Herfindahl- Hirschman index or Tobin's Q. Lindenberg and Ross (1981) in Pandey (2002) show that Tobin's Q (Q) is theoretically sound and practically powerful indicator of a firm's market power. Therefore, following them, the writer also use Tobin's Q as the indicator or measurement for market power. Moreover, since in developing countries, price and quantity or segmental data are not available for measuring the Lerner index or the Herfindahl- Hirschman index.

In equilibrium, every firm should have a Q value of 1. If a firm's Q is above 1, this should stimulate investment, while Q below 1 should discourage investment. In a competitive market, Q of all firms will be equal by one, firms with Q higher than one are expected to command competitive advantage either oligopoly or monopoly power.

The ratio of the firm's market value of a company's debt and equity relative to its replacement cost of its assets is often called Tobin's Q.

$$\text{Tobin's } Q = \frac{\text{market value of asset}}{\text{estimated replacement cost}}$$

The numerator of Q includes all the firm's debt and equity securities, not just its common stock. The denominator includes all assets and what it would cost to replace them.

Tobin argued that firms have an incentive to invest when Q is greater than 1 (when capital equipment is worth more than the cost of replacing it) and that they will stop investing when Q is less than 1 (when equipment is worth less than its replacement cost). When Q is less than 1, it may be cheaper to acquire assets through merger than to buy new assets.

It is possible if the existing assets are worth much more than they cost, but there is no scope for further profitable investment. Nevertheless, a high value for Q is usually a sign of valuable growth opportunities. The reverse is also true. Just because an asset is worth less than it would cost if bought today, it should not necessarily conclude that it could be better employed elsewhere. Companies with assets are valued below replacement cost should be looking for over their shoulders to see whether predators are threatening to take them over and redeploys the assets.

According to Lindberg and Ross (1981) in Pandey (2002), we should expect q to be higher for firms with a strong competitive advantage, and so it turns out. The companies with the highest value for Q tend to be those with very strong brand images or know how. Those with the lowest values have generally been in highly competitive and shrinking industries.

In theoretical definition we need replacement cost in counting Q, however it is not easy to get replacement cost data in developing countries. Pandey (2002) showed that Q could be defined as the sum of market values of equity and book value of long-term debt and net current assets then divided by the book value of equity, long-term debt and net current assets.

2.4. Empirical or Previous Study of Capital Structure

Previous study of capital structure and market power interaction has already been done by several researchers like Maksimovich (1988), Kare and Price (1990), Rajan and Zingales (1995) and Pandey (2002). Those are as follows:

➤ **Vojislav Maksimovich (1988)**

In his study, Maksimovich analyzes the effect of a firm's capital structure on its product market strategy in the context of repeated oligopoly model. He shows that there is an existence of upper bound on the firm's debt level in the absence of bankruptcy costs. These bounds depend on the number of firms in the industry, the discount rate, the elasticity of demand and other related factors that affect product market equilibrium in oligopolies.

➤ **Dilip D. Kare and Donald I. Price (1990)**

Kare and Price, in their study present a hypothesis that the market structure of an industry and the financial leverage of firms in that industry are related. The hypothesis is based on the traditional theory of financial structure that

suggests that the sales stability and the earning variability of a firm affect its choice of financial leverage. In their study, they use 336 firms from 37 manufacturing industries (four digit SIC) and using Herfindahl- Hirschman Index (HII) as the variable representing market power. Kare and Price found that the relationship between capital structure and market power is positive.

➤ **Raghuram G. Rajan and Luigi Zingales (1995)**

Rajan and Zingales in their study investigate the determinants of capital structure choice by analyzing the financing decisions of public firms in the major industrialized countries. At an aggregate level, firm leverage is fairly similar across the G- 7 countries. They found that factors identified by previous studies as correlated in the cross- section with firm leverage in the United States, are similarly correlated in other countries as well. They concentrate their analysis on the 1987- 1991 period and focus on non-financial corporations of the G- 7 countries.

➤ **I. M. Pandey (2002)**

Pandey provides new insights on the way in which the capital structure and market power also capital structure and profitability are related. They predict and show that capital structure and market power have a cubicle relationship as measured by Tobin's Q. It is due to the complex interaction of the market conditions, agency problems, and bankruptcy costs. Also, he shows that capital structure and profitability has a saucer- shaped relationship

because of the interplay of agency costs, cost of external financing and debt tax shield. He uses 208 Malaysian companies for the period of 1994- 2000. The estimation method uses fixed firm and time effects model on panel data.



CHAPTER III

RESEARCH METHOD

3.1. Research Method

This research is emphasized on the interaction of capital structure and market power of food and beverage companies listed in JSX. It is conducted in order to prove that the interaction between capital structure and market power is cubicle. Quantitative analysis method is applied in this research. Quantitative analysis is an analysis which is based on the data analysis stated on the numerical data. Started with the data extractions process obtained from the financial statement, the variable used were total debt equity ratio and Q ratio from food and beverage companies listed in JSX before 31 December 1997 and were consistent for the period of 1998-2002. The companies with zero sales and negative equity were excluded. First statistic test will analyze the means and standard deviation of variables for each year from 1998 to 2002. Second, regression formula analyses were executed.

3.1.1. Research Preparation

Prior to the research, the writer performs research preparation; beginning with data extraction and gathering also literature research. In favor of literature research, the writer obtains it from the library and reference, and also internet searches in order to get relevant research topics. The literature research will contribute to the research itself as a reference and applicable data accessibility.

While in favor of data extraction and gathering, the data needed were obtained from ICMD (Indonesian Capital Market Directory) at “Pojok BEJ” of FE UII. The data extraction and gathering consist of data needed like financial statements, assets (total assets, current assets), liabilities (total liabilities, long- term liabilities, current liabilities), and market value of equity. Those data can be easily derived from the financial statement summary included in ICMD.

3.2. Research Subject

The subjects of this research are the food and beverage companies listed in JSX. Also, the companies must be listed continuously before December 31st, 1997 through December 31st, 2002. The companies had also publicized audited financial statement from 1998-2002. Companies with negative equity and zero sales were excluded. The research subjects are focused in food and beverage companies because financial and securities companies have different financial characteristics and the use of leverage, compared to other companies.

3.3. Research Setting

The research is conducted by using all relevant secondary data, collected from various reliable sources. In favor of the literature review of this research underlying the theory for problem discussion and previous research, the sources are taken from text books, journals, and internet. Data collections and other sources are taken from JSX at “Pojok BEJ” of FE UII based on the consideration

that JSX is the Indonesian biggest stock market with accessible and complete data to be gathered. Financial reports summary of food and beverage companies can be accessed from Indonesian Capital Market Directory (ICMD) published by JSX.

3.4. Research Variables

In this study, there are some variables that cannot be used directly from its data sources. Therefore, further processes are needed in order to prepare the data for computation. Those variables are capital structure as the dependent variable and Q as the independent variable. Those variables are as follows:

Capital structure is mix of equity and debt. In this research, total debt- to-asset (TD/A) as a proxy for capital structure.

$$\text{Capital structure} = \text{TD/A}$$

Where,

TD= Total debt

A = Total asset

Market power means a control of a company over its price or volume of production. In this research Q is the proxy for market power.

$$Q \text{ ratio} = \frac{MVE + BVLTD + NCA}{BVE + LTD + NCA}$$

Where:

MVE = market value of equity/ market capitalization

BVLTD= Book value of long- term debt

NCA= Net current Assets

BVE= Book value of equity

LTD= Long- term debt

$$NCA = \text{Current assets} - \text{Current liabilities}$$

3.5. Research Procedures

In order to answer the research problems, it is necessary to conduct research procedures. The procedures are arranged as follows:

- Identifying all of the food and beverage companies that become the appropriate sample for this research.
- Listing all of the food and beverage companies as the subjects for this research that are listed in the Jakarta Stock Exchange (JSX) for the period from 1998 to 2002.
- Checking all of the data that will be used as variable in this research.
- Doing calculations of variables needed in this research.
- Doing the statistical test to prove that the relation between TDA and Q is cubicle. In this research, the statistical test is done by using multiple regression model. The statistical tests are measured at 95% confident level or 5% level of significance.
- Analyzing and interpreting data.
- Deriving conclusions and other findings.

3.6. Technique of Data Analysis

3.6.1. Population and Sample

Population is a group or collection of data that becomes a target of a research or a group of something, regarding where a problem exists. The populations of this research are food and beverage companies listed in the Jakarta Stock Exchange (JSX). The method that is used in this research is purposive sampling method. In this method, the sample is found based on the core of variables representing the research. Purposive sampling method is a technique of taking the sampling based on certain considerations, that is the basis consideration of research's purpose (Suharyadi and Purwanto, 2004). In other words, purposive sampling method is a method where its sample element's extractions are done purposely.

Sample is a partial of population that becomes the object of the research. Sample should be chosen first in order to obtain the data that will be used as the variables needed in this research. List of food and beverage companies used in this research must be continuously listed in JSX before December 31st, 1997 and were consistent through December 31st, 2002, with additional criterion:

1. Had publicized yearly audited financial statement of 1998 -2002, and included in ICMD for the same year.
2. There were no zero sales and negative equity for the research period.
3. Other political and economical occurrences are neglected.

In addition to that, it can be seen in the ICMD. The writer used 21 companies as samples. After that, the companies that have zero sales and negative equity are excluded from the research. With this filtering process, the writer found 10 companies left, which finally are used as the sample for this research. Companies and its stock codes that are used in the research are stated in the appendices.

All data related to the financial statement and market capitalization can be found in ICMD, and the writer used ICMD from “Pojok BEJ” of FE UII for the research. After all data recorded and posted to Microsoft Excel completely, variables can be computed.

Hypothesis is proven by statistical test. After all variables needed were computed using Excel, the writer used SPSS for processing the data statistically.

3.6.2. Steps of Analysis

In technique of data analysis there are several steps. Those steps are as follows:

1. Identify all of the food and beverage companies that become the appropriate sample for this research. Record all of the food and beverage companies based on the criterion above and exclude the companies that are not in the criterion.
2. Take and check the data availability needed in the research. The data needed are assets (total assets, current assets), liabilities (long

term liabilities, current liabilities), and market value of equity. Companies with negative equity and zero sales are excluded from the research.

3. Process the data into research variables.
4. Execute statistical tests.
5. Analyze and interpret the result of statistical test and hypothesis.
6. Draw conclusions and make recommendation for the next researches.

3.6.3. Hypothesis Formulation

Based on problem formulation and previous study above, the hypothesis of this study is:

“ The relationship between capital structure and market power is cubicle.”

3.6.4. Hypothesis Testing

Based on the problem statement above and review of related literature, therefore the null hypothesis and the alternative hypothesis are as follows:

Ho: the relation between capital structure and market power is not cubicle.

Ha: the relation between capital structure and market power is cubicle.

The hypothesis of the research is tested by using regression model.

$$(TD/A)_{i,t} = \alpha_0 + \alpha_1 Q_{i,t} + \alpha_2 Q_{i,t}^2 + \alpha_3 Q_{i,t}^3 + \varepsilon_{i,t}$$

From the above equation, the variable of Q , Q^2 and Q^3 will be examined. Below are the criteria for the alternative hypothesis to be accepted:

If α_1 and α_3 are positive; and α_2 is negative H_0 is rejected

If α_1 and/or α_3 are not positive; and/or α_2 is not negative H_0 is accepted

3.6.5. Classical Assumptions

In a research, problems that occur in regression analysis often happen. Usually it happens when checking a prediction model into model that already entered series of data. This problem of research is usually called as classical assumption, which includes autocorrelation test and multicollinearity test.

1. The Autocorrelation Test

Autocorrelation is a correlation among time series observations that relate each other (simultaneous relation). There are several conditions where autocorrelation happen/ exist. Those are as follows:

1. Inertia. Inertia usually happen in the economic phenomena where something will affect something else following the business cycle/ relates each other.
2. Bias. Bias in the specification, where there is several or some variable that is excluded from the model.
3. Inappropriate function. For example when it should use non- linear, but we apply linear and vice versa.

In order to detect whether autocorrelation exist or not, we can use Durbin Watson (Dw) test. The formula for Dw test is $\frac{\sum (e_t - e_{t-1})^2}{\sum e^2}$ and if the value of Dw between d_l and $4d_l$, therefore there is no autocorrelation.

Table 3.1

Durbin Watson

Durbin Watson (Dw)	Explanation
Less than d_l ($< d_l$)	Autocorrelation
Between d_l and d_u ($d_l - d_u$)	No conclusion
Between d_u and $4 - d_u$ ($d_u - 4 - d_u$)	No autocorrelation
Between $4 - d_u$ and $4 - d_l$ ($4 - d_u - 4 - d_l$)	No conclusion
More than $4 - d_l$ ($> 4 - d_l$)	Autocorrelation

Source: Rahmansyah (2003)

2. The Multicollinearity Test

Multicollinearity exists if there is more than one perfect linear correlation. Otherwise, it can be said that multicollinearity shows that there is one or more correlation among independent variables. When multicollinearity exists, moreover if it is perfect collinear (the correlation coefficient of inter independent variable = 1), therefore the regression coefficient of independent variable can not be determined and the standard of error are unlimited. There are several techniques in recognizing the existence of multicollinearity. Those are as follows:

1. At the same time, all independent variables significantly influence (the F-test is significant), however, partially each independent variables do not significantly give influence (the t- test is not significant)
2. The value of coefficient determination R^2 is large, but the independent variables do not significantly give influence (t- test not significant).
3. The value of partial correlation coefficient is bigger than its coefficient determination.

Beside those techniques, we can check the existence of multicollinearity in the calculation results of Tolerance (TOL) and Variance Inflation Factor (VIF). Variable would have high collinearity if its VIF is more than 10 or its tolerance tends to close to 0 (zero). The measurement of multicollinearity can be formed mathematically as follows:

$$VIF = 1 / (1 - R^2)$$

R^2 = coefficient of determination (R square)

In order to overcome multicollinearity, there are several ways:

1. Drop the independent variable predicted as the cause of multicollinearity. It can be seen from high value of inter independent variable partial correlation.
2. Add the observation or the data.

CHAPTER IV

RESEARCH FINDINGS, DISCUSSION, and IMPLICATIONS

This chapter explains about variable computation, data processing, analysis, and interpretation of hypothesis testing. This chapter consists of research findings discussion and implications.

4.1. Research Findings and Implications

4.1.1. Descriptive Statistics

Appendix 4 provides means and standard deviations of the dependent and independent variables for each year from 1998 to 2002 and for the period of 1998- 2002. The average ratio of total debt- to- assets (TDA) for the period of 1998- 2002 is 47.11%. In year-by-year analysis, TDA was relatively stable from 1998 through 2002 around 41%- 54%. It has the highest average ratio of TDA in 1998 at level of 53.64% then gradually decreases at level of 43.82% in 2000. In 2001 the TDA ratio increased at level 46.35% then decreased again at 41.17% in 2002.

Q ratio decreased from 0.99 in 1998 to 0.91 in 1999 but then gradually increased at 1.05 in 2000 and reached its peak in 2001 at 1.43. In 2002, its Q ratio level became 1.13. For the 5 years period from 1998- 2002, the average Q ratio was 1.10. Below is the summary of descriptive statistic of TDA and Q ratio.

Table 4.1

Summary of Descriptive Statistics

	TDA		Q	
	Mean	Std. Deviation	Mean	Std. Deviation
1998	0.5364	0.2659	0.9940	0.6248
1999	0.4537	0.2374	0.9191	2.0821
2000	0.4382	0.1823	1.0507	0.4586
2001	0.4635	0.2273	1.4287	1.1025
2002	0.4117	0.1885	1.1340	0.6868
1998-2002	0.4711	0.2227	1.1053	1.1172

4.1.2. Quantitative Analysis

After all variables needed are completely computed, statistical test was executed. Regression analysis was performed in order to explore the effect of independent variables (Tobin's Q) toward dependent variable (TDA/ total debt- to- assets) in a cubicle manner.

In this research, the writer uses multiple regressions. In multiple regressions, coefficients of variables are used to explain the changes in dependent variable toward the changes in independent variables. In this case, multiple regressions, there is an assumption that other things are being equal or constant. Intended for this research, the formula of multiple regressions that used was:

$$(TD/A)_{i,t} = \alpha_0 + \alpha_1 Q_{i,t} + \alpha_2 Q_{i,t}^2 + \alpha_3 Q_{i,t}^3 + \varepsilon_{i,t}$$

The purpose of the research is to provide empirical evidence that Q effects TDA in a cubicle manner. Meaning that the coefficients variables α_1 , α_2 , and α_3 should be respectively positive, negative and positive.

Appendix 3 presents the results of the regressions analysis. Based on the results, the regression formula is as follows:

$$\text{TDA} = 0.440 - 0.0216Q + 0.0218Q^2 + 0.00053Q^3$$

The main concern of this research is to test the specification about the relationship between capital structure (TDA/ total debt- to- assets) and market power (Q ratio), whether it is cubicle or not. Against what the writer predicted, the coefficient of variables Q, Q² and Q³ are not positive, negative, and positive respectively. From the results above, the coefficient of variables Q, Q² and Q³ are negative, positive, and positive respectively. All of these coefficients are at 5% level of significance. Therefore, **Ho is accepted**. It means that results of this research do not support the finding of Pandey (2002) who found that the interaction between capital structure and market power is cubicle.

There are several possibilities that can explain why the results are not as predicted. From the results it can be seen that the relationship between capital structure (TDA) and market power (Q ratio) is not cubicle. It means that at lower and higher ranges of Tobin's Q, firm does not employ higher debt and does not reduce their debt at intermediate range. It is possible for one sector of a company has no cubicle relationship between its capital structure and market power. While for the whole sector, let say manufacturing, the relationship between capital structure and market power could be cubicle. Because for this research, the results cannot be generalized

for all companies outside food and beverage companies, moreover for capital structure- market power relationship for Indonesian firm.

It is unproven in this research that the relationship between capital structure and market power is cubicle, since the population of previous research are done in manufacturing companies. Therefore it cannot be generalized with the population of food and beverage companies, since there are different characteristics. Moreover, it seems that manufacturing companies consist of several different sector of companies, while food and beverage companies are part of this manufacturing companies, and of course has more specific characteristics.

Also, beside those reasons, the unproven phenomena in this research could happen because the n sample of this research are very small (10 samples), while n sample can give affect to the results of the data analysis.

In order to know whether the relationship between capital structure and market power is cubicle, the writer also did year-by-year analysis. The writer uses the same regression formula and procedure, but only uses sample from corresponding year.

Table 4.2

Summary of year-by-year regression

	Constant	Q		Q ²		Q ³		R ²	Sig.* (F)
		Coeff.	Sig.*	Coeff.	Sig.*	Coeff.	Sig.*		
1998	0.717	0.207	0.887	-0.849	0.611	0.356	0.503	0.266	0.574
1999	0.597	-0.255	0.88	0.014	0.176	0.014	0.110	0.736	0.360
2000	-0.286	2.246	0.638	-2.241	0.609	0.709	0.575	0.139	0.809
2001	0.276	0.083	0.946	0.068	0.925	-0.016	0.89	0.333	0.456
2002	-0.165	1.446	0.453	-0.996	0.511	0.223	0.527	0.301	0.510

From the results of year-by-year regression, it can be seen that the relationship between capital structure and market power is not cubicle, and it is the same with the result of the whole year (1998- 2002) regression. Therefore, these results strengthen the point of view that the relationship of capital structure- market power is not cubicle.

4.1.3. Classical Assumptions

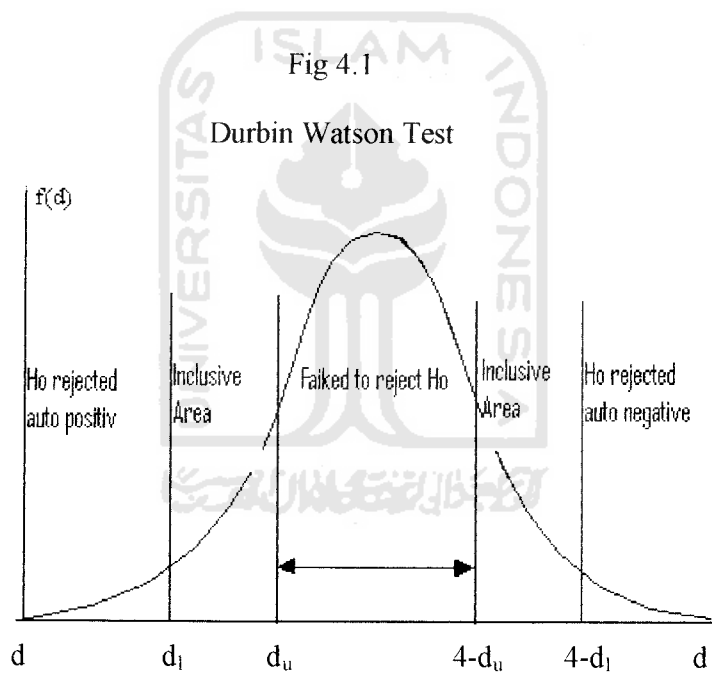
In this research, the writer uses 2 classical assumptions, which are autocorrelation and multicollinearity.

4.1.3.1. Autocorrelation Test

Autocorrelation test is a test executed in order to examine the existence of a correlation among time series observations that related to each other (simultaneous relation). In detecting autocorrelation, the writer uses Durbin- Watson. The result of Durbin Watson test can be seen in appendix 3.

- (1) If $(4-d_l) < d_w < d_l$, autocorrelation exist.
- (2) If d_w between d_u and $(4-d_u)$, no autocorrelation exist.
- (3) If d_w between d_l and d_u or between $(4-d_u)$ and $(4-d_l)$, then we cannot derive any certain conclusion (inclusive). For this value we cannot conclude that autocorrelation exist or not.

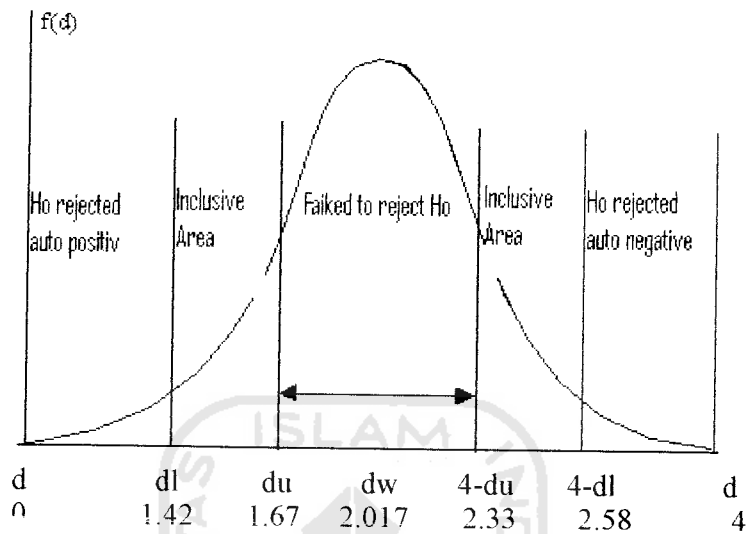
For further understanding about dw test we can see from fig 4.1



From appendix 3 we can observe that the dw score for the regression is 2.017. From Durbin-Watson test ($\alpha=5\%$, $n=50$, $k=3$) we can get $d_l=1.42$ and $d_u=1.67$ also $(4-d_l)=2.58$ and $(4-d_u)=2.33$. If those values are plot into the graph

Fig. 4.2

Durbin Watson Test Computation



From the result above it can be seen that in this research there is no autocorrelation.

4.1.3.2. Multicollinearity Test

Multicollinearity test is executed in order to detect the existence of one or more correlation among independent variables. Multicollinearity exist when the results of Variance of Inflation Factor (VIF) is more than 10. In appendix 3 it can be seen that the results of VIF is less than 10. Therefore, in this research multicollinearity does not exist.

CHAPTER V

CONCLUSIONS and RECOMMENDATIONS

In this chapter, the writer would like to discuss about the conclusions of this research and also propose the recommendations that can be considered when conducting further research.

5.1. Conclusions

From the results of the research, it can derive conclusions:

- In average, food and beverage companies that listed in Jakarta Stock Exchange (JSX) during the period of 1998- 2002 have Q ratio more than 1 (1.10). Meaning, when a firm's Q is above 1, this should stimulate investment, has strong competitive advantage and it is a sign of valuable growth opportunities.
- The general of the overall objective of this research is to provide empirical research about the interaction or relationship between capital structure (TDA) and market power (Tobin's Q). In this research, the writer predicted that the interaction between capital structure and market power is cubicle. The nature of this cubicle function is positive, negative, and positive with coefficient variables Q, Q^2 , and Q^3 respectively. However, from the research findings within 5 years (1998 – 2002) period of research, 50 total samples from 10 of food and beverage companies listed in JSX, the writer concluded that the interaction between capital structure and market power is not cubicle. Meaning that at lower and higher ranges of

Tobin's Q or Q ratio, firm does not employ higher debt and does not reduces their debt at intermediate range.

5.2. Recommendations

In this research there are some limitations that can bias to the research findings. Therefore, with the following recommendations, hopefully, it can give contribution for further research in order to achieve better results:

- For further research, the sample can be added since in this research the samples are too small. The more the sample the more significant it will be. Also, this research cannot be generalized for companies outside food and beverage companies.
- The observation period, from 1998 to 2002, were unstable. Because in this period of time the economic crisis still affect the Indonesian economy. Therefore, it may affect managers in decision-making and takes drastic measurement. This action may be biased to the computation of capital structure and market power interaction. The writer suggests that, for further research, more stable economic conditions are preferable. The length of observation period should also be extended, hence for how long an independent variable can influence the dependent variable can be revealed.
- This research only includes market power as independent variables. To reduce this imperfection, future research can add more potential variables that may influence the dependent variable (capital structure). Independent

variables that can be involved for further researches can be in the fields of tangibility, profitability, size, risk, etc.

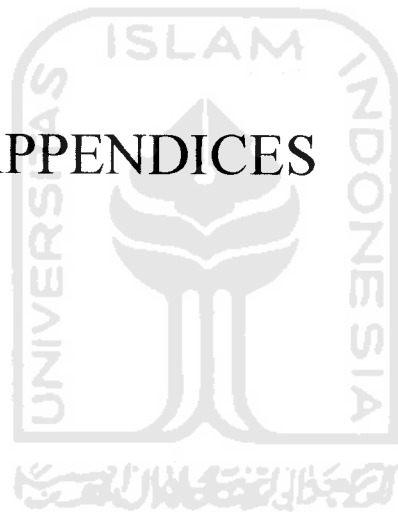


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APPENDICES



Appendix 1:

Sample Company Name and Stock Code

No.	Company Name	Code
1	PT Aqua Golden Mississippi Tbk	AQUA
2	PT Cahaya Kalbar Tbk	CEKA
3	PT Delta Djakarta Tbk	DLTA
4	PT Indofood Sukses Makmur Tbk	INDF
5	PT Mayora Indah Tbk	MYOR
6	PT Multi Bintang Indonesia Tbk	MLBI
7	PT Sari Husada Tbk	SHDA
8	PT Siantar TOP Tbk	STTP
9	PT Suba Indah Tbk	SUBA
10	PT Ultrajaya Milk Industry Tbk	ULTJ



Appendix 2:
Sample's TDA and Q
Year 1998

No	Code	TDA	Q
1	AQUA	0.6237488	0.7534791
2	CEKA	0.3736382	2.0484891
3	DLTA	0.6550352	0.0840053
4	INDF	0.9099200	1.8527963
5	MYOR	0.5720378	0.8555888
6	MLBI	0.5983162	0.7914622
7	SHDA	0.1283832	1.2709038
8	STTP	0.1857964	1.3182250
9	SUBA	0.9076758	0.4038509
10	ULTJ	0.4095514	0.5612474

Sample's TDA and Q
Year 1999

No	Code	TDA	Q
1	AQUA	0.6040259	1.1618270
2	CEKA	0.2699966	1.3069871
3	DLTA	0.3846446	0.5116207
4	INDF	0.7737556	4.0804374
5	MYOR	0.5249975	1.0416285
6	MLBI	0.3968357	0.5346454
7	SHDA	0.1512405	1.5261069
8	STTP	0.2085869	2.3208013
9	SUBA	0.8702804	-4.1947430
10	ULTJ	0.3525330	0.9020963

Sample's TDA and Q
Year 2000

No	Code	TDA	Q
1	AQUA	0.6370456	1.7937422
2	CEKA	0.2258721	0.5643738
3	DLTA	0.4389508	0.7778334
4	INDF	0.7563677	1.4355212
5	MYOR	0.5454510	0.8927292
6	MLBI	0.5039056	0.5312612
7	SHDA	0.1568027	1.4569052
8	STTP	0.3628845	1.5005967
9	SUBA	0.4291506	0.5908620
10	ULTJ	0.3261412	0.9631992

Sample's TDA and Q
Year 2001

No	Code	TDA	Q
1	AQUA	0.6789467	4.0212713
2	CEKA	0.2860091	0.3439884
3	DLTA	0.2601628	0.6486049
4	INDF	0.7189811	1.3728318
5	MYOR	0.5263949	0.7691151
6	MLBI	0.8412399	2.1730199
7	SHDA	0.1464260	1.7020863
8	STTP	0.4083775	0.6839539
9	SUBA	0.2905198	0.6654941
10	ULTJ	0.4778194	1.9063273

Sample's TDA and Q
Year 2002

No	Code	TDA	Q
1	AQUA	0.5952192	2.4653519
2	CEKA	0.2444066	0.4455108
3	DLTA	0.2225159	0.6505031
4	INDF	0.7598470	1.1532870
5	MYOR	0.4422148	0.7458854
6	MLBI	0.4043836	1.8499786
7	SHDA	0.1047343	1.7282978
8	STTP	0.4275356	1.2047615
9	SUBA	0.4327168	0.3801663
10	ULTJ	0.4835979	0.7161776



Appendix 3:
Regression for 1998- 2002

Regression

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	Q3, Q2, Q ^a	.	Enter

a. All requested variables entered.

b. Dependent Variable: TDA

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.383 ^a	.146	.091	.212349038	2.017

a. Predictors: (Constant), Q3, Q2, Q

b. Dependent Variable: TDA

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.356	3	.119	2.629	.061 ^a
	Residual	2.074	46	.045		
	Total	2.430	49			

a. Predictors: (Constant), Q3, Q2, Q

b. Dependent Variable: TDA

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.440	.074		5.965	.000		
	Q	-2.16E-02	.070	-.108	-.309	.759	.151	6.635
	Q2	2.178E-02	.008	.386	2.717	.009	.918	1.089
	Q3	5.273E-04	.005	.041	.114	.909	.146	6.850

a. Dependent Variable: TDA

Collinearity Diagnostiçs

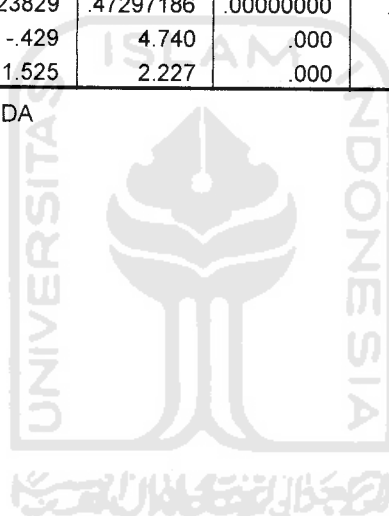
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	Q	Q2	Q3
1	1	2.550	1.000	.02	.01	.05	.01
	2	.879	1.703	.05	.00	.13	.08
	3	.530	2.194	.09	.01	.77	.01
	4	4.076E-02	7.910	.84	.97	.05	.90

a. Dependent Variable: TDA

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.43455806	.87489849	.47106652	.085198730	50
Residual	-.323829	.47297186	.00000000	.205745892	50
Std. Predicted Value	-.429	4.740	.000	1.000	50
Std. Residual	-1.525	2.227	.000	.969	50

a. Dependent Variable: TDA



Appendix 4:
Descriptive Statistic

Descriptives of TDA

Descriptive Statistics

	N	Mean	Std. Deviation
TDA98	10	.53641030	.265864056
TDA99	10	.45368967	.237393743
TDA00	10	.43825718	.182321407
TDA01	10	.46348772	.227274116
TDA02	10	.41171717	.188484522
Valid N (listwise)	10		

Descriptives of Q

Descriptive Statistics

	N	Mean	Std. Deviation
Q98	10	.99400479	.624761871
Q99	10	.91914076	2.082124667
Q00	10	1.050702	.458555333
Q01	10	1.428669	1.102459728
Q02	10	1.133992	.686776097
Valid N (listwise)	10		

Descriptives of TDA and Q for 1998- 2002

Descriptive Statistics

	N	Mean	Std. Deviation
TDA	50	.47106652	.222688562
Q	50	1.105302	1.117216280
Valid N (listwise)	50		

Appendix 5:
Year-by-Year Regression

Regression for year 1998

Variables Entered/Removed^d

Model	Variables Entered	Variables Removed	Method
1	Q98_3, Q98, Q98_2 ^a		Enter

a. All requested variables entered.

b. Dependent Variable: TDA98

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.515 ^a	.266	-.102	.279045249

a. Predictors: (Constant), Q98_3, Q98, Q98_2

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.169	3	.056	.723	.574 ^a
	Residual	.467	6	.078		
	Total	.636	9			

a. Predictors: (Constant), Q98_3, Q98, Q98_2

b. Dependent Variable: TDA98

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.717	.355		2.024	.089
	Q98	.207	1.396	.486	.148	.887
	Q98_2	-.849	1.585	-.4572	-.536	.611
	Q98_3	.356	.499	3.993	.712	.503

a. Dependent Variable: TDA98

Regression for year 1999

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	Q99_3, Q99_2, Q99		Enter

a. All requested variables entered.

b. Dependent Variable: TDA99

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.858 ^a	.736	.605	.149259432

a. Predictors: (Constant), Q99_3, Q99_2, Q99

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.374	3	.125	5.589	.036 ^a
	Residual	.134	6	.022		
	Total	.507	9			

a. Predictors: (Constant), Q99_3, Q99_2, Q99

b. Dependent Variable: TDA99

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.597	.143		4.189	.006
	Q99	-.255	.125	-2.238	-2.036	.088
	Q99_2	1.430E-02	.009	.403	1.534	.176
	Q99_3	1.424E-02	.008	2.020	1.878	.110

a. Dependent Variable: TDA99

Regression for year 2000

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	Q00_3, Q00, Q00_2 ^a		Enter

a. All requested variables entered.

b. Dependent Variable: TDA00

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.373 ^a	.139	-.291	.207193582

a. Predictors: (Constant), Q00_3, Q00, Q00_2

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.042	3	.014	.323	.809 ^a
	Residual	.258	6	.043		
	Total	.299	9			

a. Predictors: (Constant), Q00_3, Q00, Q00_2

b. Dependent Variable: TDA00

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.286	1.510		-.189	.856
	Q00	2.246	4.529	.5648	.496	.638
	Q00_2	-2.241	4.156	-.12707	-.539	.609
	Q00_3	.709	1.196	.7442	.593	.575

a. Dependent Variable: TDA00

Regression for year 2001

Variables Entered/Removed^d

Model	Variables Entered	Variables Removed	Method
1	Q01_3, Q01, Q01_2 ^a		Enter

a. All requested variables entered.

b. Dependent Variable: TDA01

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.577 ^a	.333	-.001	.227379165

a. Predictors: (Constant), Q01_3, Q01, Q01_2

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.155	3	.052	.997	.456 ^a
	Residual	.310	6	.052		
	Total	.465	9			

a. Predictors: (Constant), Q01_3, Q01, Q01_2

b. Dependent Variable: TDA01

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.276	.502		.550	.602
	Q01	8.253E-02	1.170	.400	.071	.946
	Q01_2	6.752E-02	.691	1.441	.098	.925
	Q01_3	-1.56E-02	.108	-1.369	-.144	.890

a. Dependent Variable: TDA01

Regression for year 2002

Variables Entered/Removed^d

Model	Variables Entered	Variables Removed	Method
1	Q02_3, Q02, Q02_2 ^a		Enter

a. All requested variables entered.

b. Dependent Variable: TDA02

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.549 ^a	.301	-.048	.232719946

a. Predictors: (Constant), Q02_3, Q02, Q02_2

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.140	3	.047	.861	.510 ^a
	Residual	.325	6	.054		
	Total	.465	9			

a. Predictors: (Constant), Q02_3, Q02, Q02_2

b. Dependent Variable: TDA02

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.165	.641		-.257	.805
	Q02	1.446	1.803	4.369	.802	.453
	Q02_2	-.996	1.427	-8.390	-.698	.511
	Q02_3	.223	.333	4.649	.671	.527

a. Dependent Variable: TDA02