Ownership Concentration, Corporate Governance, and Firm's Risk-Behavior: Evidence from Thailand

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An Independent Study Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Science in Finance
Department of Banking and Finance
FACULTY OF COMMERCE AND ACCOUNTANCY
Chulalongkorn University
Academic Year 2021

โครงสร้างการเป็นเจ้าของและการกำกับดูแลกิจการที่ดีซึ่งส่งผลกับความเสี่ยงของบริษัท ข้อมูลของบริษัทที่จดทะเบียนในตลาดหลักทรัพย์แห่งประเทศไทย

น.ส.นภัสสร หาญชัยกิตติกุล

สารนิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรมหาบัณฑิต
สาขาวิชาการเงิน ภาควิชาการธนาคารและการเงิน
คณะพาณิชยศาสตร์และการบัญชี จุฬาลงกรณ์มหาวิทยาลัย
ปีการศึกษา 2564

Independent Study Title	Ownership Concentration, Corporate Governance, and Firm's Risk-Behavior: Evidence from Thailand
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Field of Study	Finance
Thesis Advisor	Associate Professor Dr. PORNANONG BUDSARATRAGOON, Ph.D.

Accepted by the FACULTY OF COMMERCE AND ACCOUNTANCY, Chulalongkorn University in Partial Fulfillment of the Requirement for the Master of Science

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นภัสสร หาญชัยกิตติกุล : โครงสร้างการเป็นเจ้าของและการกำกับดูแลกิจการที่ดีซึ่งส่งผลกับความเสี่ยงของบริษัท ข้อมูลของบริษัทที่จดทะเบียนในตลาดหลักทรัพย์แห่งประเทศไทย. (Ownership Concentration, Corporate Governance, and Firm's Risk-Behavior: Evidence from Thailand) อ.ที่ปรึกษาหลัก : รศ. ดร.พรอนงค์ บุษราตระกูล

The relationship among the ownership concentration, corporate governance, and firm risk are investigated in this study. The sample for this study include all the firm listed in Thailand Stock Exchange for the time period from 2010 to 2019. In this study, both direct and indirect relationship are investigated. The results shows that ownership concentration has positive significant effect on firm risk in the case of Thailand. The main explanation for this evidence is based on the socio-emotional wealth and limited liability feature of the listed firms. Meanwhile, corporate governance does not seem to have any significant impact on risk. Focusing on the incremental or indirect effect, corporate governace also does not help alleviate the problem of the insider trading or exploitation caused my major shareholders. Therefore, ownership concentrations still have significant impact on firm risk, regardless of how good governance practice it has. Despite of no moderating role in the relationship between ownership concentration on risk, corporate governance does play a significant moderating role in reducing an inappropriate performance effect on firm risk. Firms having high CG score tends to have lower performance effect on risk relative to those having low CG score. Moreover, lead-lag effect of corporate governance is investigated, evidence from our study show no

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6284032726 : MAJOR FINANCE
KEYWO RD: Ownership Concentration, Risk, Corporate Governance, Shareholder, Performance

Napassorn Harnchaikittikul : Ownership Concentration, Corporate Governance, and Firm’s Risk-Behavior: Evidence from Thailand. Advisor: Assoc. Prof. Dr. PORNANONG BUDSARATRAGOON, Ph.D.

งานวิจัยชิ้นนี้ได้มีการศึกษาเกี่ยวกับความความสัมพันธ์ระหว่างความเข้มข้นของโครงสร้างความเป็นเจ้าของกิจการ การกำกับดูแลกิจการ และความเสี่ยงภายในบริษัท ซึ่งได้อธิบายผลของตัวอย่างของบริษัทจดทะเบียนในตลาดหลักทรัพย์ห่งประเทศไทยในช่วงเวลาระหว่างปี 2553 ถึง 2562 โดยผลการวิจัยพบว่า การกระจุกตัวของเจ้าของกิจการมีผลกระทบเชิงบวกอย่างมีนัยสำคัญต่อความเสี่ยงภายในบริษัท ในขณะเดียวกัน การกำกับดูแลกิจการภายในบริษัทไม่มีผลกระทบอย่างมีนัยสำคัญต่อความเสี่ยงที่จะเกิดขึ้น นอกจากนี้ การกำกับดูแลกิจการภายในบริษัทไม่ได้ช่วยบรรเทาปัญหาการซื้อขายหลักทรัพย์โดยใช้ข้อมูลภายในจากผู้ถือหุ้นรายใหญ่ทั้งทางตรงและทางอ้อม เพราะฉะนั้น โครงสร้างความเป็นเจ้าของกิจการภายในบริษัทยังคงมีผลกระทบต่อความเสี่ยง ไม่ว่าการกำกับดูแลกิจการจะเป็นอย่างไรก็ตาม และในทางตรงกันข้าม การดูแลกำกับกิจการที่ดี มีผลในทางอ้อมต่อความสัมพันธ์ระหว่างประสิทธิภาพของบริษัทของต่อความเสี่ยง ในบริษัทที่มีการดูแลกิจการภายในที่ดี ผลกระทบจากประสิทธิภาพของบริษัทที่มีต่อความเสี่ยงจะน้อย นอกเหนือจากนี้งานวิจัยยังได้มีการศึกษาตัวชี้วัดตามของการบริหารกิจการภายในที่ดีที่มีผลต่อความเสี่ยงของบริษัท ซึ่งพบว่าการบริหารกิจการภายในยังคงไม่ได้มีผลกระทบต่อความเสี่ยงอย่างมีนัยยะสำคัญ

Field of Study:	Finance	Student's Signature .....
Academic Year:	2021	Advisor's Signature .....

ACKNOWLEDGEMENTS

I would like to express my gratitude to my advisor, Assoc. Prof. Pornanong Budsaratragoon for providing me an opportunity to do the research and study related to the topic in my area of interest. I am thankful for her valuable guidance and time that she had putted in reviewing and adivsing my research.

I am also thankful for the solid suggestions from both of my comittees, Asst. Prof. Ruttachai Seelajaroen, Ph.D. and Asst Prof. Tanakor Likitapitwat, Ph.D.

The support from my parents, friends, and colleauges is also one the the huge factors that made my research to become successful. They have been always helpful and supportive and have me went through a lot of difficult times I had confronted. I am greatly thankful for them.

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1. INTRODUCTION

1.1 Background

The recent financial crisis in 2008 was a consequence of high level of risk taken by large financial institutions or corporations; therefore, it is important to deeply know the factors influencing corporate risk (Jiraporn et al., 2015). After a prolonged period of several scandals, such as Enron and WorldCom cases, there was an international reform of many standard-setting bodies and corporate governance. Moreover, to secure their investments, investors rely on external governance i.e., rule and regulation (Gillan, 2006; Walsh & Seward, 1990), and internal control, such as ownership concentration. It is commonly held that concentrated ownership serves as one of the best protections to shareholders in the setting, where legal investor rules and regulars are somewhat ineffective and inefficient, which common in Eastern and Asian areas.

It has been revealed that a high degree of ownership concentration is a practical tool for aligning interests between managers and shareholders, according to Agency Theory Type 1, as well as owners will tend to have monitoring incentives towards managers (Jensen & Meckling, 1976; Leland & Pyle, 1977; Stulz, 1988). This results in higher firm performance and a lower possibility of a manager to consume on the job. On the other hand large equity holding by single shareholder leads to risk-avoidance regarding the business and investment strategies giving their undiversified human capital and finance (Amihud & Lev, 1981; Amihud et al., 1990), and (Agrawal & Mandelker, 1987). Moreover, according to principal-principal theory, there are possibilities for the major shareholder to extract private benefit from a minority shareholder, resulting in the adverse effect of firm performance, risk, and shareholder's wealth. This tradeoff between cost and benefit explains why prior literature about the relationship between ownership concentration and risk is still ambiguous (Demsetz & Lehn, 1985)

Corporate Governance Score is another significant measure for the firm's quality as it is viewed in the context of strengthening shareholder's right and welfare (Jiraporn et al., 2012). In past decades, awareness about CG has been obviously raised Both institutional and individual investors have started using this governance score to decide which firms they should invest since overall rating indicates a broader aspect than a specific measure because governance mechanism tends to react and interdependent (Agrawal & Knoeber, 1993). A prior study demonstrates that well-governed firms with an effective shareholder's rights tend to yield satisfactory performance (Gompers et al., 2003). However, investor should not rely too heavily on governance score alone as there is no strong positive correlation between this rating and earning quality (Koehn & Ueng, 2005).

Prior literature have deeply investigate the association between the mechanism of the CG practice and corporate results, and the link of risk and earning or performance. Besides inconsistent results, prior research only investigated the impact of each governance measure separately on firm performance. Therefore, this paper will try to study not only the relationship between each mechanism on a firm risk, but also to study if ownership concentration, incorporating an effect of CG score, would have a significant impact on firm's degree of risk. Because ownership concentration is considered as the crucial factor playing the role of internal CG mechanisms as well.

Most existing literature have been done on the venues of the Western market, while small economies, such as those in ASEAN and Arab countries, are very much understudied in governance literature (Omran et al., 2008). Some possible explanations how come the empirical result of the paper studying the developed setting should not be applied to emerging setting is because concentration level of shareholding structure in those countries tends to be more diffused (Denis & McConnell, 2003), compared to structure in developing countries that is much highly concentrated (Claessens et al., 2000). Also, CG in Western countries is well-establish as it has been developed for a more extended period than ASEAN countries, where awareness on this topic is more recent and not yet as effective. Thailand has several features making it an unique market to deeply investigate an idea regarding ownership concentration and CG. First, the

shareholding structure in Thai market remain the same for a longer time period relative to the U.S., as major owners are family members who tend to hold the share permanently. Second is that ownership in Thailand is very much concentrated, even comparing to ASEAN countries. The concentration of ownership and family control of corporations is severe in Thailand, where the largest ten families control half of the corporate sector in terms of market capitalization (Claessens et al., 2000). Additionally, it was found that Thailand is also the country where minority shareholders are consistently expropriated (Dyck & Zingales, 2004). According to the reasons above, Thailand provide interesting characteristics and would fit as a proper venue for the study.

1.2 Objectives

- To examine relationship between ownership concentration on firm risk.
- To examine relationship between corporate governance on firm risk.
- To examine relationship between ownership concentration on firm risk associated with corporate governance quality.
- To examine if corporate governance of the firm plays some moderating impact of the relationship between corporate performance and risk or not.

2. LITERATURE REVIEW

Ownership Concentration

Despite several pieces of study on the association of concentration of ownership and corporate performance, there is far less study exploring the duty of concentration of ownership on risk level within the corporations. Previous literature also suggests an inconclusive result on the benefit and cost of concentrated ownership structure. Several governance literatures indicate that family firms, where ownership structure is concentrated, are tends to be averse to the risk and would like decisions that are less risky than optimum level because major shareholders or top owners have confronted the difficulties to diversify the risk of their investment profiles (Anderson & Reeb, 2003).

Focusing on the Western setting, firms controlled by small groups of major shareholders, whose their portfolio is not much diversified, yield obviously low risk (Faccio et al., 2011). The sample includes companies in the Western settings where their market is mostly considered to be already developed. The result is aligned with the assumption mentioned above from (Anderson & Reeb, 2003). Regarding controlling ownership, more significant proportion of firm controlled by the financial institutions represents a low level of risk, which relatively yields a firm's poor performance (Kang & Shivdasani, 1999). Additionally, this type of firms is likely to have it earning stable, which is the results of project that is not risky, which presumably have low value (Weinstein & Yafeh, 1998). This evidence is possibly caused by the bank strong incentive to alter the investing policy to low-risk project with low return, this is in order to avoid their loan from dropping in value (Durnev et al., 2004). Moreover, most banks issue loans to more than one credit, increasing their risk exposure and intensifying their risk preference for even lower risk projects.

Meanwhile, there is an idea that the effect of having major shareholder within the firm is associated with the block ownership and risk. Investment that is to reduce the risk such as portfolio diversification is not tend to occur when there is a presence of

controlling shareholder (Amihud & Lev, 1981). Some prior empirical evidence supports this result as well.

Additional interesting research on ownership investigated ownership structure on the firm diversification strategies (Banalieva & Eddleston, 2011). Some studies focus on the impact of the firm having high level of ownership concentration on the investing strategies in corporate social responsibility (CSR). It was stated that family firms significantly affect CSR as family firms show regulated action with inner parties than non-family firms (Cruz et al., 2014). Compared to the firm with dispersed ownership, high ownership concentrated firms have easier access to debt financing during financial crisis (Cladera & Martín-Oliver, 2014).

Corporate Governance

Both performance and CG has been a major focus in several CG studies in the past, and most of them has deeply studied the interaction between CG and firm performance. Meanwhile, only few numbers of the study have investigated the effect of CG on firm risk. Managers' pay and compensation are tied with the performance and are therefore incentivized to invest in high-risk projects. This issue can be mitigated by having strong CG for monitoring and transparency purposes (Huang et al., 2018). There is an evidence showing that CG reduces firm's degree of risk, standard deviation of the stock was used as a risk indicator (Ferrero-Ferrero et al., 2012). ISS, which consider numbers of governance indicator for measurement, and they discover that firms with weak CG are indeed riskier. Good CG practices act as a catalyst to reduce non-systematic risk and the possibility of financial distress (John et al., 2008).

On the other hand, increasing compliances and more governance restrictions could also introduce operating complexities for management while increasing cost and reducing decision speed, resulting in higher risk (Pech & Durden, 2004). Similarly CG activities might lead to business costs to significantly jump, and firm risk to rise (Amihud & Lev, 1981). Another perspective of positive linkage between CG and firm risk is that manager in weak governance firms is more likely to formulate strategies

reflecting their degree of risk ignoring shareholder's risk aversion (Fama, 1980; Smith & Stulz, 1985). For instance, using a sample spans four years, it was found that a firm with high governance score tends to yield higher risk, as managers were restricted from implementing policies based on their high aversion to risk (Belghitar & Clark, 2014).

Risk and Performance

A corporate value and performance involving high risk have been long examined in the strategic management literature. Change in degree of risk caused by a change in a firm's competitive advantage can be easily justified so that firms whose market power is high are unaffected from economic uncertainties and therefore consist entirely of firm-specific risk (Nguyen, 2011). Consequently, these firms with significant competitive advantages are likely to yield higher performance, suggesting a positive relationship between performance and risk. It was claimed that risk contributes to predicted positive stock return (Campbell et al., 2001; Goyal & Santa-Clara, 2003), that an increase in risk shown in the US firms is associated with their growth strategies. Further, there is the positive relationship between volatility and the expected growth of an earnings (Xu & Malkiel, 2003). Volatility is proportionally associated to capital budgeting. This implies that this is likely to make the firms resource allocation within the corporation better and more effective (Durnev et al., 2004).

Conversely, prior studies are challenging the positive relation of these two factors. For instance, there was a paper studying this relation, measure ROE as firm performance, and risk. The conclusion is companies having great corporate results have a low level of risk, which is possibly caused by the assumption that managers are could be either risk-averse or risk-seeking (Shleifer & Vishny, 1986). There is a recent research shows significant result on negative relationship between performance and firm risk, evidence from four-year span of listed Taiwanese firms (Tsai & Luan, 2016). Therefore, the risk-return relation is inconclusive and can be justified in several different aspects.

3. THEORETICAL BACKGROUND

Agency Theory Type 1 (Principal-Agent)

Shareholders are likely to invest in an enterprise that they are confident that managers will use their money efficiently and reasonable return is guaranteed. Shareholders' confidence is established through various mechanisms, and one of them is the proper treatment of shareholders, whether majority or minority. Complete employment contracts are unfeasible since it is impossible to foresee all future contingencies or to predict hidden motivation of both investors and managers, resulting in the "incomplete contracts" and the principal-agent problem to rise. CGhas been linked with this problem traditionally. Agency relationship is defined as a contract where one party, as the principal, engages with another party as the agent to perform services on their behalf (Jensen & Meckling, 1976). This includes performing decision-making for an agent. However, suppose both parties of the contract are utility maximization. In the context of corporations, a principal-agent relationship arises when an individual owning the firm is not the same as one managing or controlling it. To demonstrate, shareholders are principal who makes employment contracts with managers, who serve as agents to professionally run the firm to generate competitive returns on behalf of shareholders' best interest. Due to the separation of control and ownership, the potential conflict of interest between two parties exists, and CG generally is the collection of strategies that could reduce this conflict and ensure that shareholder wealth is maximized (Jensen & Meckling, 1976).

Based on the principal-agent model, divergence of both objectives and interests between managers and shareholders hurt firms since shareholders want to increase corporate earnings. On the other hand, directors pursue their self-interest such as bonuses, on-the-job consumption, empire-building, and other incentives at the expense of shareholder's wealth. This is called agency cost (Demsetz & Lehn, 1985; Jensen & Meckling, 1976). This expropriation action made by directors has a significant effect on firm performance and its degree of implemented risk, as well as enhances the likelihood of financial distress. When shareholding in the firm is dispersed among

minority shareholder, it is argued that the shareholder will not be able to control and monitor managerial decisions as the incentives to monitor management are weak (Shleifer & Vishny, 1986). Small shareholders also have an incentive to "free-riding" in the hope that other larger shareholders will do the monitoring on their behalf, this is because the expected benefit from monitoring is shared with every unit of shareholders. In contrast, the monitoring costs are only incurred by those who perform monitoring task. Ownership concentration is essential in large-scale firms because it is an effective solution to reduce agency cost and resolve the monitoring problem. Owners in the company can utilize their power through voting rights. Therefore, the free-ride problem is less likely to arise where concentrated ownership exists as the majority shareholder captures most of the expected benefits of their monitoring efforts. It was indicated that the bigger the stake of one equity holders, the stronger incentives for them to use their control rights and apply performance maximizing decisions through monitoring (Zeckhauser & Pound, 1990). This is especially necessary for settings where markets are yet to be developed, such as most Asia countries. To illustrate the problem discussed above, managers might turn down a risk increasing positive NPV project if the cost of an increased risk incurred by managers themselves is greater than the benefit of increasing firm value. This allows managers to lower firm risk to their advantages. Direct monitoring from the concentrated owner can significantly mitigate this issue by applying their voting rights.

Agency Theory Type 2 (Principal-Principal)

In the presence of high concentration in ownership structure, the agency problem is shifted from traditional type of agency theory to another kind of the problem, called principal-principal conflicts (Bebchuk & Weisbach, 2010; Young et al., 2008). Despite all benefits from concentrated ownership, the principal-principal theory states that ownership concentration can also have a significant adverse effect on firms. An increasing level of block-holding in firms raise an incentive to exert opportunistic behavior by majority shareholders. The bigger the holding of a single owner, the easier for him or her to divert personal benefit to themselves rather than to the company. This is because the majority owner can overrule and exploit the minority shareholders,

resulting in a interest confliction between major and minor investors (Fama & Jensen, 1983; Morck et al., 1988; Shleifer & Vishny, 1986). For instance, it was discovered that they can appoint most management team to act on their preferences so that manager works to maximize the value of major shareholders instead of the value of the firm, while the opinion of small shareholders is continuous to be overlooked (Yabei & Shigemi, 2009).

According to the previous literature shows that major shareholder could extract private benefit through "tunnelling", meaning that "resource and benefit transfer out of the firms for controlling shareholders' profit or interest" (Johnson et al., 2000). Practically, tunnelling can take place in several forms. First, the controlling owners of the firm can increase their share within the firm without transferring any asset through transactions that are a disadvantage to minority shareholders, such as share issues dilution.

Economic Theory

Economic theory postulates CG and risk level of the firm as function of the utility of an major shareholder coming up with their utility from private consumption of firm resources (John et al., 2008). Benefit extraction from an insider is invesrsely associated with owner’s wants for risk-seeking action that would enhance the value. An impact of CG on firm risk-taking could stem from an idea that improving corporate monitoring will lower the magnitude of the private benefit extraction performed by controlling shareholders. Stricter governance can impose the internal pressure on the owners or major shareholders, and this plausibly reduce their benefit extraction caused by the major shareholders. Taken together, an improvement in corporate governance mechanism, therefore, decreased the utility from inside profits, which could lead to higher firm value that is the results from the risk-seeking action back to the optimal level (Fauver et al., 2017; Weisbach, 1988).

Prospect Theory

At the corporate level, many pieces of literature have examined risk-return phenomenon based on the theory of "prospect theory", suggesting that managers will make the investment decision, mainly based his opinion on the expected or set earning (Fiegenbaum & Thomas, 2004). This theory shows how people make an investment base on the following assumptions. First, investors evaluate the outcome of their action from the gain or loss related to the target point (Li & Yang, 2013). Second, investors are "loss-aversion". Last, the investor is risk-averse if they earn or gain but act as a risk-seeker of they find loss. To illustrate, firms set their target return, the firms avoid taking more risk if their earning appear to be high enough (Miwa, 2016). In this case, it becomes risk-averse, and therefore, the slope for the risk-return relationship is positive. On the other hand, when an expected return is low to the level that they are not satisfied or maybe even lower that their reference, such as losses, the firm tends to risk attempting to reach the target level. This indicates a negative slope for the risk-return (Fiegenbaum & Thomas, 2004).

4. RESEARCH HYPOTHESIS DEVELOPMENT

Several financial crises occurred in the past partially were the result of an excessive risk-taking by large financial institutions and corporations; therefore, it is necessary to clearly understand factors that can directly have an impact on corporate risk since risk is one of the few factors that can decide whether the firms will fail or succeed; as a result, it is interesting to investigate this variable.

***H1*:** Ownership concentration is likely to have the significant effect on firm risk.

$$\mathbf{H_{0,1}}: \beta_1 = 0 \qquad \mathbf{H_{a,1}}: \beta_1 \neq 0 \quad \text{(from Model 1)}$$

Findings from (Amihud & Lev, 1981). states that the degree of ownership concentration is one of the factors influencing firm risks. For the group of major shareholders, the more shares they hold, the more voting power they have; therefore, it is plausible that they will choose the projects or investment strategies, based on their risk preference (Charles & Snell, 1989). Some major shareholders do not want to harm their wealth and tends to prefer the firm to have low level of risk as they do not want to expose to any higher risk due to their under-diversified portfolio (Anderson & Reeb, 2003; Faccio et al., 2011). On the other hand, some top shareholder might be risk-seeking in a way that they would like the firm to invest in high-risk projects, hoping to receive the great earning in returns. Also, some of them are likely to have an idea that, although the loss can be huge, it is still limited to what they have invested and is shared among all the shareholders in the firm, while the return is potentially to be unlimited (Shleifer & Vishny, 1986). Therefore, the result could be either positive or negative side of the risk level. With all the voting power they hold in a single firm, they could exercise their influences on the managers to act according to their preferred risk level. Meanwhile, in many literatures with the US setting, ownership is less likely to have a huge impact on corporate result as there are some regulations, both external and internal, that reduce the room for insiders to expand their power within the firms (Anderson & Reeb, 2003). However, I believe that is not the case for Thailand. Thailand is one of the several countries that is considered to have very high concentration level of ownership, compared to other countries. Thus, the impact might also be significant.

According to an empirical evidence from Vietnamese, which is one of the ASEAN countries that has similar market nature and concentration level of ownership, also shows that concentration level of ownership can directly affect the risk level within the firm (Nguyen, 2011).

Thus, with the reasons mentioned above, I expect to ***reject*** the null hypothesis ($H_{0,1}$), meaning that I predict that ownership concentration is likely to have the significant effect on firm risk.

***H_2*:** Corporate governance is likely to have significant effect on firm risk.

$$\mathbf{H_{0,2}} : \beta_2 = \mathbf{0} \qquad \mathbf{H_{a,2}} : \beta_2 \neq \mathbf{0}$$

Major role of CG is to strengthening shareholder's rights and welfare. In the firm, there might be some inappropriate actions done by managers, such as an exploitation, private benefit extraction, empire-building, consuming on the job, etc. Therefore, CG is a crucial factor that act as an internal governance mechanism to monitor and regulate the appropriateness within the firm. Besides from performance, risk level is another corporate factor that can be directly affected from these possible actions of manager and executives.

The impact can be either positive or negative side of the risk level. Having weak internal CG would allow managers the room to formulate the investment strategies or corporate policies that are beneficial to themselves, and this might pose the disadvantage to firms and shareholders (Demsetz & Lehn, 1985). Managers could entrench and make an investment decision that benefit themselves, and this will not maximize the firms' or shareholders' wealth, but the wealth of managers. Managers can directly increase the firm risk by investing in risky projects hoping to receive the better return and better performance-tied compensation, while this risk level might not appropriate to most shareholders. On the other hand, there might be some managers who try to avoid risky projects, despite of the great potential return, because they do

not want to put their positions at stake (Amihud & Lev, 1981; Fama, 1980). If it turns out worse than their expectation, they might lose their job because they have their human capital tied up with the firm (Campello et al., 2009). With this, firm might face the level of risk that is too high or too low, based on manager's self-preference. Therefore, strong CG is likely to alleviate this problem.

Both institutional and individual investors started to have some interest in monitoring the governance system within the firm to decide which firms should they invest their money in, as the overall rating indicates the broad aspects than the specific measurement as each different governance factors are likely to interact with one another as well (Agrawal & Knoeber, 1993). Some paper found no evidence in this relationship with the reasons saying that people in emerging market does not put much attention and priority on CG, but to focus more on other factors that are more solid, argued by (Bebchuk & Weisbach, 2010). However, I believe that is not the case of Thailand as the attention of this topic has increase a lot recently. Also, it is interesting to study Thai market because CG here is much recent and new, compared to those in the Western countries. This relationship is less studied in Asia context as well.

With the explanations and reasons mentioned above, I expect to ***reject*** the null hypothesis ($H_{0,2}$), meaning that I predict corporate governance to have the significant effect on firm risk.

H_3: Corporate governance has significant moderating impact on the relationship between performance and firm risk.

$$\mathbf{H_{0,3}}: \beta_3 = 0 \qquad \mathbf{H_{a,3}}: \beta_3 < 0 \quad \text{(from Model 2)}$$

The relationship of risk and performance, CG and performance, and governance mechanism and risk are deeply studied in the literature review section. Facilitate effective and transparent management that can deliver better firm value, which mainly rely on the corporaste performance and risks is the main goal of the implementing CG

practice in the firm (Fama & Jensen, 1983). Therefore, it is interesting to focus on interrelationship among CG, risk, and corporate results.

The role that CG might help reduce the impact of the relationship between firm performance and risk will be clearly examined. When firms conduct CG activity, it helps to improve the reputation of the firms (Sherman, 2004), and it can successfully increase stock value and firm profitability (Brown & Caylor, 2004). Most paper yield the result that companies with great practice of the CG mechanism are likely to yield greater performance (Cheung et al., 2006). Focusing on corporate risk, CG either reduces or increases firm risk through negative reinforcement of risk control and restrictions (Ferrero-Ferrero et al., 2012; Sherman, 2004). Therefore, it can be inferred that CG possibly influences the association between corporate performance and risk. In addition, attitude toward risk is subject to different performance conditions (Wiseman & Gomez-Mejia, 1998). If the firm is an underperforming organization, managers tend to take higher risk attempting to bridge the gap between true result and the targeted performance, or the reference point, which is loss aversion. This could be another way around if the firm perform better than what managers have expected. Incorporating an effect of strong CG might help alleviate problem of inappropriate level of risk taken by managers through effective monitoring and strict regulations.

Among all firms, there are firms with good CG and companies with low CG, so it is interesting to investigate the performance impact on firm risk in firm having good governance practice relative to those with poor governance practice. Moreover, I believe that, at this point, not many papers have studied the indirect impact of CG on the relationship between performance and risk yet. As a result, I came up with this hypothesis.

Together with the reasons mentioned in the above paragraph, I expect to ***reject*** null hypothesis ($H_{0,3}$), meaning that I predict corporate governance to have significant moderating impact on the relationship of firm performance and its risk

***H_4*:** Corporate governance has significant moderating impact on the relationship between ownership concentration and firm risk.

$$\mathbf{H_{0,4}}: \beta_3 = \mathbf{0} \qquad \mathbf{H_{a,4}}: \beta_3 < \mathbf{0} \quad \text{(from Model 3)}$$

In most emerging countries, their market setup is characterized by a highly concentrated ownership structure. Only a few owners have a majority or complete control over investment strategies, decision-making, and firm resources. As a result, the confliction of the interest between controlling shareholders and small outsiders can be witnessed in these countries, especially in Asia (Black et al., 2013). These dominant owners are likely to opt for either higher or lower risk-taking strategies and decision, based on their preference alone and they tend to ignore the idea or interest of the minority shareholders. There is a high possibility for concentrated shareholders and large family owners to indulge in lower risk projects particularly because they have most of their capital invested in a single firm (Paligorova, 2009). Majority shareholder might, on the other hand, exercise their influence and let the firm jump into the risky projects hoping for the great return so that they could extract some private benefit from those earning (Bertrand et al., 2002). Internal governance mechanism should reduce the influence of the major shareholders and their misappropriation action. Thus, corporate risk level will fall or rise to the optimal level that match with the firm's condition, reported by (Gómez-Mejía et al., 2007; John et al., 2008). Also, CG should increase the power of outside or small shareholders in the firm way of making decisions. Hence, following the strengthening of overall internal CG mechanisms, the degree of firm risk could be different from those firms having weak CG.

By far, not many people have studied on the indirect effect of CG on the linkage of concentration level of ownership and risk, especially in the setting of Asia. Therefore, it would be interest to investigate this incremental impact of the CG on how it would play a role in the setting of an emerging countries, such as Thailand.

I expect to ***reject*** null hypothesis ($H_{0,4}$), meaning that I predict corporate governance to play the significant moderating role.

5. SAMPLE AND DATA

5.1 Sampling design and data sources

The sample used in this study is collected from all listed companies in the SET for the past ten years, from 2010-2019. This period reflects the full stages of the corporate life cycle. Of all the listed firms, the study excludes the following:

- Bank, insurance, and financial institutions are subject to unique risk structure and a different set of regulatory restrictions. Also, their financial statements have a different structure from other firms, making cross-firm comparisons of performance to be difficult.
- Firms that have holding company as their majority shareholders.
- Exclude samples having negative MBVA.

All the samples' data is collected from three primary data sources. The first group of data includes stock price, return, standard deviation, risk-free, and other numbers used for control variables, which is extracted from the Bloomberg database. Corporate ownership structure and shareholding information will be drawn from SETSMART, form 56-1, and company's annual report. Lastly, CG rating will be collected from the Thai IOD report, provided by the Thai Institute of Director Association (Thai IOD) on their official site.

5.2 Variables

Corporate risk and performance variables

To capture corporate risk in the empirical testing, this study uses annualized standard deviation of daily stock returns for risk or volatility proxy (Palmer & Wiseman, 1999). To measure firm performance, Tobin’s Q is for market-based measurement. This has been frequently applied for measuring performance in several

existing corporate governance literature. Tobin's Q is described as a forward-looking measurement of performance, and not impacted much by accounting standards (Demsetz & Villalonga, 2001). Tobin's Q can be calculated by the market value of equity to book value of firm's assets.

Ownership variables

Cumulative common stock percentage of the top five shareholders holding highest shares is used to measure the concentration level of ownership within the firms (Demsetz & Lehn, 1985). This measure has been frequently applied in the ownership concentration studies; therefore, it will ensure comparability of the result of this study with those existing relevant studies (Sánchez-Ballesta & García-Meca, 2007).

Table 1

Variable definitions

Variables	**Symbol**	**Definition**
Dependent variables		
Total Risk	TotRisk	An annualized standard deviation of daily stock return
Idiosyncratic Risk	IdioRisk	Standard deviation of an error term from a regression of daily stock returns on daily market returns
Independent variables		
Five largest shareholders	LSH5	Accumulated shareholding percentage of five largest shareholders
Corporate Governance Score	CGDummy	Corporate governance rating ranged from 1 to 5, dummy as 0 for companies rated less than 3, as 1 for companies score at 3, and as 2 for companies score at 4, and as 3 for companies score at 5
Tobin's Q Ratio	PerfTOBIN	Market-based performance measurement, calculated from Current Market Capitalization / Total Asset
Return on Asset	PerfROA	Accounting-based performance measurement, calculated from Net Income / Total Asset
Control variables		
Firm size	Size	Total asset of the firm
D/A ratio	Lev	Amount of total debt divided by the total asset
Market to Book	MBVA	Market capitalization / Book Value of Asset
Firm age	Age	First year since the firm listed in SET
Current Ratio	Liquidity	Current Asset / Current Liabilities
Industry Dummy	IndDummy	1 for cyclical stock, and 0 for defensive stock
Interaction terms		

PerfTOBIN * CGDummy	TOBINCG	Impact of performance (proxied by Tobin's Q) on risk in firm with high CG rating relative to firm with low CG rating
PerfROA * CGDummy	ROACG	Impact of performance (proxied by ROA) on risk in firm with high CG rating relative to firm with low CG rating
LSH5 * CGDummy	LSHCG	Impact of concentration level of ownership on risk in firm with high CG rating relative to firm with low CG rating

Control variables

To avoid the potential bias caused by omitted variables, numbers of control variables that could explain and affect firm risk and measurement of the risk are included in the regression models. First, firm size ln(TotAsset). The firm size can have a big impact in the firm's risk to decide on an investment strategies (Whited & Wu, 2006). Large firms are also expected to be less risky than small firms because of their greater way of diversifying risk away through their different products. The study also accounts for the firm's capital structure since investment decisions, and the degree of risk-taking is directly associated with an access to finance (Campello et al., 2009). This can be estimated from the company's financial leverage, which is measured by total debt over total equity. Firm risk can also be influenced by the firm's growth potential (Levine, 2003). This growth opportunity is proxied by market-to-book (MBVA), measured by the market value of assets. Several studies report that firms with more growth potential (high MB) are likely to have a higher risk profile. Data having negative MBVA ratio will be screened out of the samples. Next, firm age should also be included since the new firms with low age are likely expand at the faster pace compared to the old firm, implying higher risk-taking. Moreover, innovative capacity and R&D projects, which can significantly affect risk, might be influenced by a firm's age (Black et al., 2013). This can be calculated using the natural logarithm of total numbers of years firms appeared in SET until last year covered in the sampling period. The literature also discovers the relationship between liquidity within the firm (cash holdings) and the level of risk of the firm (Denis & Sibilkov, 2010). To illustrate, in the case of financial uncertainty, firms with huge needs for investment can store up their

liquidity to protect themselves against the unpleasant possibility in the future. This measurement of liquidity can be estimated from the formula of the amount of the liquid asset to the amount of the firm's current liabilities. Lastly, corporate performance is controlled as it could significantly increase or decrease degree of risk of the firm.

6. METHODOLOGIES

This study includes different set of regression models to explore relationship among ownership concentration, CG, firm performance, and risk. Linear direct association of concentration level of ownership and corporate risk, and between CG and firm risk will be firstly investigated. Next, the literature expands to study the indirect association between firm performance and its risk associated with CG level of the firm. Finally, the study tests if CG mechanisms or practice implemented within the firm will play a moderating effect on the relationship between concentration level of ownership and risk or not.

In addition, both of corporate performance and risk can be influenced by several factors aside from governance rating and ownership structure; therefore, some potential variables that can affect these factors are included in the model as control variables. Firm size, performance, leverage, growth potential, firm age, as well as liquidity, are controlled. To account for variation across industry-specific characteristics, industry dummy is also included. Panel data is used for testing this empirical study to avoid omitted variable bias and distortion in relationship between interested variables, which could occur in cross-sectional data. Fixed effect model is applied to all the regression testing.

6.1 The association of ownership concentration/CG and firm risk

To investigate whether concentration level and CG directly impacts companies' risk (H_1 & H_2), firm's total risk is used as a proxy for risk measurement. The regression model for hypothesis are as follows:

$$\begin{aligned} \text{Risk}_{i,t} = {} & \beta_0 + \beta_1(\text{LSH5}_{i,t}) + \beta_2(\text{CG Dummy}_{i,t}) + \beta_3(\text{Performance}_{i,t}) \\ & + \beta_4(\text{Size}_{i,t}) + \beta_5(\text{Leverage}_{i,t}) + \beta_6(\text{MBVA}_{i,t}) + \beta_7(\text{Age}_{i,t}) \\ & + \beta_8(\text{Liquidity}_{i,t}) + \text{Industry Dummies} + \eta_i \\ & + \varepsilon_{i,t} \quad \ldots. \qquad (1) \end{aligned}$$

For the first hypothesis, if we fail to reject the null hypothesis, ownership concentration is not likely to have any impact on firm risk. However, if the null hypothesis can be rejected, we could say that either principal-principal theory or socioemotional wealth theory is correct. This would apply the same for beta two for the second hypothesis as well. If we can reject the null hypothesis, either risk-seeking or risk-avoidance ideas of managers can be used to demonstrate the linkage of CG and risk.

6.2 The relationship between corporate performance and risk associated with corporate governance.

Main goal of incorporating effective CG into the firm is to facilitate transparent management that can deliver better firm value, which depends on both corporate performance and risk-taking decision (Fama & Jensen, 1983). Therefore, moderating effect of CG on the association between these two significant variables should also be investigated.

$$\begin{aligned} \text{Risk}_{i,t} = {} & \beta_0 + \beta_1(\text{Performance}_{i,t}) + \beta_2(\text{CG Dummy}_{i,t}) \\ & + \beta_3(\text{Performance} * \text{CG Dummy}_{i,t}) + \beta_4(\text{LSH5}_{i,t}) + \beta_5(\text{Size}_{i,t}) \\ & + \beta_6(\text{Leverage}_{i,t}) + \beta_7(\text{MBVA}_{i,t}) + \beta_8(\text{Age}_{i,t}) \\ & + \beta_9(\text{Liquidity}_{i,t}) + \text{Industry Dummies} + \eta_i + \varepsilon_{i,t} \quad \ldots. \qquad (2) \end{aligned}$$

The firm performance is interacted with dummy variable for governance quality in model (2). The coefficient of this interaction term will reveal an indirect impact of governance of how it will change the relationship between firm performance and firm risk. If we fail to reject null hypothesis, it means that the relationship between performance and risk in firm with strong CG would be the same as those with weak CG. And either managers or investors do not take CG into their account when they make the risk-taking decisions.

6.3 The relationship between ownership concentration and firm risk associated with corporate governance.

The mechanism of ownership concentration can be used to explain principal-principal issue in the model (1), which is the relationship between majority shareholder and minority shareholder; however, it does not provide an evidence or explanation on principal-agent relationship. Therefore, corporate governance is added into the model to explain this relationship. Effective corporate governance promotes operational transparency and shareholder protection; therefore, mitigate principal-agent problem in the firm. Moreover, it can also solve the confliction of an interest problem between small shareholders and majority shareholders. Consequently, it is conceivable that different governance quality possibly has different influence on degree of risk taken in firms where concentration level of ownership is concentrated.

Early regression model is for investigating direct relationship between each variable only; thus, the study has further focus on deeper condition relating to three variables by incorporating an effect of corporate governance and see if there will be influence of governance quality on relationship between ownership concentration and risk (H_4). The economic model for this hypothesis is as followed:

$$\begin{aligned}\text{Risk}_{i,t} = {} & \beta_0 + \beta_1(\text{LSH5}_{i,t}) + \beta_2(\text{CG Dummy}_{i,t}) \\ & + \beta_3(\text{LSH5}_{i,t} * \text{CG Dummy}_{i,t}) + \beta_4(\text{Performance}_{i,t}) \\ & + \beta_5(\text{Size}_{i,t}) + \beta_6(\text{Leverage}_{i,t}) + \beta_7(\text{MBVA}_{i,t}) + \beta_8(\text{Age}_{i,t}) \\ & + \beta_9(\text{Liquidity}_{i,t}) + \text{Industry Dummies} + \eta_i \\ & + \varepsilon_{i,t} \quad \ldots. \end{aligned} \tag{3}$$

The ownership concentration is interacted with dummy variable for governance quality in model (3). The beta of this interaction term will show an indirect effect of governance on how it will play the moderating impact the association between concentration level of ownership and firm risk. If we fail to reject null hypothesis, it can be implied that CG could not explain the relationship between ownership concentration and firm risk.

7. RESULTS

7.1 Statistics

Table 2
Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max	p1	p99
TotRisk	3720	.322	.209	.017	1.581	.054	1.113
IdioRisk	3720	.276	.183	.017	1.292	.046	1.002
LSH5	2978	.564	.125	.295	.802	.334	.799
CGDummy	3720	1.284	1.033	0	3	0	3
PerfTOBIN	3677	.999	1.226	.033	44.36	.115	5.238
Perf ROA	3666	4.459	8.802	-74.33	64.98	-23.42	27.784
Size	3315	8.552	1.228	6.527	11.512	6.582	11.322
Lev	3682	22.53	20.194	0	112.607	0	72.105
MBVA	3659	1.953	2.567	.127	64.527	.315	10.511
Age	3720	16.556	6.808	1	27	2	27
Liquidity	3418	3.332	11.58	.012	388.685	.208	26.856
IndDummy	3720	.401	.49	0	1	0	1

Table 2 above shows the statistics for the firms listed in Thailand used in this methodology, with sample of 3,720 firm-year observations from 372 companies in SET with the studying time ranged from 2010 to 2019. Concentration of firm's ownership in the samples range from 29.5% to 80.2% but an average, represented by the mean percentage of LSH5, is 56.4%, which is higher than that in the United State, where the average is 25% (Demsetz & Lehn, 1985). It is also reported that an ownership concentration in Japan is 33.39%, using the same proxy of the concentration as this study (Nguyen, 2011). Shareholding structure in Singapore and Vietnam and the mean of their study is approximately 43.8% (Nguyen, 2011). This is the reason why Thailand is a unique and appropriate setting to investigate the effect of high concentration of ownership on firm risk as Thailand's ownership structure is relatively concentrated, despite of comparing to the neighbor countries having similar market nature, such as those in ASEAN (Jumreornvong et al., 2018). CG rating, represented by CGDummy, has the mean of 1.28, which is considerably moderate as 1 represent rating at 3 from Thai-IOD. Total risk and Idiosyncratic risk are reported with an average of 32.2%, and

27.6% accordingly. These risk measurements are relatively smaller compared to the same measurement of the firms listed in United State (Campbell et al., 2001). There are two proxies representing firm performance, which are Tobin's Q and ROA with average of 0.99 and 4.46 accordingly. On average, the sample firms carry 22.53% debt in their capital structure, which is comparably low to those in the United State and Japan, stated (Nguyen, 2011). Firms with small size of total asset fall under those in services industry and the one with the largest size are those listed in the energy industry. The average period that the sample firms has spent in SET since their Initial Public Offering is 16.56 years, represented by variable called Age.

Table 3
Cross-industry summary statistics of main variables

Industry	LSH5			CGDummy			Obs.
	Min	Max	Mean	Min	Max	Mean	
Agro & Food	33.01%	80.22%	55.84%	0	3	2	400
Consumer Products	33.63%	78.41%	58.14%	0	3	1	380
Industrials	33.26%	80.20%	57.72%	0	3	1	670
Property & Construction	29.54%	80.21%	53.50%	0	3	0	900
Resources	33.23%	80.15%	57.42%	0	3	3	350
Services	33.02%	80.23%	56.56%	0	3	2	690
Technology	33.17%	80.23%	59.24%	0	3	2	330

Table 3 illustrates the average numbers of main variables from different industries over the period from 2010 to 2019. As observed, an industry with most concentrated ownership is Technology and the one with less concentrated level is Property and Construction. However, the mean value of each industry is somewhat similar at the level of 50 to 60%, which is in line with the summary descriptive statistics shown in **Table 2**. Focusing on CGDummy, there is one industry having the highest CG score, which is Resources. The dummy for this industry is 3, reflecting the excellent rating. While the industry with lowest governance rating on average is Property & Construction, having a dummy of zero, which can be considered a poor rating. The rest industries received the dummy of one and two, reflecting a moderate to good rating. Agro & Food, Services, and Technology show an above-average rating as well.

Table 4
Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) TotRisk	1.000									
(2) LSH5	0.069*	1.000								
(3) CGDummy	0.118*	0.023	1.000							
(4) PerfTOBIN	0.024	0.060*	0.017	1.000						
(5) Size	-0.019	-0.044*	0.014	0.004	1.000					
(6) Lev	0.103*	-0.024	0.140*	-0.216*	0.107*	1.000				
(7) MBVA	0.073*	0.050*	0.058*	0.709*	0.034	0.033*	1.000			
(8) Age	-0.028	-0.069*	0.142*	0.008	-0.023	-0.088*	-0.018	1.000		
(9) Liquidity	0.050*	0.067*	-0.056*	0.091*	0.021	-0.189*	-0.017	0.030	1.000	
(10) IndDummy	0.375*	-0.110*	0.084*	-0.042*	0.049*	0.195*	0.000	0.036*	0.001	1.000

**** p less than 0.01, ** p less than 0.05, * p less than 0.1*

Moreover, this study also examines the correlation between each variable, which is demonstrated in **Table 4**. This is to check preliminary evidence that main variables have any correlation with the risk or not. Despite of the weak trend, it is significant that the shareholding structure is correlated with the total risk. The correlation is positive 0.069, implying the higher the ownership concentration might related to higher firm risk. This univariate analysis also shows that CG statistically has positive correlation with firm total risk at 10% significant level, suggesting that the higher CG rating results in higher firm total risk. Their relationship will be investigated deeply in the regression **Table 5** Considering the control variables, none of these pairs contain the figure higher than 0.5, implying that the correlations between them are extremely low, which is considerably good. Control variables are also correlated with the firm total risk, including leverage ratio, MBVA, firm age, and firm liquidity, and the dummies of the industry.

7.2 Empirical Findings

Table 5 represents the result of the regression analysis on the ownership concentration effect and CG effect on firm risk, where robust standard error is adjusted for the clustering at the firm level to correct serial correlation problem. The Hausman test is performed to ensure the fittest model for the hypothesis and the test yields P value at 0.000 implying that the fixed effect model should be employed.

Table 5
Regression result of concentration level of ownership and CG on firm total risk

	(1) TotRisk
LSH5	.139*
	(.072)
CGDummy	.003
	(.007)
PerfTOBIN	-.018**
	(.007)
Size	.004
	(.005)
Lev	.0003
	(.0004)
MBVA	.005**
	(.002)
Age	-.016***
	(.001)
Liquidity	.0004
	(.0004)
IndDummy	.118***
	(.008)
_cons	.393***
	(.064)
Model	FE
R-squared	.149
Hausman Test (	0.000

Notes: star represents significant level while SE shown in the parentheses

7.2.1. Analysis on ownership concentration and firm risk

The result from **Table 5** on LSH5 variable shows that we can ***reject*** the null hypothesis (**$H_{0,1}$),** which mean that ownership concentration has the significant direct effect on firm risk. Based on the result, shareholding structure in each firm tends to have the significant positive impact on the degree of firm risk at 10% significant level. By increasing the level of ownership concentration by one-unit, corporate risk will also increase by 0.139 unit. Shareholding structure play the crucial role within the firm and can be considered as one of the factors that guide firms' direction through their positions within the firm and their voting power (Charles & Snell, 1989; Fama & Jensen, 1983). Their findings confirmed that being an ownership concentrated firm

could directly and indirectly affect the firm risk. Based on principal-principal theory, an insiders would utilize their voting power over minority shareholders by exerting some opportunistic action to exploit the firms through plausible channels (Johnson et al., 2000). To demonstrate, they can appoint the firm executives to act on their own interest and to maximize their own final wealth, instead of the firm's value.

Large shareholders are less likely to get into unnecessary diversification but tends to be more focused on a single project. Major shareholders, in most firms, also have an intention to push the firm toward high-risk project, hoping to receive the higher return as well. (Shleifer & Vishny, 1986). This result from this study is also consistent with the evidence found from Vietnam and Singapore settings (Nguyen, 2011). The first rationale behind this result is due to "limited liability", which is the special feature of the listed firm. Limited liability implies that the loss of an insider is limited to only what they have invested in the firm and is also shared among all shareholders. Meanwhile, the potential gain is unlimited. Despite of high chance of facing a huge loss because a lot of their capital is invested in a firm, there is still possibility where they could gain the huge benefit, which most of the insiders think it is worthy and this leads to their risk-seeking behavior (Nguyen, 2011). Moreover, insiders can extract some private benefits from the firm's gain as well, which will even increase their wealth. Therefore, positive ownership concentration effect can be seen in **Table 5.** Other papers have the similar view of the positive relationship between ownership concentration and firm risk, and prospect theory was used to define this positive relation between ownership concentration and firm risk (Gómez-Mejía et al., 2007). Socio-emotional wealth is needs that is not a finance but personal and emotional needs of the firms that meets the owners' preference, such as ability utilize their power on other people within the firms, ability to maintain their control or to utilize their power. Most major shareholders are afraid of this non-financial loss; therefore, to avoid this loss and to keep expanding their empire, they tend to be more risk-seeking and willing to invest in risky investments or projects, hoping that it could yield them the great return and more opportunity to continuously expand their empire and power. Thus, even though major shareholders might hold an under-diversified portfolio, they are still risk-seeking, which could eventually lead the firm risk level to be higher.

The reasons mentioned above clearly shows that concentration level of ownership can play a crucial role on corporate results, such as firm risk. Also, the positive relationship between these two variables can be obviously observed in the setting of Thailand.

7.2.2 Analysis on CG and firm risk

The result from **Table 5** on CGDummy variable show that we ***fail to reject*** the null hypothesis (**$H_{0,2}$**), which mean that CG, proxied by CGDummy, does not have the significant direct effect on firm risk. It can be seen from the table that an effect of CGDummy on risk is positive 0.003, yet the relationship is not statistically significant at 1%, 5%, and 10% level.

Corporate governance in an emerging country, such as those in ASEAN, is still new and possibly yet to be as effective, compared to most Western countries such as the United States. Thus, people do not pay much attention and put much weight on this factor, resulting in its low impact on corporate risk (Jiraporn et al., 2015). It should be noted that CG in Thailand is the governance by form, not by substances. Thailand still mainly focusses on the required criteria and qualification of each firm instead of focusing on the results. Consequently, the CG rating might not reflect the true sense of the governance quality of the firm.

Findings from previous studies also state that they could not find clear relationship between CG with risk, which is in line with the result of this study (Agrawal & Knoeber, 1993) (Mehran, 1995). The reason behind an unclear relationship is that the CG score, either high or low, do not play a significant role in shaping corporate risk. Most governance matrix such as ISS and CGR reflect several categories of governance factors. Because the result of several CG factor are summarized into a single CG figure., there is high chance of noise included in the score. Factors might even get cancelled with one another as well (Koehn & Ueng, 2005). This is consistent with the evidence from other investigations confirming of the relationship between governance matrix

and corporate performance and risk are flawed as they do not actually be able to test it (Sonnenfeld, 2004). With this, CG matrix is somewhat contradicting, and it is not surprised that no significant correlation between the CG score and firm risk cannot be not found in this study.

7.2.3 Analysis on other control variables and firm risk

Besides from the main dependent variables, performance, age, and industry dummy appears to have the statistically significant impact on firm risk at the different significant levels, which is represented in **Table 5**. Performance of the firm has significant negative impact on risk at 5% significant level. This means that if the performance of the firm increases by one-unit, firm risk will reduce by 0.018 unit. Managers and insiders tend to decide the risk level of the firm based on their reference point instead of the firm's final wealth (Wiseman & Gomez-Mejia, 1998). Once the performance is lower than the expectation, managers are willing to take higher risk, hoping to achieve better performance and reduce the gap. Growth potential, represented by MBVA, is also have significant impact on firm risk, on the positive side. Several studies report that firms with higher growth potential tends to have higher risk profile (Levine, 2003). Focusing on the firm age, represented by Age, it is concluded that younger firms are likely to have higher investing potential, implying higher risk-taking, which the result is consistent with this study (Black et al., 2013). By increasing firm age by one unit, the risk will increase by 0.016 unit, at 1% significant level. Liquidity that can directly increase the firm risk shows no significant impact in this case.

7.2.4 Analysis of an indirect effect of CG on performance impact on risk

The result from **Table 6** on TOBINCG variable show that we can ***reject*** the null hypothesis ($\mathbf{H_{0,3}}$), which mean that corporate governance has the significant moderating impact on the relationship between firm performance and firm risk. As the coefficient of the interaction term (TOBINCG) is negative 0.009 at 10% significant level, it can be implied that the impact of an extra unit of performance effect on risk is

smaller among high-rated firms, relative to those poor-rated firms. In other words, the impact of performance on risk is lower in high-rated firms, and vice versa.

Table 6

Regression result of interaction term between performance and corporate governance on firm total risk

	(1) TotRisk	(2) TotRisk
PerfTOBIN	-.028***	
	(.009)	
CGDummy	.01	.006
	(.008)	(.008)
TOBINCG	-.009*	
	(.005)	
LSH5	.131*	.129*
	(.072)	(.072)
Size	.004	.003
	(.005)	(.005)
Lev	.0003	.0002
	(.0004)	(.0004)
MBVA	.005**	.008***
	(.002)	(.002)
Age	-.016***	-.016***
	(.001)	(.001)
Liquidity	.0003	.001
	(.0004)	(.0004)
IndDummy	.117***	.119***
	(.008)	(.008)
Perf_ROA		-.002**
		(.001)
ROACG		-.001*
		(.001)
_cons	.391***	.409***
	(.064)	(.064)
Model	FE	FE
R-squared	.15	.148
Hausman Test (P value)	0.000	0.000

Notes: star represents significant level while SE shown in the parentheses

The result is also supported in several governance literatures (Brown & Caylor, 2004). It shows that the firms with good CG can mitigate its risk through effective monitoring and the restriction, while at the same time, can improve corporate

performance through board and transparency related factors. This also means that an action taken by self-preference of executives or managers are also monitored. Some empirical findings state that both major shareholders and managers makes decision regarding the firm risk based on the reference point (Wiseman & Gomez-Mejia, 1998). When the performance is lower than what they have expected, they will try to reduce the gap by investing in even riskier project, wishing to receive the huge return. This is similar to window management or the tournament behavior in the field of mutual fund Despite there is not direct effect of CG rating, it can play some incremental role on incorporating corporate restrictions that can possibly alleviate the issue of an inappropriate risk level taken by managers within the firm. The regulations and restriction will reduce the room for managers to invest based on their risk preference.

The study also utilized additional proxy to represent firm performance, which is Return on Asset (ROA) and ROACG to represent the interaction term between performance and CG. It can be seen that the result is consistent across different performance measurements. CG rating also have the moderating effect on the relationship between performance and risk with 10% significant level, using ROA as a proxy for performance. The plausible reason that the incremental impact is less compared to TOBINCG is that ROA is an accounting-based measurement, which contain a lot of noise and can be interfered by several factors, such as accounting standards and limitations (Jiraporn et al., 2015). Therefore, Tobin's Q, our main performance measurement, is considered to be more solid since it is the market-based and forward-looking indicator, stated by (Shan & McIver, 2011).

7.2.5 Analysis of an indirect effect of CG on ownership concentration impact on risk

The result from **Table 7** on LSHCG variable show that we ***fail to reject*** the null hypothesis (**$H_{0,4}$**), which mean that corporate governance does not have the significant moderating impact on the relationship between firm performance and firm risk at any significant level of 1%, 5%, and 10%. It can be implied that the impact of an extra unit of ownership on risk is the same among high-rated firms and poor-rated firms.

Table 7

Regression result of interaction term between ownership concentration and corporate governance on firm total risk

	(1) TotRisk
LSH5	.129*
	(.086)
CGDummy	.003
	(.027)
LSHCG	-.01
	(.047)
PerfTOBIN	-.018**
	(.007)
Size	.003
	(.005)
Lev	.0003
	(.0004)
MBVA	.005**
	(.002)
Age	-.016***
	(.001)
Liquidity	.0004
	(.0004)
IndDummy	.117***
	(.008)
_cons	.399***
	(.07)
Model	FE
R-squared	.149
Hausman Test (P value)	0.000

Notes: star represents significant level while SE shown in the parentheses

Based on the results above, it can be assumed that CG rating does not reflect the solution the resolved the information asymmetry problem, which mainly caused by concentrated ownership, or the exploitation problem to the point where total risk is significantly affected. In other words, there is no clear difference in ownership impact in firms with either high or low governance matrix.

An empirical finding with Thailand venue also states supports this relationship (Jumreornvong et al., 2018). The rationale between low incremental impact of CG is possibly caused by, first, the noise in the rating itself. As stated in analyses of CG and risk section, some important factors might get cancelled with less important one, once they are all incorporated into a single number. Thus, governance rating does not really capture firms' actual quality of the governance practice. This reason might be applicable to this study as the prior result was also based on the same market. Another reason is that CG in emerging countries is relatively not practical and not as strong (Gibson, 2003). In Thailand, there is neither proxy voting nor cumulative voting and the board of director requires only 30% of independent directors, while 50% is required in most Western countries (Nguyen, 2011). Most of the directors are also directly appointed by the shareholders. The idea of CG and its awareness about CG in Thai market has been known only few decades ago, this reason is also plausible. The final reason is that ownership in Thailand is clearly concentrated, even comparing to those neighboring country such as Singapore or Vietnam. It is very concentrated to the level where the effect of CG seems futile. This can be supported by the regression results of the LSH5 alone, which is statistically significant at the level of 1% with high beta at 0.625. All in all, it can be assumed that the ownership impact on firm total risk is the same for firm with high and low CG scores.

In short, ownership concentration has significant positive impact on firm risk, yet this is not the case for the relationship between CG and risk. Still, despite of having no impact, CG rating can still have a significant moderating impact on the relationship between performance and risk. However, unsurprisingly, due to the high level of concentration of ownership in Thailand, incremental impact of CG cannot be seen here.

7.3 Robustness Check

So far, total risk has been used as a proxy to represent firm's degree of risk. Some prior literatures also apply idiosyncratic risk as another risk proxy as well;

therefore, my study decides to include an additional risk measurement so that the result is comparable to broader governance literature. Idiosyncratic risk is the portion of the risk level that can be directly attributed to the companies. It is calculated by the standard deviation of an error term from a regression of daily stock returns on the daily market returns. With this, alternative measurement of firm risk is included to confirm if the results are robust.

Table 8 summarizes the robust result for ***H1*** and ***H2***. The result is similar to the **Table 6** mentioned earlier in multiple regression analysis section, yet the idiosyncratic risk is added as another independent variable shown in Model (2). Fixed effect is employed in the Model both models. Hausman test, again, is tested to ensure the most appropriate model for the equation. It appears that fixed effect model is more suitable for the data for the test is 0.000.

It can be seen from the result of **Table 8** on LSH5 (Model 2) that we can ***reject*** null hypothesis ($H_{0,1}$), which mean an ownership concentration has significant impact on firm risk at 5% level. Since the sign of the coefficient is positive, by increasing ownership concentration by one-unit, firm risk will also increase by 0.127 unit. Since the results using total risk and idiosyncratic risk are both positive and statistically significant, it appears that ***H1*** is robust.

Table 8, comparing Model (1) to the Model (2), it is observed that ***H2*** is also robust. The result shows that we fail to reject the null hypothesis ($H_{0,2}$). Despite of using different risk measurement, which is idiosyncratic risk, an impact of CG on firm risk is still statistically insignificant at any levels of 1%, 5%, or 10%.

Table 8
Robustness Test: Regression result of concentration level of ownership and CG on firm total risk and idiosyncratic risk

	(1) TotRisk	(2) IdioRisk

LSH5	.139*	.127**
	(.072)	(.065)
CGDummy	.003	.001
	(.007)	(.006)
PerfTOBIN	-.018**	-.026***
	(.007)	(.007)
Size	.004	.001
	(.005)	(.005)
Lev	.0003	.0003
	(.0004)	(.0003)
MBVA	.005**	.003
	(.002)	(.002)
Age	-.016***	-.012***
	(.001)	(.001)
Liquidity	.0004	.001**
	(.0004)	(.0004)
IndDummy	.118***	.055***
	(.008)	(.007)
_cons	.393***	.342***
	(.064)	(.058)
Model	FE	FE
R-squared	.149	.096
Hausman Test (P value)	0.000	0.000

Notes: star represents significant level while SE shown in the parentheses

Table 9
Robustness Test: Regression result of interaction term between performance and corporate governance on idiosyncratic risk

	(1) TotRisk	(2) TotRisk	(3) IdioRisk	(4) IdioRisk
PerfTOBIN	-.028***		-.037***	
	(.009)		(.008)	
CGDummy	.01	.006	.008	-.001
	(.008)	(.008)	(.008)	(.007)
TOBINCG	-.009*		-.01**	
	(.005)		(.005)	
LSH5	.131*	.129*	.119*	.125*
	(.072)	(.072)	(.065)	(.065)
Size	.004	.003	.002	.001
	(.005)	(.005)	(.005)	(.005)
Lev	.0003	.0002	.0003	0.0005
	(.0004)	(.0004)	(.0003)	(0.0003)
MBVA	.005**	.008***	.003	.007***
	(.002)	(.002)	(.002)	(.002)
Age	-.016***	-.016***	-.013***	-.012***

	(.001)	(.001)	(.001)	(.001)
Liquidity	.0003	.001	.001*	.001***
	(.0004)	(.0004)	(0.0004)	(.0004)
IndDummy	.117***	.119***	.055***	.056***
	(.008)	(.008)	(.007)	(.007)
Perf_ROA		-.002**		-.004**
		(.001)		(.001)
ROACG		-.001*		-.007*
		(.001)		(.001)
_cons	.391***	.409***	.339***	.369***
	(.064)	(.064)	(.058)	(.058)
Model	FE	FE	FE	FE
R-squared	.15	.148	.098	.089
Hausman Test (P value)	0.000	0.000	0.000	0.000

Notes: star represents significant level while SE shown in the parentheses

Table 9 includes the regression result of the idiosyncratic risk as an additional risk measurement, shown in Model (3) and Model (4). The results are consistent across both risk measurements and performance measurements.

It can be seen in this table on TOBINCG that we can ***reject*** null hypothesis ($H_{0,3}$), meaning that corporate governance does play the significant moderating role on the relationship between firm performance and risk. Firm having excellent CG rating would have lower performance impact on risk, compared to those having poor CG rating. The results using different proxies are in line with one another, implying that ***H_3*** is also robust.

Illustrated in **Table 10**, LSHCG shows that we ***fail to reject*** null hypothesis ($H_{0,4}$), as corporate governance still has insignificant moderate effect, despite of using idiosyncratic risk. The indirect impact of corporate governance is not significant at any significant level of 1%, 5%, or 10%. Thus, across the firms rated differently, the ownership impact on risk is still indifferent, so we can conclude that ***H_4*** is also robust.

Table 10

Robustness Test: Regression result of interaction term between concentration level of ownership and corporate governance on idiosyncratic risk

	(1) TotRisk	(2) IdioRisk
LSH5	.129*	.127*
	(.086)	(.077)
CGDummy	.003	-.001
	(.027)	(.024)
LSHCG	-.01	-.01
	(.047)	(.042)
PerfTOBIN	-.018**	-.026***
	(.007)	(.007)
Size	.003	.001
	(.005)	(.005)
Lev	.0003	.0003
	(.0004)	(.0003)
MBVA	.005**	.003
	(.002)	(.002)
Age	-.016***	-.012***
	(.001)	(.001)
Liquidity	.0004	.001**
	(.0004)	(.0004)
IndDummy	.117***	.055***
	(.008)	(.007)
_cons	.399***	.341***
	(.07)	(.063)
Model	FE	FE
R-squared	.149	.096
Hausman Test (P value)	0.000	0.000

Notes: star represents significant level while SE shown in the parentheses

7.4 Non-linearity Test

Some prior theories and empirical research revealed that effect of ownership maybe non-linear since concentration level of ownership helps alleviate the conflict of interest issues within the firm and thus is benefiting, on the other hand, too concentrated level of shareholding structure plausibly allows insiders to exploit the minority

shareholders, which can cause the firm the detriment (Jiraporn et al., 2015). So, this study also wants to investigate the possible non-linear impact among the direct association between shareholding structure and firm risk. The results are presented in section shown in **Table 11**. Again, the equation was regressed with both fixed and random effect model, and Hausman to still provide P value at 0.000 so the research drops the results from random effect.

Particularly, the quadratic term is added to the regression model as one of the main explanatory variables. The results are consistent across two measurements of risk. In Model (1) and (2), both LSH5 and its square root term shows a significant effect to firm risk. It seems that there is the non-linearity impact in the relationship between concentration level of ownership and firm risk. This result is in line with the previous studies investigating Thai market, which the relationship does not appear to be non-linear here (Jiraporn et al., 2015; Jumreornvong et al., 2018).

Table 11
Exploring non-linearity.

	(1) TotRisk	(2) IdioRisk
LSH5	.164	.461
	(.486)	(.437)
LSH5sq	-.022	-.301
	(.434)	(.39)
CGDummy	.003	-.001
	(.007)	(.007)
PerfTOBIN	.018**	.026***
	(.007)	(.007)
Size	.003	.001
	(.005)	(.005)
Lev	0	0
	(0)	(0)
MBVA	.005**	.003
	(.002)	(.002)
Age	-.016***	-.012***
	(.001)	(.001)
Liquidity	0	.001**
	(0)	(0)
IndDummy	.118***	.055***
	(.008)	(.007)
_cons	.386***	.257**
	(.137)	(.123)

Model	FE	FE
R-squared	.149	.096
Hausman Test (P value)	0.000	0.000

Notes: star represents significant level while SE shown in the parentheses

7.5 Lead-Lag Effect

Table 12
Exploring lead-lag relationship

	(1) TotRisk	(2) IdioRisk
LSH5	.136*	.122*
	(.072)	(.065)
CGDummy_L1	-.002	-.002
	(.006)	(.005)
PerfTOBIN	.017**	.026***
	(.007)	(.006)
Size	.003	.001
	(.005)	(.005)
Lev	.0003	.0003
	(.0004)	(.0004)
MBVA	.005**	.003
	(.002)	(.002)
Age	-.015***	-.012***
	(.001)	(.001)
Liquidity	.0004	.001**
	(.0004)	(.0004)
IndDummy	.118***	.055***
	(.008)	(.007)
_cons	.399***	.348***
	(.065)	(.058)
Model	FE	FE
R-squared	.149	.096
Hausman Test (P value)	0.000	0.000

Notes: star represents significant level while SE shown in the parentheses

Due to the concern that CG practice might not take its effect in the same year, it is better to empirically investigate lead-lag relationship. The numbers of lag most literature has been using is one to two lags for the yearly data, so the model does not

lose much of its degree of freedom. To detect the lead-lag relationship between explanatory variable and the dependent variable, another variable for the lagged CGDummy was generated as another independent variable. According to the **Table 12**, the results shows that CGDummy-risk relationship is positive yet the risk impact is insignificant at any level of 1%, 5%, and 10%. To imply, CG rating has no impact on firm risk, either on total risk or idiosyncratic risk. The results are consistent across different risk measurements.

8. CONCLUSION

An impact of corporate governance on firm performance and firm risk has been widely discussed, empirically and theoretically in prior studies. The interrelationship of the ownership concentration, CG, firm risk, and performance is deeply investigated in this study. The sample of this study includes 10 years period ranged from 2010 to 2019, using Thai listed companies. Thai market has unique characteristics that make it a great setting to explore the ideas regarding shareholding structure and CG. Concentration level of ownership is relatively high in Thailand, compared to the United States, Japan, United Kingdom, or even neighbored country such as Singapore and Vietnam. It is also expected that the metrics of the developed and developing counties vary.

The regression result shows that ownership concentration has significant direct effect on firm risk on a positive side, meaning that higher level of concentration leads to higher degree of firm risk. The reasons behind this result are the "socio-emotional wealth" and "limited-liability" of insiders. This finding is also consistent with the results from prior literature. On the other hand, there is no significant relationship between CG score, represented by the dummy variable, and corporate risk. This idea can be supported by the reason that CG of Thai market is yet to be effective, compared to those in developed countries. The noise caused by too many factors including in one metric can also be another reason supporting the result. Considering an incremental effect, this study documents that governance rating does have some effects on performance-risk relationship, but no effect on ownership-risk relationship. There is no difference in the ownership effect on risk in firms with high and low governance rating. In contrast, governance rating does play some significant roles on the association between corporate performance and risk. Governance practices have the moderate impact by alleviating problem of insider utilizing their power in an incorrect way, which could also result in the exploitation of the minority shareholders in one or another. Alternative measurement of risk is also tested, and it yields that all the findings are robust. The finding also confirms that there is non-linearity and lead-lag effect for the relationship between each main variable.

9. SUGGESTIONS

Based on the empirical evidence that corporate governance, proxied by CG rating, does no play the moderating role on the linkage of ownership concentration and firm risk, it could be implied that CG rating might not help resolve the problem related to the concentration level of ownership. Therefore, I would like to suggest the regulators to add more criteria that focus more on the ownership concentration, since the concentration in Thailand is relatively high, compared to both Western and neighboring countries. Additional criteria could help discipline the concentrated firm not to exercise much of their influence and not the exploit minority shareholders. With this, CG might play some role in the ownership impact on firm risk and the concerns regarding an insider-trading could be resolved as well. The regulators can setup the reference point or the target percentage of ownership concentration that will trigger some additional criterion on those firms. For example, firm having concentration level of ownership high than 50% should be monitored with some extra checklists or requirements.

Our results confirmed an insignificance impact of corporate governance. Current process of coming up with the final figure or the CG rating is to check if the firms have completed the checklists or have the required component related to CG or not, meaning that the pure result of the governance practice is completely ignored. To suggest, an organization could find an alternative measurement or the new process of coming up with CG rating. This is to retrieve the actual governance quality of the firm by focusing more on the results earned by those governance checklists, instead of monitoring through the different components alone since the component might or might not yield the good governance quality of the firms. This will make corporate governance in Thailand to be more of “CG by substances” instead of “CG by rule”.

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