BOARD SIZE, BOARD COMPOSITION AND FIRM VALUE IN R&D COMPANIES THE CASE OF INDONESIA

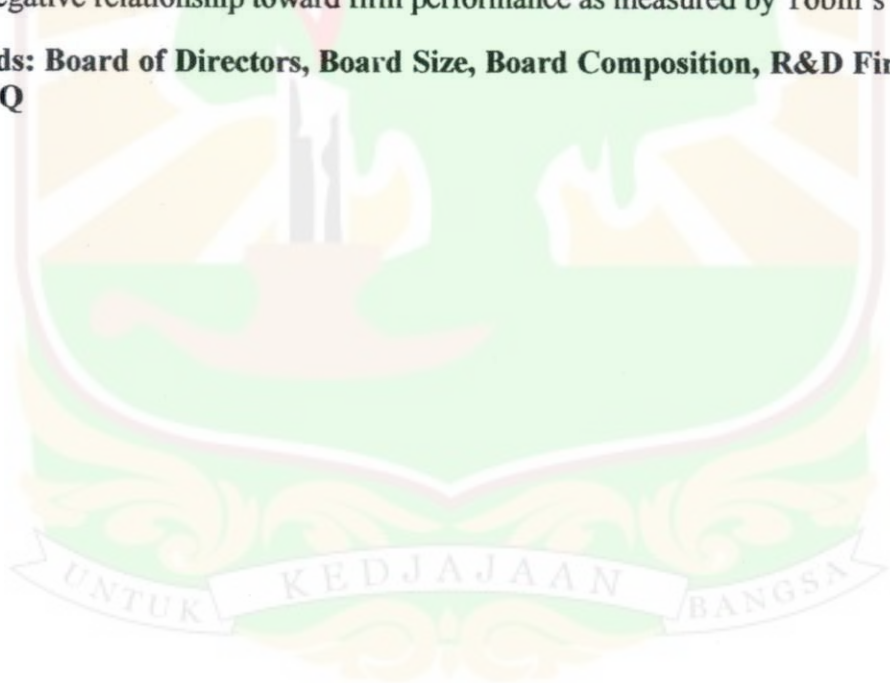## THESIS

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ABSTRACT

Board of directors of a corporation is ultimately responsible for the organization's decision and its performance. To be the key of success of the organization, board must be functioning effective and efficient. Reviewing the board performance is valuable in contributing to the function of the board. One of method to reviewing the board is through the established structure of the board; that is within its size and composition balances. This thesis tried to investigate whether the optimum board size and board composition balances for complex firms and high R&D firms are also found in Indonesia's Manufacturing firms. This thesis used 6 Indonesian's R&D manufacturing companies as a data samples, and used Tobin's Q as a firm performance measurement. This thesis found that, contrary to the hypotheses, the optimum board size and board composition balances for complex firms and high R&D firms, as suggested by previous research, wasn't found in Indonesian's R&D manufacturing companies and also have a negative relationship toward firm performance as measured by Tobin's Q.

Keywords: Board of Directors, Board Size, Board Composition, R&D Firms, Tobin's Q

i

FOREWORD

Finally, after 7 months and lot of efforts, I finally completed this thesis and end the journey as an undergraduate student. I would like to express my greatest gratitude to the greatest of all, Allah SWT., for giving endless graces in each single second of my life. I owe a great thanks to Muhammad saw, may Allah bless him, for his guidance on how to life well on earth. To you my beloved Ma, thanks for your irreplaceable love and caring, I love you more than words. As the old wise man said, we're born without manual book, that's what fathers is, and it's you Pa, my manual book in how to drive myself through the life. Mela, my pretty sister, to all your support and smile, and your warning about my smoking habit, you're going to be great doctor someday sis. David, the family shield, thanks for keeping our family safe while I weren't there. To my youngest bro, Emeraldo, for teaching me how not just to be older, but to be adult man

My widya for you love, support, and smile, and like the love song I like, I could move the mountain when I'm with you. My companion in Perintis Kemerdekaan 43, now and then, you guys knows how to make a lot of fun with a little bit of money. To the international class of '03, thank you for the best moments in my life. My brothers in arms in Serendipity, for our great friendship. Da zal, the hands that feed my brains with magazines, book, and all the readable things, thanks man, you rock. Osra, Buyung, and Efwan, thank you guys, and hey, we made it.

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I admitted that there are so many other people's I couldn't mentioned here, and so I just glad that you were with me, in good and the bad times, thank you. I couldn't ask for more, since this thesis is my undergraduate thesis; I admitted it's far from good one, whether for material contents and writing systematic aspect, than tons of advice and constructive critics. Last but not least, I hope, one way or another, this research could be useful to all the readers of this thesis.

CONTENTS

LIST OF TABLES AND FIGURES

CHAPTER 1

INTRODUCTION

1.1. Background

In the last two decades, there are the series of the financial catastrophes around the globe along with their financial crisis impact. Further research following those series of crisis confirms that the cause of the financial catastrophe was related with the weakness in the implementation of corporate governance within the countries. Prasetyantoko (2008) state that, the cause of many economic crises that happened throughout the world in the last two decades, was a failure in applying good Corporate Governance, aside from reckless economic liberalization and improper financial regulation. Similar opinion was stated by The International Corporate Governance Network (ICGN) on his statement concerning 2008 global financial meltdown, saying that Corporate Governance failings were not the only factor, but they were critical and significant. On the other hand, good corporate governance also practice plays a critical role in both maintaining and pushing economy growth of one country (Morck and Nakamura, 1999).

As for Indonesian studies, many issues related with corporate governance became popular in Indonesia in the end of 20th century, precisely after the economic crisis in 1997 (Lukviarman, 2004). Lukviarman, Syakhroza, Prasetyantoko and Sutojo are few the names of scholars are willing to understand corporate governance within the Indonesian banking and corporate nature. Indonesian corporate governance

system is an interesting subject to observe, because of the absences of the common corporate control, relative to other countries (Lukviarman, 2004). Hence, any research conducted in this field of study, should be used as a tool to improving the implementation of corporate governance, by then, stakeholders and wide scale of national economic growth will gain positive impact (Daniri, 2006).

So why the corporate governance matter? It is because corporate governance is a structure of the relationship among various participants in determining the direction and performance of corporation, the primary participants are the shareholders, the management and the board of directors (Monks & Minow, 2001), and distributed the rights and responsibilities among them (OECD). Therefore, the central to the study of corporate governance are the board (as the governing body), the management and the shareholders (Tricker, 2010).

Board of directors of a corporation is ultimately responsible for the organization's decision and its performance. It's the board that is accountable to the owners, members, and other legitimate stakeholders. The board should be providing direction and supervising the work of executive management (Tricker, 2010), along with resources and useful information to help the companies against the uncertain business environment. Thus properly structured governing boards have the effect of the organizational outcomes (Siciliano, 1996).

Since Indonesia applied two-tier board instead of unitary board in the corporate governance structure, there are consequences in the term of

2

board of directors. Two-tier board corporate governance structure separates the supervisory board from the executive board. This thesis will be based upon the board's role as a direction provider and supervisor agent (Tricker, 2010). In the case of Indonesia, through the Indonesia's Corporate Governance Code (ICCG) 2006 and Indonesian law no 40 2007 which regulates company incorporated, the role of directing and supervising the management are the main responsibility of the board of commissioners.

To be the key of success of the organization, board must be functioning effective and efficient. Reviewing the board performance is valuable in contributing to the function of the board (IOD, 2010). Furthermore, Sir Bryan Nicholson, the former UK's Financial Reporting Council (FRC), argued that reviewing the board creates sustained improvement in board effectiveness. Tricker (2010) further adds that one of method to reviewing the board is through the established structure of the board; that is, within its composition balances and its size.

Board should reduce it size, because board with large number of member tends to inhibit director's contribution and are in danger of splitting into cliques (Tricker, 2010). Jensen (1993) stated that the effectiveness of the board may decline as board size increase above a moderate number, so the larger the size of the board, means the less effective the board is. While the arguments stated small board is better dominates the literature. Other researcher, such as Dalton et al (1999) and Coles, Daniel & Naveen (2007), argued that larger board is better form for the complex firms that operate in multiple segments

While the literature on board size predominantly suggest that smaller boards perform better, evidence on the relation between the balances of board composition and performance is mixed. Those who argued that higher number of outsider add value in some circumstances (Weisbach, 1988; Borokhovich, Parino & Trapani, 2996; Brickley, Coles and Terry, 1994; Byrd and Hickman, 199; Staikouras et al, 2007). Another research argued that there's no relationship between fraction of outside director on the board and on performance as measured by Tobin's Q (Baysinger and Buttler, 1985; Hermalin and Weisbach, 1991; Bhagat and Black 2001). Yermack (1996) and Agraawal & Knoeber (1996) find a negative relationship between the fraction of putside directors and Tobin's Q, and Rosenstein and Wyatt (1997) and Klein (1998) find that insiders add value.

The reason behind this thesis used firms that have R&D investment (R&D) firms as a basis of the research could be traced form the earlier research about Corporate Governance in Industry Level context. Coles, McWilliams and Sen (2001) examine the relationship between the typical agency theory constructs of monitoring, incentives and ownership structure, with financial performance. The results indicate that while some of the traditional agency variables do impact performance, both individually and as interactions, industry performance is a strong and significant driver of performance for sample firms. They conclude that, while firms may use governance packages to deal with agency issues, further research could provide important evidence on these issues by focusing on examining a more refined, industry-level context (Yang, Searcy, Tatum, 2006).

4

So what is the driver performance that explained above? Mancinelli and Mazzanti (2007) found that R&D is a main driver of performance of a company. As we know innovation is a result of the firm's investment in R&D, moreover, innovation will foster economic growth (Solow, 1950; Hillier et. al, 2008; Yang, Falah and Chen, 2009) and financial performance of the firms (O'rega, Sims & Ghobadian, 2008).

Hence in industry level context corporate governance studies, what matter in corporate financial performance isn't solely affected by corporate governance packages chosen by the companies, but also whether the companies invested their resources in R&D. R&D companies in this thesis described as the companies that have R&D investment in its annual expenditure. In recent years, researchers have become increasingly aware of the impact of corporate governance on innovation (Yang, Falah & Chen, 2009). Brown and Caylor, 2005, used broad based measure that encompasses 51 governance factors, the empirical results indicates a positive association between corporate governance quality and R&D expenditures (Yang, Falah & Chen, 2009). In addition, their paper also shows that firms which are more financially constrained tend to reduce investment in R&D. Structure of corporate governance is more emphasized than governance practices when the impact on R&D intensity is studied (Lhuillery, 2006), moreover, Lhuillery adds that firms with governance practices that are shaped in order to defend shareholders' rights are more R&D intensive.

The rest of this chapter is arranged as follows. Section 2 presents the research objectives of the research. Section 3 discusses the problems statement and then section 4 describes the writing systematic of this research.

1.2. Research Objectives

This thesis will be focusing on major issues in the board characteristics; that is, board composition and its size. Latter the finding of this thesis hopefully will add to the literature in three ways. First, this thesis is willing to contribute to the existing literature on performance and board structure. Second, this thesis adds the literature on the determinants of board structure. Third, this thesis adds the Indonesia corporate governance study literature, especially in R&D based companies CG study.

1.3. Problems Statement

Bases on the previous explanation in Background section, this research proposes 3 main questions as listed below:

a) Does complex firms have larger board size and have more or less independent commissioner than simple firms?

b) Does high R&D firms have higher fraction of dependent commissioner?

c) Does Tobin's Q increases relevant to the board of commissioners size in complex firms?

d) Does Tobin's Q increases relevant to the fraction of dependent commissioners on the board for High R&D firms?

1.4. Writing Systematic

This thesis consists of 5 chapters. Chapter one consist of introduction which contains background, problem statement, objectives of the research and writing systematic. Chapter 2 will explain the theoretical framework and review the literature about all related researches. Third chapter will explain about research method including the population that are taken, the sampling method, variables identification and measurement, data gathering method and technique. Chapter 4 will tell about research analysis, like empirical findings and other related things which is analyzed during research process. Chapter 5 is concluding section, which contains the research conclusions, the research limitations and further research.
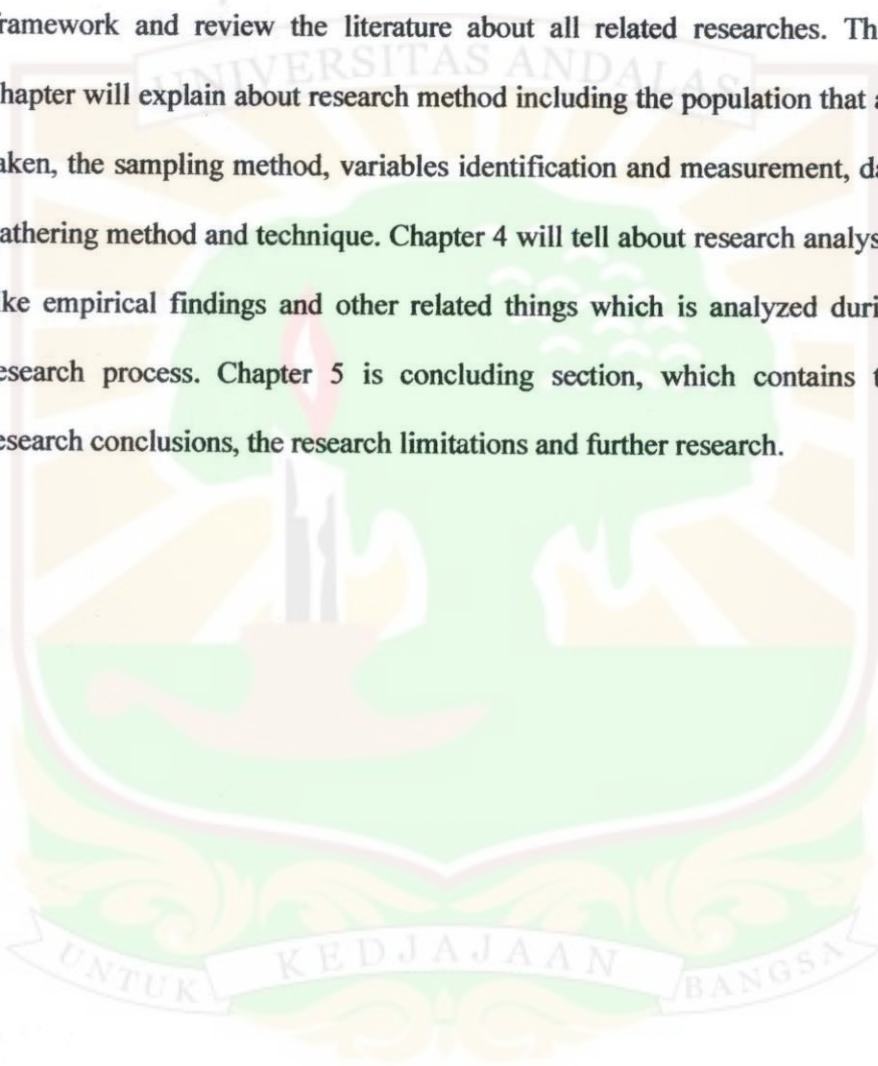
CHAPTER 2

THRORETICAL FRAMEWORK

2.1. Introduction

Corporate governance has become a key policy issue in addressing the way a company is managed in various countries. The things that make differences is a level of corporate governance development among the countries, aside from the existence, scale, the complexity of business environment and also an institutional factor that became a foundation in corporate governance study (Prasetyantoko, 2008).

As for Indonesia, there are at least 2 key reasons why Corporate Governance became an interesting study theme. First, for practical reason, corporate governance issue has just begun popular issue in the end of 1997 (Lukviarman, 2004; Prasetyantoko, 2008). Before the 1997 financial crisis, there almost no Corporate Governance issues discussion in Indonesia (Prasetyantoko, 2008); let alone the existence of sufficient common corporate control, relatives to other countries (lukviarman, 2004). Second, for academic reason, Corporate Governance study is a multidisciplinary study because the complexity of corporate governance related issues (Prasetyantoko, 2008), although In Indonesia, financing and accounting is still the two main field of study in corporate governance study.

2.2. Corporate Governance

The term "corporate governance" is a relatively new one both in the public and academic debates, although the issues it addresses have been around for much longer, at last since Berle and Means (1932) and even earlier Smith (1776). The globalization of the market has ushered in an era in which the quality of corporate governance is a crucial component of corporate survival. The compatibility of corporate governance practices with global standard has also become an important part of corporate success. The practices of good corporate governance has therefore become a necessary prerequisite for any corporation to manage effectively in the globalize market.

Corporate Governance is a subject that notoriously difficult to explain in one sentence. Some view of corporate governance in the narrow sense, dealing with the structure and functioning of the board of directors, and their relationship to management. A broader definition is proposed by Monks & Minow (2001) stated that corporate governance is a structure of the relationship among various participants in determining the direction and performance of corporation, the primary participants are the shareholders, the management and the board of directors. There are many definitions about corporate governance. The Organization for economic Cooperation and Development (OECD) defines "corporate governance" as follows:

> "*Corporate governance is the system by which business corporations are directed and controlled. The corporate governance structure specifies the distribution of rights and responsibilities among different participants in the corporation, such as the board, the managers, shareholders and other stakeholders, and spells out the rules and procedure for provides the structure through which the*

company objectives are set, and the means of attaining those objectives and monitoring performance."

La Porta, Silanes, Shleifer and Vishny (2000) define corporate governance as "a set of mechanisms through which outside investors protect themselves against expropriation by the insiders" c.f. Drobetz, Schillhofer and Zimmermann (2003). Zingales (1998) defines corporate governance as "the complex set of constraints that shape the ex-post bargaining over the quasi-rents generated by a firm.

> Australian Stock Exchange defines corporate governance as "The system by which companies are directed and managed. It influences how the objectives of the company set an achieved, how risk is monitored and assessed, and how performance is optimized." The Indonesian Institute for Corporate Governance (2000) described corporate governance as a process and structure that is implemented in running the company with the objective is increasing of shareholders' value in the long term, while keep paying attention to other investors' interest.

As corporate governance issues are multifaceted, its definition should also consider the broader context to include the business environment, social and cultural, as well as the political framework (Blair 1995). Seen in this light, corporate governance could be defined as referring to.

> The whole set of legal, cultural and institutional arrangements that determine what publicly traded corporations can do, who controls them, how the control is exercised and how the risks and returns from the activities they undertake are allocated (Blair 1995).

Corporate governance is an important pillar of market economy as it relates to the investor confidence both in the companies as well as in the overall business environment. Implementation of corporate governance encourages fair competition and conducive business climate that leading to sustainable economic growth and stability (Boediono in ICCG, 2006).

To implement corporate governance, one country needs corporate governance frameworks of their own to ensures that the corporate governance are well implemented respective to their country. Organization for Co-operation and Development (OECD, 2004) stated the 6 guideline to assist government in developing their corporate governance framework.

Below there are principles which are built by the Organization for Co-operation and Development (OECD, 2004) that become the guidelines in many countries to develop Corporate Governance, in the end of every point, we will compared to the corporate governance framework in Indonesia as presented in Indonesia's Code of Corporate Governance (ICCG) 2006. Those OECD principles are:

A. Ensuring the basis for an effective corporate governance framework.

The corporate Governance framework should promote transparent and efficient markets, be consistent with the rule of law and clearly articulate the division of responsibilities among different supervisory, regulatory and enforcement authorities.

1) The corporate governance frameworks should be developed with a view to its impact on overall economic performance, market integrity and the incentives it creates for market participants and the promotion of transparent and efficient markets.

2) The legal and regulatory requirements that affect corporate governance practices in a jurisdiction should be consistent with the rule of law, transparent and enforceable.

3) The division of responsibilities among different authorities in a jurisdiction should be clearly articulated and ensure that the public interest is served.

4) Supervisory, regulatory and enforcement authorities should have the **authority, integrity and** resources to **fulfill their** duties in a professional and objective manner. Moreover, their rulings should be timely, transparent and fully explained.

If we compared to Indonesia, as reflected in Indonesia's Code of Corporate Governance (ICCG) 2006, the government is aware with the objective of the corporate governance framework to promote the transparent and efficient market by, among other things, perfecting the GCG code, and to ensure that the existence of good public government as a basis for good corporate governance.

B. The Rights of Shareholders and Key Ownership Functions.

The corporate governance framework should protect and facilitate the exercise of shareholders' rights.

1) Basic shareholder rights should include the right to: 1) secure methods of ownership registration; 2) convey or transfer shares; 3) obtain relevant and material information on the corporation on a timely and regular basis; 4) participate and vote in general shareholder meetings; 5) elect and remove members of the board; and 6) share in profits of the corporation.

2) Shareholders should have the right to participate in, and to be sufficiently informed on, decisions concerning fundamental corporate

changes such as: 1) amendments to the statues, or articles of incorporation or similar governing documents of the company; 2) the authorization of additional shares; and 3) extraordinary transactions, including the transfer of all or substantially all assets, that in effect result in the sale of the company.

3) Shareholders should have the opportunity to participate effectively and vote in general shareholder meetings and should be informed of the rules, including voting procedures that govern general shareholder meetings:

a. Shareholders should be furnished with sufficient and timely information concerning the date, location and agenda of general meetings, as well as full and timely information regarding the issues to be decided at the meeting.

b. Shareholders should have the opportunity to ask questions to the board, including questions relating to the annual external audit, to place items on the agenda of general meetings, and to propose resolutions, subject to reasonable limitations.

c. Effective shareholder participation in key corporate governance decisions, such as the nomination and election of board members, should be facilitated. Shareholders should be able to make their views known on the remuneration policy for board members and key executives. The equity component of compensation schemes for board members and employees should be subject to shareholder approval.

d. Shareholders should be able to vote in person or in absentia, and equal effect should be given to votes whether cast in person or in absentia.

4) Capital structures and arrangements that enable certain shareholders to obtain a degree of control disproportionate to their equity ownership should be disclosed.

5) Market for corporate control should be allowed to function in an efficient and transparent manner.

a. The rules and procedures governing the acquisition of corporate control in the capital markets, and extraordinary transactions such as mergers, and sales of substantial portions of corporate assets, should be clearly articulated and disclosed so that investors understand their rights and resources. Transactions should occur at transparent prices and under fair conditions that protect the rights of all shareholders according to their class.

b. Anti-take-over devices should not be used to shield management and the board from accountability.

6) The exercise of ownership rights by all shareholders, including institutional investor, should be facilitated.

a. Institutional investors acting in a fiduciary capacity should disclose their overall corporate governance and voting policies with respect to their investments, including the procedures that they have in place for deciding on the use of their voting rights.

14

b. Institutional investors acting in a fiduciary capacity should disclose how they manage material conflicts of interest that may affect the exercise of key ownership rights regarding their investment.

7) Shareholders, including institutional shareholders, should be allowed to consult with each other on issues concerning their basic shareholders rights as defined in the Principles, subject to exceptions to prevent abuse.

In Indonesia's Code of Corporate Governance (ICCG) 2006, the Rights of Shareholders and Key Ownership Functions are fully covered and explained. One note is taken from the ICCG 2006 that is, in exercising their rights and responsibilities, the shareholders shall also consider the sustainability of the company (ICCG 2006, Page21).

C. The Equitable Treatment of Shareholders

The corporate governance framework should ensure the equitable treatment of all shareholders, including minority and foreign shareholders. All shareholders should have the opportunity to obtain effective redress for violation of their rights.

1) All shareholders of the same series of a class should be treated equally.

a. Within any series of a class, all shares should carry the same rights. All investors should be able to obtain information about the rights attached to all series and classes of shares before they purchase. Any changes in voting rights should be subject to approval by those classes of shares which are negatively affected.

b. Minority shareholders should be protected from abusive actions by, or in the interest of, controlling shareholders acting either directly or indirectly, and should have effective means of redress.

c. Votes should be cast by custodians or nominees in a manner **agreed upon with the beneficial owner of the shares.**

d. Impediments to cross border voting should be eliminated.

e. Processes and procedures for general shareholder meetings should allow for equitable treatment of all shareholders. Company procedures should not make it unduly difficult or expensive to cast votes.

2) Insiders trading and abusive self-dealing should be prohibited.

3) Members of the board and key executives should be required to disclose to   the board whether they, directly, indirectly or on behalf of third parties, have a material interest in any transaction or matter directly affecting the corporation.

In Indonesia's Code of Corporate Governance (ICCG) 2006, there are principles that required companies to treat their shareholders equally. One note is taken from ICCG related to the equally treatment, is, the company shall facilitate the exercise the ownership rights and responsibilities of the shareholders based on the principle of fairness and in accordance with laws and regulations and the article of associations (ICCG 2006, Page21).

D. The Role of Stakeholders in Corporate Governance

The corporate governance framework should recognize the rights of stakeholders established by law or through mutual agreements and encourage active co-operation between corporations and stakeholders in creating wealth, jobs, and the sustainability of financially sound enterprises.

1) The rights of stakeholders that are established by law or through mutual agreements are to be respected.

2) Where stakeholder interests are protected by law, stakeholders should have the opportunity to obtain effective redress for violation of their rights.

3) Performance-enhancing mechanisms for employee participation should be permitted to develop.

4) Where stakeholders participate in the corporate governance process, they should have access to relevant, sufficient and reliable information on a timely and regular basis.

5) Stakeholders, including individual employees and their representative bodies, should be able to freely communicate their concern about illegal or unethical practices to the board and their rights should not be compromised for doing this.

6) The corporate governance framework should be complemented by an effective, efficient insolvency framework and by effective enforcement of creditor rights.

The Indonesia's Code of Corporate Governance (ICCG) 2006 recognized that the stakeholders-aside from the shareholders-are those having an interest and are directly affected by the strategic and operational decisions of the company. The stakeholders are including **employees, resources providers and communities. Thus, there should** be a fair and equal relationship between a company and its stakeholders based on law or through mutual agreements applicable to each respective party.

E. Disclosure and Transparency

The corporate governance framework should ensure that timely and accurate disclosure is made on all material matters regarding the corporation, including the financial situation, performance, ownership, and governance of the company.

1) Disclosure should include, but not be limited to, material information on :

   a. The financial and operating result of the company.

   b. Company objectives.

   c. Major share ownership and voting rights.

   d. Remuneration policy for members of the board and key executives, and information about board members, including their qualifications, the selection process, other company directorships and whether they are regarded as independent by the board.

   e. Related party transactions.
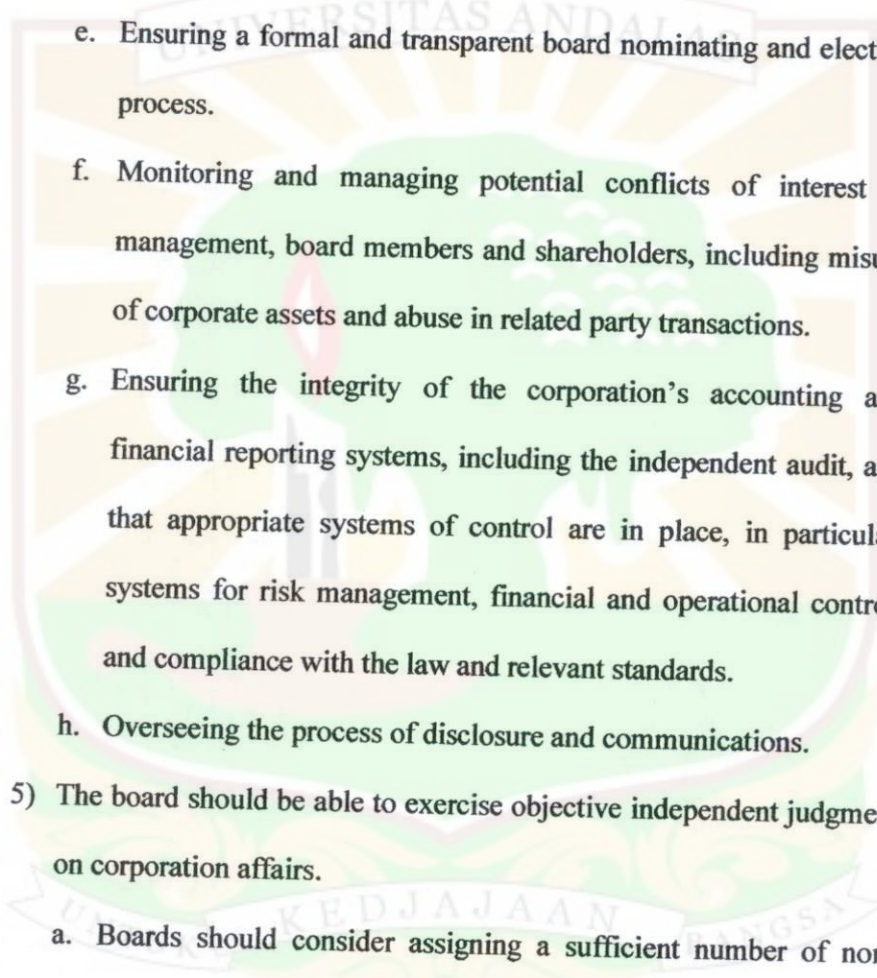
f. Foreseeable risk factors.

g. Issues regarding employees and other stakeholders.

h. Governance structures and policies, in particular, the content of any corporate governance code or policy and the process by which it is implemented.

2) Information should be prepared and disclosed in accordance with high quality standards of accounting and financial and non-financial disclosure.

3) An annual audit should be conducted by an independent, competent and qualified, auditor in order to provide an external and objective assurance to the board and shareholders that the financial statements fairly represent the financial position and performance of the company in all material respect.

4) External auditors should be accountable to the shareholders and owe a duty to the company to exercise due professional care in the conduct of the audit.

5) Channels for disseminating information should provide for equal, timely and cost-efficient access to relevant information by users.

6) The corporate governance framework should be complemented by an effective approach that addresses and promotes the provision of analysis are advice by analyst, brokers, rating agencies and others, that is relevant to decisions by investors, free from material conflicts of interest that might compromise the integrity of their analysis or advice.

Overall, for corporate governance framework in Indonesia as reflected in Indonesia's Code of Corporate Governance (ICCG) 2006, Companies is suggested to make a statement regarding the conformance of its corporate governance code in its annual report. **Moreover, the statement is necessary to enable the shareholders and** stakeholders to evaluate the extent of the application of the corporate governance code within the company (ICCG 2006, Page 25).

F. The Responsibilities of the Board

The corporate governance framework should ensure the strategic guidance of the company, the effective monitoring of management by the board, and the board's accountability to the company and shareholders.

1) Board members should act on a fully informed basis, in good faith, with due diligence and care, and in the best interest of the company and the shareholders.

2) Where board decisions may affect different shareholder groups differently, the board should treat all shareholders fairly.

3) The board should apply high ethical standard. It should take into account the interest of stakeholders.

4) The board should fulfill certain key functions, including:

   a. Reviewing and guiding corporate strategy, major plans of action, risk policy, annual budgets and business plans, setting performance objectives, monitoring implementation and corporate performance, and overseeing major capital expenditures, acquisitions and divestitures.

b. Monitoring the effectiveness of the company's governance practices and making changes as needed.

c. Selecting, compensating, monitoring and, when necessary, replacing key executives and overseeing succession planning.

d. Aligning key executives and board remuneration with the longer term interest of the company and its shareholders.

e. Ensuring a formal and transparent board nominating and election process.

f. Monitoring and managing potential conflicts of interest of management, board members and shareholders, including misuse of corporate assets and abuse in related party transactions.

g. Ensuring the integrity of the corporation's accounting and financial reporting systems, including the independent audit, and that appropriate systems of control are in place, in particular, systems for risk management, financial and operational control, and compliance with the law and relevant standards.

h. Overseeing the process of disclosure and communications.

5) The board should be able to exercise objective independent judgment on corporation affairs.

a. Boards should consider assigning a sufficient number of non-executive board members capable of exercising independent judgment to tasks where there is a potential for conflict of interest. Examples of such key responsibilities are ensuring the integrity of financial and non-financial reporting, the review of

related party transactions, nomination of board members and key executives, and board remuneration.

b. When committees of the board are established, their mandate, composition and working procedures should be well defined and disclosed by the board.

c. Board members should be able to commit themselves effectively to their responsibilities.

6) In order to fulfill their responsibilities, board members should have access to accurate, relevant and timely information.

Since Indonesia applied two-tier board instead of unitary board, Indonesia's Code of Corporate Governance (ICCG) 2006 provide the principles of the both board; of commissioners and board of directors, each within their rights and responsibilities as the organs of the company.

Overall, Indonesia's Code of Corporate Governance (ICCG) 2006 stated that the board of commissioners shall function and be responsible collectively for overseeing and providing advices to the board of directors and ensuring the company implements the corporate governance. As for board of directors, the function of this board is responsible collegially for the management of the company. Each member of the boards of directors can carry out its duty and take decisions in accordance with their respective assignments and authorities (ICCG 2006, page 14-20).

These 6 elements above in the macro level could be used to assist one country to develop their own corporate governance framework, and perfecting the corporate governance code of the respective countries (ICCG, 2006). In the lower level, those 6 elements could be used to measure the corporate governance implementation process within the company. The principles will give a wide opportunity for managers in a country depend on the distinct national business systems in that country (Pedersen & Thomsen, 1999).

The objective of CG is to achieve a responsible, value oriented management and control of companies. CG rules promote and reinforce the confidence of current and future shareholders, lenders, employees, business partners and the general public in national and international markets, Drobetz, Schillhofer and Zimmermann (2003).

Sound corporate governance should provide proper incentives for the board and management to pursue objectives that are in the interests of the company and its shareholders and should facilitate effective monitoring. The presence of an effective corporate governance system within an individual company and across an economy as a whole helps to provide a degree of confidence that is necessary for the proper functioning of a market economy. As a result, the cost of capital is lower and firms are encouraged to use resources more efficiently, thereby underpinning growth (OECD 2004).

Hart (1995) suggests that "corporate governance" issues arise in an organization whenever two conditions are present. First, there is an agency

problem, or conflict of interest, involving members of the organization-these might be owners, managers, workers or consumers. Second, transaction costs are such that this agency problem cannot be dealt with through a contract. These numerous definitions all share, explicitly or implicitly, some common elements. They all refer to the existence of conflicts of interest between insiders and outsiders, with an emphasis on those arising from the separation of ownership and control (Jensen and Meckling 1976) over the partition of wealth generated by a company.

A degree of consensus also exists regarding an acknowledgement that such corporate governance problem cannot be satisfactorily resolved by complete contracting because of significant uncertainty, information asymmetries and contracting costs in the relationship between capital providers and insiders (Grossman and Hart 1986; Hart and Moore 1990; Hart 1995). And finally, one can be led to the inference that, if such corporate governance problem exists, some mechanisms are needed to control the resulting conflicts. Additionally, Farinha (2003) argue that, the precise way in which those monitoring devices are set up and fulfill their role in a particular firm (or organization) defines the nature and characteristics of that firm's corporate governance. As the following section show, such mechanisms can be internal or external to the company.

2.3. Agency Theory

In modern economies, the management and control of companies is increasingly separated from the ownership. It is in line with the Agency Theory that pointing out the importance on separating day to day corporate management from the owners to the managers. The purpose of the separation system is to create efficiency and effectiveness by hiring professional agents in managing the company. It is happened where the CEOs of public companies have responsibility to act as agents for the owners. While the owners seek to gain information (by evaluation), develop incentive systems to ensure agent actions in the owner's interests, agency theorists attempt to design the most cost effective information systems (FCGI, 2006).

Jensen and Meckling (1976) argued that an agency relationship as a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent. If both parties to the relationship are utility maximizes, there is good reason to believe that the agent will not always act in the best interests of the principal.

However there is a problem in this separation of corporate management and ownership as well. Managers may seek to maximize their own-self interest at the expense of shareholders. Furthermore this separation may lead to lack of transparency in the use of funds in the company and in the proper balancing of the interest of, for instance, shareholders and managers and of controlling and minority shareholders (FCGI, 2006). They

25

believe that the owner-manager's divergence of interests causes agents to fail to maximize the welfare of the principal. This failure is the most important cost resulting from the principal and agent conflict, which is known as agency problem (Lukviarman, 2004). Jensen and Meckling (1976) argue that corporate performance will increase with the level of management and insider ownership in a company.

Despite their conflicting result, both views recognize the need for control mechanisms to align the interest of the principals and agents in order to resolve the agency problem. However, exercising control through monitoring mechanism is not without costs. Monitoring or agency costs will be borne by the principals as the capital owners in this relationship (Lukviarman, 2004). The owners have incentive to ensure that managers do not diverge from the goal to maximize the shareholder value. However, as entrepreneurs, owners have to consider the cost and benefit of monitoring mechanism that they choose to oversee management (Lukviarman, 2004). In sum, the agency theory seeks to define the nature of the contracts that will minimize agency costs; that is the cost of monitoring, motivating, ensuring the commitment of the agent (Davis & Thompson, 1994, c.f. Lukviarman, 2004).

Jensen and Warner (1988) c.f. Lukviarman (2004) argue that the agency theory identifies potential conflicting interests among parties within a company, which in turn affect corporate behavior in different ways. Since each party has interests that may differ from others, the governance system can serve as 'rules of the game' for every party to follow. Hence this system

provides control to ensure that the business practices and the achievement of organization's objectives do not benefit one party at the expense of the others.

2.4. Governance Mechanisms

Researchers such as Shleifer and Vishny (1997) explain that governance mechanisms used as important part in corporate governance framework. Because it can ensure that investors will gain the return of their investment. Governance mechanism can be broadly characterized as being internal or external to the firm. The internal mechanism of primary interest are the board of directors and the managerial incentive schemes, while the external mechanism rely on the effectiveness of the market in providing discipline over a company and the legal/regulatory system. Based on such disciplinary mechanisms, one could expect different corporate governance system to arise as result of varied financial systems, legal and regulatory framework (Lukviarman, 2004).

2.4.1. Internal Corporate Governance

Internal corporate governance discusses the relationship between managers and stakeholders or between company's internal parties (managers and shareholders) and minority shareholders. The important elements in internal corporate governance involve the rights of shareholders and the way protecting it, the roles and responsibility of board of directors, beside that included also disclosure aspect and rules for stock accounting, Jeanly (2005).

The very purpose of the internal control mechanism is to provide an early warning system to put the organization back on track before difficulties reach a crisis stage (Jensen, 2000 c.f. Lukviarman 2004). Therefore, the board of director at the apex of the **internal control system has the final responsibility for the functioning** of the firm. Corporations in most countries of the world have board of directors, although they have some different in practices. On the other hand, in Continental European countries and Japan the two-tier system is more prevalent.

The active role of board of directors in performing their supervisory and advisory tasks is believed to be an efficient and a less expensive governance mechanism than other external mechanism (Lukviarman, 2004). The board of directors can act to restrict potential conflicts of interests between managers and shareholders. This can possibly be achieved if directors are independent of management and have appropriate knowledge of the firm (Van den Berghe and De Ridder, 1999, c.f. Lukviarman 2004).

2.4.2. External Corporate Governance

Internal corporate governance discusses the relationship between the company with the investor aspirants or industrialist in the capital market. The important elements in external corporate governance are the rules of capital market which is related to company's budget in term of merger and acquisition (M&A), hostile

28

takeover, and also principles of disclosure and accounting rules, Jeanly (2005).

The external corporate governance is a compliment of the internal corporate governance which gives a punishment in form of taking over when the managers are not efficient, and on the contrary gives a reward in form of stock price increasing when the managers evaluated being efficient, Jeanly (2005).

2.4.3. Relationship Between Internal and External CG

Picture 1

```
┌─────────────────────────────────────────────────────┐
│ Internal corporate governance:                        │
│                                                       │
│   -   Relationship between manager and shareholders.  │
│   -   Protection for shareholder's rights             │
│   -   Disclosure and accounting                       │
│                                                       │
└─────────────────────────────────────────────────────┘
                          │
                          ↓
┌─────────────────────────────────────────────────────┐
│ External corporate governance:                        │
│                                                       │
│   -   Performance measurement system.                 │
│   -   Punishment for managers                         │
│   -   Reward for managers                             │
│                                                       │
└─────────────────────────────────────────────────────┘
```
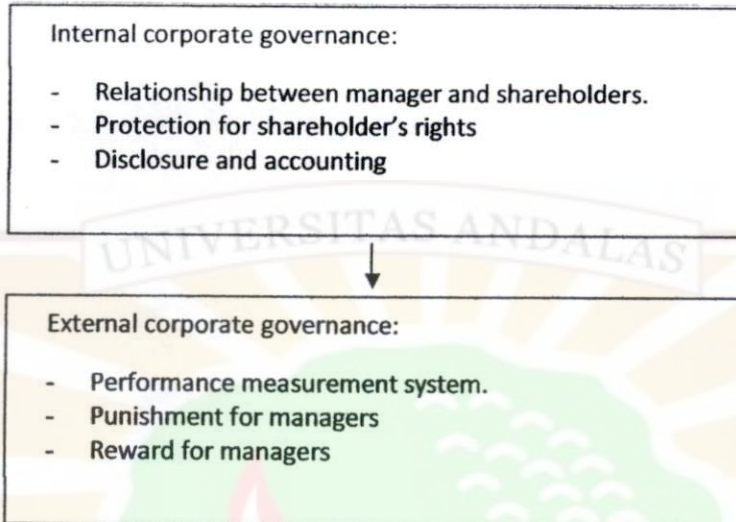
Source: Tunggal (2000), c. f. Jeanly (2005)

2.5. Board of Directors

A firm's board of directors is an important mechanism for limiting managers' self-serving behavior when the company's managers and owners have conflicting goals (Eisenhardt, 1989, c.f. Deutsch). The primary duty of the board of directors in a publicly held company is to protect and promote the interests of shareholders. The board is authorized to endorse managerial initiatives, evaluate the performance of senior executives and to reward or penalize that performance O'Sullivan & Wong (1998).

Corporations in countries of the world have board of directors, although they have some differences in practices, such as position and composition (Moerland, 1995 c.f. Ningsih, 2006). In general, the practices

of Board of Directors within the corporate governance framework could be classified as one-tier (unitary board model) or two-tier board model (Lukviarman, 2004).

One-tier board structure, which also known as "unitary board" is prevalent in Anglo-Saxon governance model. This type of board condenses executives and supervisory responsibilities of the board in one legal entity (Gay 2002 cited in Lukviarman 2004). This unitary board model entrusts both management (executive directors) and control (non-executive directors) to the hands of board of directors, who are vested with universal power. All directors have the same power, non-executive directors can also take the initiative in management decisions, and they are not restricted to post decision approval. All directors regardless of whether they are executives or non-executives directors owe the same duties to the company (Hopt and Leyens, 2004).

In two-tier board structure, as commonly found in Continental European countries, there is a separation of executive and supervisory roles under different boards. Those are the supervisory board and board of management. The responsibility of the management board is running the business, and the supervisory board controls the management (not the corporation), its compliance with the law and articles of the corporation and its business strategies. The supervisory board can not directly become involved in managing the company, but if articles so provide or the supervisory board so decides, specific types of transactions may become subject to its approval (Hopt and Leyens 2004). The supervisory board is

31

responsible for bringing actions of the company against members of management board (Hopt and Leyens 2004).

Indonesia also adopted two-tier system of board. Companies incorporated under the Indonesia Company Law (2007) in the Article 1 point 2 stated that the main participants in the organization of the company are consist of the shareholders, the board of commissioner, and the management. The supervisory board or in Indonesian company law 2007 called board of commissioner (Article 1 point 6) is clearly separated from and independent of the executive or management board, consistent with the characteristic of Continental European governance model. The two-tier Board, which makes a clear separation between on the one hand the Board of Management charged the management of the company and on the other hand, the Board of Commissioners charged with the supervision of the way the Board of Directors is managing the company in the interest of the company, is that such two-tier Board enhances the check and balances required for corporate governance (Tumbuan, 2005).

The two-tier board structures of German corporations, for example, consist of a supervisory board (*Aufssichtsrat*) and management board (*Vorstand*). The General Meeting of Shareholder (GMOS) elects the supervisory board members, half of which consists of the representatives of company employees proposed by the unions (Fukao 1995 c.f. Lukviarman 2004). This supervisory board then elects the members of the board of management which manages the corporation's daily activities. In Indonesia (Company Law, 1995) both the members of supervisory board (board of

commissioners) and board of management (board of directors) are elected, expelled and held responsible to shareholders through the General Meeting of Shareholder. As such, the board of management in Germany is insulated from the direct pressure of shareholders, while in Indonesia both the boards are under direct scrutiny from shareholders. In addition, there are no legal representatives of employees in supervisory boards in Indonesia as found in other two-tier board systems, and no one can be a member of both boards of the same company (Lukviarman, 2004).

The Board of Commissioners has very important roles in the company especially in the implementation of sound corporate governance. The Board of Commissioner lies at the core of corporate governance-charged with ensuring strategic guidance mechanism. Since management is responsible for the firm's efficiency and competitiveness and Board of Commissioners is the proper focal point of the corporation's perpetuation and success (Zehnder, 2000, c.f. Nigsih 2006).

In OECD Principles of Corporate Governance (1999), the key functions of Board of Commissioners consist of:

A. Reviewing and guiding corporate strategy, major plans of action, risk policy, annual budgets and business plans; setting performance objectives; monitoring implementation and corporate performance and overseeing major capital expenditures, acquisition and divestitures.

B. Selecting, compensating, monitoring and, when necessary replacing key executives and overseeing succession planning.

C. Reviewing key executives and board remuneration and ensuring a formal and transparent board nomination process.

D. Monitoring and managing potential conflicts of interest of management, board members and shareholders, including misuse of corporate assets and abuse in related party transactions.

E. Ensuring the integrity of corporation's accounting and financial reporting system including the independent audit and that appropriate system of control are in place, in particular, systems for monitoring risk, financial control and compliance with the law.

F. Monitoring the effectiveness of the governance practices under which it operates and making changes as needed.

G. Overseeing the process of disclosure and communication.

The Indonesian company law (2007) in Article 108 point 5 stated that every public listed company in Indonesia should have a minimum of two Board of Commissioner members. The Board Commissioners shall be responsible and shall have the authority to supervise the actions of the Board Management, and shall give advice to the Board Management when required (Article 1 point 6).

Monitoring function by the Board of Commissioner itself presents an agency problem as board members (agents) are expected to monitor managers on behalf of the stakeholders (principals). However, not all firms experience the same level of monitoring activities (Lukviarman, 2004).

The Board Commissioners should be composed in such a way that its members act independently and critically in relation to each other and the

Board of Management, in order to increase the effectiveness of its management role, and the transparency of its deliberations (ICCG, 2001). The JSX (Now IDX) decreed the requirement for independent commissioners through the JSX regulation dated on July 1, 2000. It remarks that listed companies are obliged to have independent commissioners proportionally equal to the shares owned by the non-controlling shareholders. In this rule the minimum requirement for the independent commissioners is 30 percent of the Board of Commissioners membership. The JSX provide some criteria for the independent commissioners;

A. The independent commissioner has no affiliation relationship with the controlling shareowner of the company.

B. The independent commissioners have no affiliation relationship with the director and other commissioners of the company.

C. The independent commissioners have no double position as director in other companies affiliated to the related company.

D. The independent commissioners should understand capital market laws and regulations.

E. The independent commissioner is proposed by the non-controlling shareholders (minority share holders) through the general meeting of shareholders.

The independent Commissioner(s) must be appointed by the General Meeting of Shareholders from among persons who are not affiliated with the majority shareholder, any member of the Board of Directors and the other members of the Board of Commissioners.

2.6. Performance Measurement

Several performance measurement models have been developed that could be considered as improvements on the traditional financial models. These models are very much finance related and take the position that business processes' ultimate success can be viewed through focusing on financial performance measures. Among these models are Balanced Scorecard, the Economic Value Added and the Strategic Performance Measurements (Lukviarman, 2004).

Although new performance measurement models have subsequently been introduced, all of them retain financial performance measures. These improved performance measures use additional indicators that are non-financial, or else they utilize operational performance measures as complementary, with financial measures at the core of the model (Lukviarman, 2004).

In this study, Tobin's Q is used as the performance measurement. Tobin's Q has several differences with ROA.These two measures differ from each other in two aspects (Demsetz & Villalonga, 2001). Firstly, is in the time perspective: accounting profit is back-ward looking, while Tobin's Q is a forward looking measure of performance. Within this context, accounting profit rates are affected by accounting practices and emphasize what management has accomplished. Tobin's Q on the other hand, reflects the value of investors assign to a firm's intangible assets based on predicted future revenue stream. As such, this measure could be seen as estimating what the management will accomplish.

A second distinction is in regard to who is actually measuring performance. For accounting profit rate, this measure is done by accountant, constrained by standards set by his/her profession. Tobin's Q measures are used in common by the community of investor's constrained by their perception (i.e. optimism, pessimism) (Demsetz & Villalonga, 2001). As an indicator of performance Tobin's Q is computed as the market capitalization plus total liabilities divided by total asset.

Although the above discussion reveals that accounting profit and Tobin's Q are different in their perspective, the two measures are interrelated (Lukviarman, 2004). According to Demsetz and Villalonga (2001), the investor community who developed Tobin's Q measurement do not 'ignore the past in their attempts to determine reasonable expectations for the future profitability of firms'. The reason is that 'high accounting profits are usually accompanied by high stock price. The use of the market value of the firm as numerator of Tobin's Q to some significant degree reflects accounting profit rates. In sum, it might be argued that the use of either of these performance measurements will have similar result.

Chung and Pruitt (1994) argued that Tobin's Q plays important role in many financial interactions. Defined as the ratio of the market value of a firm to the replacement cost of its assets, q has been employed to explain a number of diverse corporate phenomena, such as cross-sectional differences in investment and diversification decisions (Jose, Nichols and Stevens, 1986) and Malkiel, von Furstenberg, and Watson (1979)), the relationship between managerial equity ownership and firm value (McConnell and

Servaes (1990) and Morck, Shleifer, and Vishny (1988)), the relationship between managerial performance and tender offer gains (Lang, Stulz, and Walkling (1989)), investment opportunities and tender offer responses (Lang, Stulz and Walkling (1989)), and financing, dividend, and compensation policies (Smith and Watts(1992)).

Chung and Pruitt (1994) argued that for many thousands of corporate financial analysis, approximate q offers a simple, tractable formula to obtain relatively accurate and timely q values with computational effort. Given the potential for Tobin's q to provide valuable insight into a variety of important business and financial decisions, it is plausible that approximate q or some variation of it may one day play an important role in financial analysis. Indeed, many financial managers will no doubt recognize the similarity between approximate q, MVA (market value added), and EVA (economic value added). Unlike MVA, however, approximate q, by virtue of its ratio composition, is a standardized performance measure. It is not subject to the scale biases inherent in simple differences, such as MVA.

Return on Assets focuses overall performance of the firm and reflects the annual measured return to the historical value of investment a firm has made (Lukviarman, 2004). For this reason, ROA is measured as net income divided by total book value of assets. ROA as performance measurement in this study is total assets as the denominator described all the resources needed by company to run the business activity of the firm (Novia, 2006).

2.7. Previous research

There is 2 point of view in board optimal size. Those who saw larger board size is better board and those who argue oppositely; the smaller board is the better one, each of them supported by an argument resulted from corporate governance research. Several studies show how, instead of larger board, smaller board proved be the optimal form for the firms. Keeping board size small can help firms improve their performance (Siriwardhane, 2008; Frick and Bermig,2009), the reason behind this argument according to jensen (1993); when board get large, they are less likely to work effectively, due to the lack of coordination and directors free-riding (steiner, 1972; Hackman, 1990; Lipton &Lorsch, 1992).

The view about smaller board size is better board form for a company is not shared by all researchers though. Board size may be a measure of an organization's ability to form environmental links to secure critical resources (Goodstein *et al* 1994 as quoted by Dalton et al). Proven (1980) as cited by Dalton et al (1999) demonstrate that board size was associated with a firm's ability to extract critical resources such as amount of budget, external funding and leverage from an environment. Resource dependence theory has been the primary foundation for the perspective that larger boards will be associated with higher levels of firm performance (Alexender, Fennell & Halpern (1993) as cited by Dalton *et al* (1999). Moreover, Dalton, et al. (1999) and Coles, Daniel & Naveen (2007) argue that larger boards may be better for complex firms due to greater advising requirements (e.g. for complex firms that operate in multiple segments).

Larger boards potentially bring more experience and knowledge and offer better advice (Dalton, Daily, Johnson, and Ellstrand, 1999), complex firms should have larger boards. In particular, such firm should have more outsides on the board who then serve to provide advice and expertise to the CEO (Hermalin and Weisbach, 1988; Agrawal and Knoeber, 2001; and Fich, 2005). By contrast, firms for which the firm-specific knowledge of insiders is relatively important, such as R&D-intensive firms, are likely to benefit from greater representation of insiders on the board. Thus, such firm should have a higher fraction of insiders on the board.

If firm choose board structure to maximize firm value, if there are no transaction costs altering board structure, and if suitable control variables are included in the regression specification, then there should be observable relation between board structure and firm performance (Demstez and Lehn, 1985; Coles, Lemmon, and Meschke, 2006). Coles, Daniel and Naveen stated that if transaction costs are significant, however, firms could deviate from their optimal board structure. Under certain conditions, complex firms are likely to have smaller boards than optimal and that R&D-intensive firms are likely to have fewer insiders on the board than is optimal. Then, firm performance increases in board size in complex firms and in insider fraction in R&D-intensive firms.

2.8. Hypotheses Development

Firms can be complex along different dimensions, such as scope of operations, firm size and the extent of reliance on external capital (Coles, Daniel & Naveen, 2007). So, Scope of operations (diversification), firm size and the reliance on external capitals (leverage) are all proxies for complexity and the CEO's need for advice. As firm complexity increases along the any of these dimensions, so, too, does the need for bigger board.

Diversified firms operated in multiple segments (broad scope of operations) tend to be more complex (Rose & Shephard, 1997), have large boards because they require outside expertise for a greater number of industries (Yermack, 1996), and have greater needs for advice (Hermalin & Weisbach, 1998). As for firms size dimension, the larger the firms size, the more the firms have more external contracting (booth & Deli,1996) and, thus, require larger boards (Pfeffer, 1972). In case of the reliance on external funding, firms with high leverage depend on external resources to a greater extent and could have greater advising requirements (Pfeffer, 1972; Klein, 1998).

H1 : Complex firms will have larger board and more independent commissioners than simple firms.

Coles, Daniel, and Naveen in 2007 stated that there has been general push, led by institutions, regulators and legislators, toward more independent boards. Several factors, however, support placing insiders on the board. Inside directors possess more firm specific knowledge (Fama and Jensen, 1983 in Coles, Daniel, and Naveen, 2007) and thus, are helpful in firms operating in uncertain environments (Williamson, 1975 in Coles et.all

41

2007). Insiders with specific knowledge are better positioned to select appropriate strategies (Baysinger and Hoskisson, 1990 in Coles et al. 2007; Fama, 1980). Raheja in 2005 suggests that firms with high project verification costs (such as R&D-intensive firms) benefit from having more insiders on the board. Burkart, Gromb, and Panuzzi (1997) state that it could be optimal to reduce monitoring and cede discretion to the management team in firms in which the manager's initiative leads to higher value. Coles, Daniel, and Naveen (2007) continue with the statement "managerial initiative is likely to be a critical determinant of firm value R&D-intensive firms. If the fraction of outsiders is correlated with monitoring intensity, we expect high-R&D firms to be monitored less and, hence, all else equal, to have a higher fraction of insiders on the board. Even absent these arguments, monitoring R&D-intensive firms requires more firm-specific knowledge. Thus, in such firms, having higher fraction of outsiders on the board does not necessarily improve the effectiveness of monitoring.

H2 : High-R&D firms will have a higher fraction of dependent commissioners on the board.

While the literature on board size predominantly suggests that smaller boards perform better (Yermack, 1996), evidence on the relation between board composition and performance is mixed (Coles, Daniel, and Naveen, 2007). Weisbach (1998), Borokhovich, Parrino, and Trapani (1996), Brickley, Coles, and Terry (1994), Byrd and Hickman (1992), and Cotter, Shivdasani, and Zenner (1997) find that more independent boards add value in some circumstances. Baysinger and Butler (1985), Hermalin and Weisbach (1991), and Bhagat and Black (2001) find no relation

42

between the fraction of outside directors on the board and Tobin's Q. Yermack (1996) and Agrawal and Knoeber (1996) find that a negative relation between the fraction of outside directors and Tobin's Q, and Rosenstein and Wyatt (1997) and Klein (1998) find that insiders add value.

The question arises as to whether standard empirical designs that regress performance on firm structure are informative (Coles, Daniel and Naveen, 2007). Often the answer is no, with the difficulty being that such designs typically do not solve the standard endogeneity and caution problems (Coles, Daniel and Naveen, 2007). For example, if shareholders are free to costless adjust organization form to maximize value; there would be no reason to observe an empirical relation between two endogenous variables (Demsets, Lehn, 1985 and Coles, Lemmon, and Meschke, 2006), such as performance and board structure. That is, in properly specified model, including on the right-hand side the underlying determinants of both the dependent variable and an endogenously determined independent variable would reduce or eliminate any ability to detect such a relation between the two variables (Coles, Daniel and Naveen 2007).

Coles, Daniel and Naveen (2007) provide two illustrative models that address such difficulties. Both models predict a nontrivial relation between Q and board structure. The first model relies on transaction cost based departures from optimal board structure. In second model, with negligible transaction cost, in which the data would be interpreted as tracing an envelope of optimal board structure and jointly determined performance. For ease of exposition, Coles, Daniel and Naveen (2007) assume that there are only two kinds of firms. To streamline the case, they concentrate

primarily on simple versus complex firms, but similar arguments apply to low-R&D versus high-R&D firms as well. Suppose a hump-shaped function between Q and board size holds for both simple and complex firms and the unique maximum occurs for simple firms at board size of, example 8, and for complex firms at 12. They assume that book asset is predetermined so that maximizing value (or surplus net of initial investment) is tantamount to maximizing Q.

Coles, Daniel and Naveen (2007) also consider about transaction costs to changing board structure. There are likely to be long-lived deviations from optimal board size when the transaction costs of altering board structure exceed the benefits. If deviations from optimal board size are random, because any deviations from optimal board size is detrimental to firm value, the data would trace a hump-shaped relation between board size and Q for both complex and simple firms. But for both types of firms, simple and complex, the data and corresponding figures represent the objective functions that firms would maximize in the absence of substantial impediment/costs.

The reason why would simple firms tend to have larger boards than optimal and complex firms have smaller boards than optimal because that possibility could be come from transaction costs. The candidates also could be the reason for the hinder simple (complex) firms from downsizing (upsizing) the board size quickly (Coles, Daniel and Naveen 2007).

H3 : *Tobin's Q increase in board of commissioners size for complex firms.*

H4 : *Tobin's Q increases in the fraction of dependent commissioners on the board for high-R&D firms.*

CHAPTER 3

RESEARCH DESIGN

3.1. Dependent Variable

Dependent variable are variable which influenced by independent variables. It is the main variable that lends itself for investigation as a viable factor. Having defined the operating performance measurement, this research used Tobin's Q as the measurement of company's performance. Tobin's Q defined as the ratio of the market value of assets to book value of assets. The calculation of Tobin's Q is as follows (Bhagat and Black, 2002, as adapted from Kee H. Chung & Stephen W. Pruitt, 1994) ;

$$Tobin's\ Q = \frac{Market\ Value\ of\ Asset}{Book\ Value\ of\ Asset}$$

$$Tobin'sQ = \frac{MVCS+BVPS+BVLTD}{BVTA}$$

Where;

MVCS : Market value of common stock

BVPS   : Book value of preferred stock

BVLTD : Book value of long term debt

BVTA   : Book value of total asset

3.2. Independent Variable

Independent variables are variables that estimated freely influenced to dependent variables in either a positive or negative way. The independent variables in this study are:

1. Board Size is the number of board of commissioners or the sum of independent commissioners and dependent commissioners

2. Insider Director or dependent commissioners is identified as officers of the company, owner related boards member who is relative or has a personal ties to a company and/or controlling shareholders

3. Outside Director or independent commissioners is an independent board member who doesn't have such affiliation (like inside director has), or whose only affiliation with the firm is a board membership.

3.3. Control Variable

Controlling Variables are variable that controlled or made constant, so that would influence the main variable. This research uses two control variables. They are Firm's size and firm specific knowledge. These control variables will categorize the firm size into two criteria as, complex firm and simple firm. Meanwhile, firm specific knowledge will divide into high R&D firm and low R&D firm. The inclusion of control variables in the model is to avoid corporate performance being influenced by other factors.

a. Firm size will divided into complex firm and simple firm. This description is taken from Coles, Daniel and Naveen (2007). For each firm-year observation in the sample, this research compute a factor score based on the number of segments, (log) sales and leverage. The factor score for a firm-year observation is a linear combination of the transformed (to standard normal) values of these three variables. Advice will use to named the resulting factor because advice increase in firm

46

complexity and hence in the firm's need for advice. Firm with above-median factor score are termed "complex" and those median are termed "simple".

b. Firm Specific Knowledge

Firm specific knowledge will be proxy by research and development intensity which is the ratio of research and development expenditure to book value of assets. Above median will termed are "high" and below the median are "low".

3.4. Data Construction

This study uses secondary data from Indonesian Capital Market Directory (ICMD) and annual reports that published by Indonesia Direct Exchange (IDX) and also by company's corporate website. Research population is Go-Public firms in Indonesia, listed in IDX for five consecutive years 2005-2009. The samples used in this study chosen based on certain criteria as followed:

a. Listed manufacturing firm in Jakarta Stock Exchange for 5 consecutive years, 2005 – 2009.

b. Audited financial statement data end in December, 31st.

c. Issuing the Financial statement for explained years.

d. Described their Boards of Directors size and composition in their report.

e. Issued an annually expenditure on R&D

This research focused on the relationship between board sizes and board composition toward firm's value. This study will measure firm's performance, thus it can be used as prediction tool based on Tobin's Q to the various indicators that influence them. This thesis used the research framework described as a figure. Framework of this research could be illustrated in two flowchart; we could see this framework in the next page.

Figure1. Research Framework
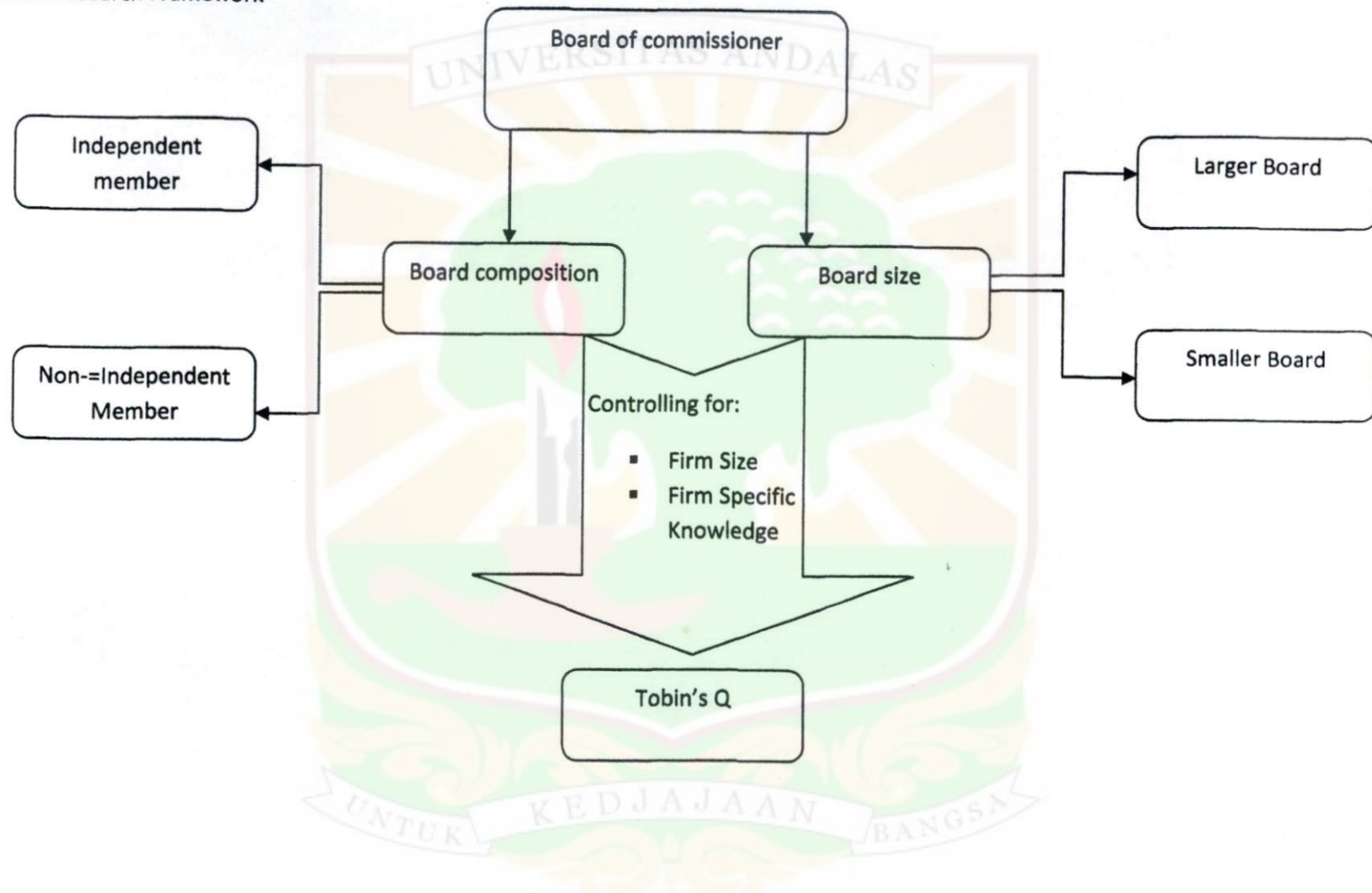
3.5. Methodology.

There are various statistical techniques available within the quantitative research. Pallant (2001) in Nigel (2006) argues that the choice of an appropriate technique depends on the research questions of the researcher wishes to address and the nature of the data that has been collected.

This research is using 2 methods of analysis testing which is provided by SPSS 17. The first analysis testing is independent sample T-test. This analysis testing is used for Hypothesis 1 and 2. Furthermore, for Hypothesis 3 and, multiple regression method will be used . the model that utilized in hypothesis 3 and hypothesis 4 will describe as below.

A. Model utilizing for hypothesis 3

$$Y = a + b1x1 + b2x2 + e$$

$$Tobin's\ Q = a + BOC + b2\ DCOM + e$$
Where;

a	=Intercept	
$Tobin's\ Q$	$= \dfrac{Market\ Value\ of\ Asset}{Book\ Value\ of\ Asset}$	
$Tobin'sQ$	$= \dfrac{MVCS+BVPS+BVLTD}{BVTA}$	

MVCS = Market value of common stock
BVPS = Book value of preferred stock
BVLTD = Book value of long term debt
BVTA = Book value of total asset

BOC = Board of Commissioners number
DCOM = Dummy of firm size
 = 1 : Complex firms
 = 0 : Simple firms
e = Error
b1 = Coefficient of Regression
b2 = Coefficient of Regression

B. Model utilizing at hypothesis 4

$$Y = a + b1x1 + b2x2 + e$$
$$Tobin's\ Q = a + b1DRD + b2FODC + e$$
Where;

a	=Intercept
$Tobin's\ Q$	$= \dfrac{Market\ Value\ of\ Asset}{Book\ Value\ of\ Asset}$
$Tobin'sQ$	$= \dfrac{MVCS+BVPS+BVLTD}{BVTA}$

MVCS   = Market value of common stock
BVPS   = Book value of preferred stock
BVLTD   = Book value of long term debt
BVTA   = Book value of total asset
BOC   = Board of Commissioners number

DRD   = Dummy of R&D intensity
     =   1   : High R&D firms
     =   0   : Low R&D firms
e   =   Error
b1   =   Coefficient of Regression
b2   =   Coefficient of Regression

Dummy variables are utilized in both of the models above. First dummy variable is using to differentiate between complex firms and simple firms. Second dummy variable for differentiate between high R&D firms and Low R&D firms. The purpose of dummy variables is to grouping the data which is does not have the number to differentiate it. For example: woman and man; war or peace; rich or poor. Two kinds of the methods (multiple regression and independent sample t-test) in this research are using SPSS 17 as the software to precede the entire hypothesis.

CHAPTER IV

RESULT AND EXPLANATION

4.1. Result of Hypothesis Testing

4.1.1 Board of Commissioners and Independent Commissioners Size

Hypothesis 1: Complex firm will have larger board of commissioners than simple firms.

The dependent variable is firm size which is divided into complex firm and simple firm. This concept is following (Guay, 1999; Gaver and Gaver 1993 et Coles, Daniel and Naveen, 2007). They suggest that for each firm-year observation in the sample will compute a factor score based on the number of segments, log (sales), and leverage. The factor score for a firm-year observation is a linear combination of the transformed (to standard normal) values of these three variables. The resulting factor score will term as "ADVICE", because it increase in firm complexity and hence in the firm's need for advice. Firm with above-median (above 16,377) factor score are termed "complex" and those below median (below 16,377) are "simple". The independent variables are board of commissioners and independent commissioners. Independent sample t-test is using to perform to get the result of this hypothesis.

Table 1 **Group Statistic Table for BOC size and Firm Size**

Group Statistics

	complex firm	N	Mean	Std. Deviation	Std. Error Mean
larger board size	complex firm	15	0.8	0.414	0.107
	simple firm	15	0.27	0.458	0.118

Table 2 **Independent Sample t-test Table for BOC Size And**

Firm Size

<table>
<tr><td colspan="12" align="center">Independent Samples Test</td></tr>
<tr><td></td><td></td><td colspan="2">Levene's Test for Equality of Variances</td><td colspan="7">t-test for Equality of Means</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td colspan="2">95% Confidence Interval of the Difference</td></tr>
<tr><td></td><td></td><td>F</td><td>Sig.</td><td>T</td><td>Df</td><td>Sig. (2-tailed)</td><td>Mean Difference</td><td>Std. Error Difference</td><td>Lower</td><td>Upper</td></tr>
<tr><td rowspan="2">larger board size</td><td>Equal variances assumed</td><td>,707</td><td>,408</td><td>3,347</td><td>28</td><td>,002</td><td>,533</td><td>,159</td><td>,207</td><td>,860</td></tr>
<tr><td>Equal variances not assumed</td><td></td><td></td><td>3,347</td><td>27,723</td><td>,002</td><td>,533</td><td>,159</td><td>,207</td><td>,860</td></tr>
</table>

In hypothesis 1 including 3 variables, are board of commissioners size, independent commissioners and firm size (complex firm and simple firm). Table 1 shows the result of independent sample t-test in exploring the relationship between board of commissioners size and firm size. Meanwhile, the relationship between independent commissioners and firm size will describe in the table 2. In table 1, the Levene's test for the board is more than 0.05 (0.408) and the t-test are

3.347 which is mean it is not significant. Hence, since the significance level is higher than 0.05, this thesis found that the negative relationship between the firm size and the size of the board of commissioners.

Table 3 Group Statistic Table for Independent Commissioner And Firm Size

Group Statistics

	complex firm	N	Mean	Std. Deviation	Std. Error Mean
more independent	complex firm	15	0.8	0.414	0.107
	simple firm	15	0.27	0.458	0.118

Table 4 Independent Sample t-test Table for Independent Commissioner And Firm Size

TIndependent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
more independent	Equal variances assumed	,707	,408	3,347	28	,002	,533	,159	,207	,860
	Equal variances not assumed			3,347	27,723	,002	,533	,159	,207	,860

Table 4 shows the result of independent sample t-test that describing the relationship between independent commissioners and firm size. The Levene's test for independent commissioners is bigger than 0. 05 (0.408) and the t-test are 3.347. This finding is similar in with description about the table 1 & 2 above. This finding tells that it is insignificant because the Levene's test shows the number that bigger than 0.05. Hence, this result indicates the negative relationship between the size of the firm and the number of independent commissioner.

4.1.2 Fraction of dependent commissioners in R&D firms

Hypothesis 2: High-R&D firms will have a higher fraction of non-independent commissioners on the board.

Dependent variable of this hypothesis is R&D firms. R&D firms are divided into high R&D firms and low R&D firms. Two kinds of this variable are gained from R&D expenditure of the sample firm for each year divided with value of book asset in the same year. The result of this ratio called with R&D intensity. The above medians (above 0.000851) of R&D intensity are termed "high' and those below median (below 0.000851) are termed "low". Definition of fraction of dependent commissioners is the ratio dependent commissioners to board of commissioners.

Table 5 Group Statistic Table for Fraction of Non-Independent

Commissioners and High R&D Firms

	high R&D	N	Mean	Std. Deviation	Std. Error Mean
high fraction	1	15	0.6	0.507	0.131
	0	15	0.47	0.516	0.133

Table 6 Independent Sample t-test Table for Fraction of Non-Independent

Commissioners and High R&D Firm

Independent Samples Test									
				t-test for Equality of Means					
		Levene's Test for Equality of Variances						95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
high fraction	Equal variances assumed	,413	,526	,714	28	,481	,133	,187	-,249	,516
	Equal variances not assumed			,714	27,991	,481	,133	,187	-,249	,516

Levene's test in table 6 for dependent commissioners is 0.526. As we know, if t-test is bigger than 0.05 mean that this finding is insignificant. The sentences for the result above is dependent commissioner on the board is higher in high-R&D firms. This result is inconsistent with hypothesis in this research. This result indicates that

there is a negative relationsgip between the indensity level of R&D firms and the number of insiders in board of commissioners.

4.1.3 Board of commissioners and Tobin's Q at complex firm

Hypothesis 3: Tobin's Q increases in board of Commissioners size for complex firms.

This hypothesis is using multiple regressions to solve the problem. Relation between Tobin's Q as the proxy of performance and board of commissioners in complex firm describe by the model of this multiple regression. The model that utilized is:

$$Y = a + b1x1 + b2x2 + e$$
$$Tobin's\ Q = a + BOC + b2\ DCOM + e$$

Where;

a	=Intercept	
$Tobin's\ Q$	$= \dfrac{Market\ Value\ of\ Asset}{Book\ Value\ of\ Asset}$	
$Tobin'sQ$	$= \dfrac{MVCS+BVPS+BVLTD}{BVTA}$	
MVCS	= Market value of common stock	
BVPS	= Book value of preferred stock	
BVLTD	= Book value of long term debt	
BVTA	= Book value of total asset	
BOC	= Board of Commissioners number	
DCOM	= Dummy of firm size	
	= 1	: Complex firms
	= 0	: Simple firms
e	= Error	
b1	= Coefficient of Regression	
b2	= Coefficient of Regression	

The influence of BOC toward Tobin's Q at complex firms can be formulated based on the coefficient table in the next page.

Table 7 **Coefficient Table for BOC Size and Tobin's Q**

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-0.198	0		-0.504	0.619
	board size	0.256	0	0.543	2.508	0.018
	complex firm	-1.115	0	-0.745	-3.441	0.002

a. Dependent Variable: tobinsQ

From this table can be formulated the multiple regressions as:

$$Y = -0.198 + 0.256 \, BOC - 1.115 \, DCOM$$

This multiple regression model explains that:

- The intercept is -0.918, means that without any influence of BOC and DCOM then the Tobin's Q ratio is -0.918.

- The coefficient b1 is 0.256 means that if the values of BOC increase one point with assumption the other variables are fixed so the Tobin's Q ratio will increase 0.256.

- The coefficient b2 is -1.115 means that if the value of DCOM increase one point with assumption the other variables are fixed so the Tobin's Q ratio will decrease 1.115

Table 8 **Model Summary Table for BOC Size and Tobin's Q**

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.553[a]	0.306	0.255	0.657094

a. Predictors: (Constant), complex firm, board size

From table 5, the regression model explains approximately 30.6 percent respectively of the variation in the dependent variables.

Table 9 **ANOVA Table for BOC Size and Tobin's Q**

ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	5.141	2	2.57	5.953	.007[a]
	Residual	11.658	27	0.432		
	Total	16.799	29			

a. Predictors: (Constant), complex firm, board size

b. Dependent Variable: tobinsQ

From the ANOVA or F test above there can be gain the conclusion that Fhit is 5.953 with 0.007 significant level. Because of the probability number (0.007) is higher than 0.05, so that the regression model could not be used to predict the ratio of Tobin's Q. In other words, the factors of BOC and DCOM have the negative value towards Tobin's Q ratio.

4.1.4 Fraction of dependent commissioners and Tobin's Q at high R&D firms

Hypothesis 4: Tobin's Q increases in the fraction of dependent commissioners on the board for high-R&D firms.

The model which is used to find the result of this hypothesis is similar with the model that used at hypothesis 3. The model is:

$$Y = a + b1x1 + b2x2 + e$$
$$Tobin's\ Q = a + b1DRD + b2FODC + e$$

Where;

a	=Intercept	
$Tobin's\ Q$	$= \dfrac{Market\ Value\ of\ Asset}{Book\ Value\ of\ Asset}$	
$Tobin'sQ$	$= \dfrac{MVCS+BVPS+BVLTD}{BVTA}$	
MVCS	= Market value of common stock	
BVPS	= Book value of preferred stock	
BVLTD	= Book value of long term debt	
BVTA	= Book value of total asset	
BOC	= Board of Commissioners number	
DRD	= Dummy of R&D intensity	
	= 1	: High R&D firms
	= 0	: Low R&D firms
e	= Error	
b1	= Coefficient of Regression	
b2	= Coefficient of Regression	

Table 10 **Coefficient Table for Fraction of Non-Independent**

Commissioners and High R&D Firms

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.568	0.954		2.691	0.012
	high R&D	0.72	0.244	0.481	2.947	0.007
	Fraction	-4.085	1.567	-0.426	-2.606	0.015

a. Dependent Variable: tobinsQ

Table 10 describes the influence of FODC (fraction of dependent commissioners) toward Tobin's Q at high R&D firms. The model that can be made from the table above:

$$Y = 2.568 + 0.720DRD - 4.085FODC$$

This multiple regression model explains that:

- The intercept is 2.568, means that without any influence of FODC and DRD then the Tobin's Q ratio is 2.568.

- The coefficient b1 is 0.720 means that if the value of DRD increases one point with assumption the other variables are fixed so the Tobin's Q ratio will increase 0.720.

- The coefficient b2 is -4.085 means that if the value of FODC increases one point with assumption the other variables are fixed so the Tobin's Q ratio will decrease -4.085

Table 11 **Model Summary Table for Fraction of Non-Independent**

Commissioners and High R&D Firms

Model Summary

Model		R Square	Adjusted R Square	Std. Error of the Estimate
1	.564[a]	0.318	0.268	0.651291

a. Predictors: (Constant), fraction, high R&D

From table 9, the regression model explains approximately 31.8 percent respectively of the variation in the dependent variables.

Table 12 **ANOVA Table for Fraction of Non-Independent**

Commissioners and High R&D Firms

ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	5.346	2	2.673	6.301	.006[a]
	Residual	11.453	27	0.424		
	Total	16.799	29			

a. Predictors: (Constant), fraction, high R&D

b. Dependent Variable: tobinsQ

From the ANOVA or F test above there can be gain the conclusion that Fhit is 6.301 with 0,006 significant levels. Because of the probability number (0,006) is smaller than 0.05 so that the regression model could not be used to predict the ratio of Tobin's Q. In other words, BOC and DCOM have an influence factor to Tobin's Q ratio.

TABLE 13 **Summary of the result of hypothesis testing**

	Hypotheses	Result
H1	Complex firm will have larger board of comissioner and more non-independent comissioner than simple firm	Rejected
H2	High R&D firms will have a higher fraction of non-independent comissioners than simple firms	Rejected
H3	Tobin's Q increases in board of comissioners size for complex firms	Rejected
H4	Tobin's Q increases in the fraction of non independent commissioners on board for high R&D Firms	Rejected

4.2 Analysis and Discussions

Hypothesis 1 questioned whether complex R&D in Indonesian firms will have larger board of commissioners and more non-independent commissioner member than simple firms. Hypothesis 1 determined as supported hypothesis if complex firm will have both larger board and more dependent commissioner member than their opposite match, simple firms.

The arguments behind this hypothesis are proposed by Coles, Daniel and Naveen (2007), Rose and Shepard (1997), Hermalin and Weisbach (1996), Pfeffer (1972), Klein (1998), Booth and Deli (1999). They argued that the scope of operations of the firm (firm diversification), firm size and the firm's reliance on external capital (firm's leverage) are all proxies for the complexity of the firm and the CEO's need for advice. As firm complexity increases along any of these dimensions, so too, does the need for a bigger and more independent board (Coles, Daniel & Naveen, 2007).

From the result displayed in result of hypothesis testing, there is no supported evidence whether complex firm will have larger board and/or have more independent member of board of commissioners. The significance level in independent sample test for complex firm will have larger board is 0.480 which is bigger than 0.05 significance level. This means that the complex firms in Indonesia doesn't have larger board size than the simple firms. Similar result was found in hypothesis testing for whether complex firm will have more independent member in their board of commissioners, with significance level of 0.480, this finding means that the complex firm in

Indonesia doesn't have more independent board's member than the simple firms.

This finding is contrary to what Coles, Daniel and Naveen (2007), Rose and Shepard (1997),Hermalin and Weisbach (1996), Klein (1998) among others that used non-Indonesian firms as their bases of data and found that the complex firms will have larger board of commissioner size and have more independent board member. As a conclusion, Indonesian complex' manufacturing companies doesn't have larger board size and or have more independent board of commissioner member than simple manufacturing companies

Hypothesis 2 questioned whether High R&D firms in Indonesia will have a higher fraction of non-independent commissioners. What the hypothesis testing found that the significance level for this hypothesis is 0.526 which is higher than 0.05, which means these result didn't support the argument of the hypothesis; Indonesian high R&D manufacturing firms doesn't have a higher fraction of non-independent commissioners than low R&D manufacturing firms.

The result of this hypothesis testing is not similar with Coles, Daniel & Naveen (2007) found in their research. They use the US Company's data as their sample data and found that there's a negative relation whether high R&D firms will have a higher fraction of insider in the board. Furthermore, there are several studies shows the result that supports the finding of Coles Daniel and Naveen (2007), such as Lehn, Patro & Zhao (2004) and Linck,

Netter & Yang (2007). They find, however, that large firms will have a higher proportion of insiders.

Hypothesis 3 questioned whether Tobin's Q increases in board of commissioners size for complex firms in Inodnesia. The result of the hypothesis testing shows that negative relationship between the sizes of board of commissioners for complex firms toward higher firm Tobin's q value. This result is not similar to what Coles, Daniel and Naveen (2007) found in their research by using US companies as their data. They found that there is a positive (negative) relationship between the board sizes of board of commissioners toward higher (lower) Tobin's q value. Furthermore, the negative relationship between the sizes of board toward the higher firm value found in relatively small firms size (bennedsen, Kongsted & Nielsen, 2007).

Hypothesis 4 questioned whether Tobin's Q increases in the fraction of non-independent commissioner members on board for high R&D firms in Indonesia. Result taken from hypothesis testing shows the opposite statement. With significance level 0.06, which is higher than 0.05, it means that there's a negative relationship between the higher fraction of non-independent commissioner member toward higher firm's Tobin's q value. This finding is contrary to what Coles, Daniel and Naveen (2007) found in their research. They found that there's positive relationship between higher fraction of non-independent commissioner on board for high R&D firms toward firm tobin's q value. On the other hand, Rosenstein and Wyatt (1997) and Klein (1998) found that the insider in the board add value to the firms.

This thesis, through the hypothesis result, found that the optimum board structure (As suggested by Coles, Daniel and Naveen, 2007; Hermalin & weisbach, 1996; Lehn, Patro and Zhao, 2004; bennedsen, Kongsted & Nielsen, 2007) in the complex firms and high density R&D firms has a negative relationship toward firm's performance (Tobin's Q). Several researchers when observing the R&D firs board structure toward firms performance show the opposite result related to this thesis found.

Coles, Daniel and Naveen (2007) used US R&D firms as their sample data and found that the larger the R&D firms, the larger the size of the board and more independent the member of the board is, and have positive relationship towards firm's performance. Furthermore, they add that the higher the R&D firms, the higher the fraction on insider in the board composition, and also have the positive relationship toward firm's performance. Moreover, Yang, Searcy and Tatum (2006) used the US Biotechnology firms as their sample data. The biotechnology firms are associated with R&D concentrated investment industry. Their research found that, opposite to our hypothesis, the larger the board is, the larger the biotechnology firms are, and have positive relationship towards fir performance. They also found that, contrary to our hypothesis, the higher the R&D firms are the higher of insider in the board composition and have the positive relationship toward firm performance. Generally, they stated firms with good and optimum board of governance structure will have a higher financial performance of its R&D investment than firms without good corporate governance.

CHAPTER V

CONCLUSION AND LIMITATION

5.1 Conclusion and Implications

This study has examined the board of commissioners sizes and its structure toward firm's performance. Independent variable in this study is board commissioner's structure and the dependent variable is firm's performance which took Tobin's Q as the proxy. This study also used two control variables which are the firm's size and firm-specific knowledge. Firm's size divided into complex and simple firm meanwhile firm-specific knowledge using R&D intensity as the proxy that divided into high-R&D firm and low-R&D firm.

The result found that (1) complex firms has smaller board of commissioners than simple firm (2) complex firms does not have more independent commissioners than simple firms (3) high-R&D firms have lower fraction of non-independent commissioners on the board (4) Tobin's Q have negative relationship with board of commissioners size at complex firms (5) Tobin's Q have negative relationship with fraction of non-independent commissioners at high-R&D firms.

The discussion on the research result illustrated the nuance of board of commissioner in Indonesian R&D firms. First result stated that complex firm in Indonesia has smaller board than simple firms; also have negative relationship with the firms performance as measured by Tobin's Q. The hypothesis testing also figured that a complex firm doesn't have more independent commissioners than their counterpart, the simple firms.

68

Furthermore, the high R&D firms in Indonesia doesn't have higher fraction of insider commissioner compared to simple firms, also, have negative relationship with firm performance as measured by Tobin's Q.

Referring to previous research and the theories related with the optimum implementation of corporate governance structure in R&D companies, this thesis finding contradicts those arguments. Hence, R&D companies in Indonesia, in their searching for an optimum and good board structure, should look for another aspect in corporate governance structure. A women representation for example, Ross and Dezso (2008) found that women representations are most effective at the companies that heavily rely on R&D. Another factor that could be the key in optimum structure firm in R&D companies is putting more pro shareholders governance practice, which has a positive influence in R&D investment (Lhuillery, 2006).

5.2 Limitation and further research

This thesis view the R&D are importance in industry level context (Yang, Searcy, Tatum, 2006), therefore, this research contain only 6 companies. For furher research, it could be better to add some non-traditional industry firms, such as service provider companies, financial and banking firms,etc. And also increase the size of the data samples.

Moreoever, since this thesis finding contradicts the optimum board size and board composition for complex firms and high R&D firms, further research could be addressed in the other aspects of corporate governance to find the optimum corporate governance structure for Indonesian R&D firms. For examples, women representation toward the outcome of R&D investment

69

(Ross and Dezso, 2008) another could be the shareholders governance practice towards the outcome of R&D investment (Lhuillery, 2006).

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