VIETNAM NATIONAL UNIVERSITY HO CHI MINH CITY

UNIVERSITY OF ECONOMICS AND LAW

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BANK RISK, CHARTER VALUE AND MARET DISCIPLINE: EVIDENCE FROM ASEAN 5

SUMMARY OF DOCTORAL DISSERTATION

HO CHI MINH CITY - 2025

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Major: Finance – Banking

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CHAPTER 1 INTRODUCTION

1.1 Problem statements

The banking system serves as a cornerstone of any economy, particularly in developing countries where stock markets are underdeveloped. Banks play three fundamental roles: channeling funds from savers to borrowers, addressing information asymmetries, and acting as delegated monitors (Allen & Carletti, 2009). By collecting deposits and extending credit, banks reduce monitoring costs and improve resource allocation efficiency (Boot & Thakor, 1997; Diamond, 1984). However, their central role also makes them vulnerable to contagion, where the collapse of one bank can trigger a domino effect across the financial system (Levine, 2005).

The ASEAN-5 countries (Indonesia, the Philippines, Malaysia, Thailand, and Vietnam) represent a compelling case study due to their robust economic growth, with an average GDP growth rate of 5.24% between 2006 and 2022, surpassing both the G7 and other emerging Asian economies (IMF, 2022b). Despite a significant contraction of -4.1% in 2020 due to COVID-19, the ASEAN-5 rebounded strongly with a 6.4% growth rate in 2022, reflecting their resilience and increasing significance in global trade. However, growing financial openness has heightened the risk of contagion within their banking systems (Ovi et al., 2020). Furthermore, institutional and regulatory frameworks across the ASEAN-5 remain inconsistent, creating challenges for banks to balance charter value, risk management, and market discipline in an evolving environment.

The 2007–2009 global financial crisis revealed critical weaknesses in risk management practices, prompting organizations like the Basel Committee on Banking Supervision (BCBS) and the International Monetary Fund (IMF) to issue guidelines aimed at enhancing risk management (BCBS, 2015; IMF, 2009). Nonetheless, inconsistent implementation across ASEAN-5 countries complicates risk governance. For example, Malaysia introduced "Risk Management Guidelines" in 2013, while Vietnam has continuously updated regulations, transitioning from basic reserve requirements to advanced measures such as stress testing models (Nguyen, 2022). However, the overall risk governance framework in ASEAN-5 remains fragmented and evolving.

Period 2007 and 2014, ASEAN countries undertook reforms to improve risk management, but delayed and inconsistent implementation of deposit insurance policies raised concerns about moral hazard, as banks might engage in higher-risk activities with guaranteed depositor compensation (Anginer et al., 2014). IMF data (2022a) indicates that ASEAN-5's average non-performing loan (NPL) ratio of 3.2% exceeds those of the U.S., China, and Japan. Meanwhile, bank charter values increased consistently from 2.78 in 2006 to 3.15 in 2022, alongside a decline in market discipline. These trends underscore the need to explore how risk, charter value, and market discipline interact to influence banking stability.

The ASEAN Banking Integration Framework (ABIF) has further increased market concentration, raising concerns about large banks becoming "too big to fail" and systemic risks spreading across the region. Without proper oversight, integration policies could

inadvertently heighten vulnerabilities in the banking sector. Thus, investigating how charter value and market discipline interact with market concentration and affect system stability is essential to address theoretical and practical gaps.

The unique characteristics of ASEAN-5, including underdeveloped financial markets and institutional frameworks, emphasize the importance of studying these interrelationships. Additionally, weak institutional environments, limited law enforcement, and political instability exacerbate risks and governance challenges, underscoring the necessity for regulatory reforms. A deeper understanding of the dynamics among bank risk, charter value, and market discipline is crucial to fostering a more resilient banking system and sustainable growth.

Prior research on these relationships remains limited, with inconsistent findings and a lack of comprehensive analysis in emerging markets like ASEAN-5. While some studies suggest higher charter values reduce risk (Keeley, 1990; Gropp & Vesala, 2004), others argue they may encourage risk-taking (Agusman et al., 2006). Similarly, the role of market discipline in risk mitigation remains contested (Ghosh, 2009a; Le, 2020). Therefore, this study, titled "Bank Risk, Charter Value, and Market Discipline: Evidence from ASEAN-5," seeks to address these gaps, offering a more holistic understanding and practical policy recommendations to enhance banking stability and resilience in the rapidly evolving financial landscape of ASEAN-5.

1.2 Research gaps

After summarizing the background of the study, the author finds out some gaps as

follows:

First, most prior studies have focused on the one-way relationship between bank risk charter value and market discipline. Therefore, this study will enrich the evidence of the interrelationship among bank risk, market discipline and charter value in emerging markets in Asia-Pacific by considering ASEAN-5 banking system.

Second, the evidence of the interrelationships among bank risk, market discipline and charter value is scanty [perhaps Ghosh (2009a) in India is one of the exceptions]. The inconsistent findings in the literature suggest that the interrelationship between market discipline and charter value may differ beyond the different economic conditions (Haq et al., 2019) and the degree of competitiveness environment (Keeley, 1990; Marcus, 1984). The experience of one economy (e.g., India in Ghosh (2009a) study could not be automatically applied to other emerging environments, especially the banking system, due to substantial variations in institutional reality. Thus, our study used cross-country data to investigate the two-way causal relationship between bank risk, charter value and market discipline. More importantly, the present study considers different critical perspectives affecting the relationships among bank risk, market discipline, and bank charter value, including the impacts of bank size, the global financial crisis (CRISIS), market concentration, institutional quality and the COVID-19 pandemic.

Last, the present study closes the gap in empirical research and offers policy measures that could be implemented in decision-making processes to promote bank stability in ASEAN-5 and other developing markets with similar banking structures.

1.3 Research objectives

1.3.1 General research objectives

The primary objective of this study is to analyze the interrelationships among bank risk, charter value, and market discipline within the ASEAN-5 region. The findings aim to provide policymakers with comprehensive insights into the critical roles of market discipline and charter value in managing bank risk.

1.3.2 Specific research objectives

From the general objective, the thesis outlines the following specific objectives:

Identify whether there are interrelationships between bank risk, charter value, and market discipline?

1.4 Research question

This study attempts to answer three main research questions as follows.

Research question 1 (RQ1): Are there interrelationships among bank risk and market discipline?

Research question 2 (RQ2): Are there interrelationships among bank risk and charter value?

Research question 3 (RQ3): Are there interrelationships among charter value, and market discipline?

1.5 Research object and research scope

1.5.1 Research object

The interrelationships among bank risk, charter value and market discipline in five countries in Southeast Asia (so-called ASEAN-5).

1.5.2 Research scope

Content: This dissertation examines the interrelationships among bank risk, charter value and market discipline in five countries in Southeast Asia (so-called ASEAN-5) including Vietnam, Indonesia, Thailand, Malaysia, and the Philippines.

*Time frame***:** The study uses data from 2006 to 2022

1.6 Research methodology and data

1.6.1 Research methodology

This study primarily employed a quantitative approach. The study uses a three-stage least squares (3SLS) estimator within simultaneous equations models (SEM) to explore the interrelationships between bank risk, charter value, and market discipline.

1.6.2 Data

The study uses the data of banks from 5 ASEAN countries: Vietnam, Indonesia, the Philippines, Malaysia and Thailand. The author chose ASEAN-5 countries because of their dynamism and diversity. These countries have different levels of development and institutional quality. Most of the financial data was taken from Thomson Refinitiv Eikon database. Furthermore, the data on the economic growth and inflation rate were obtained from the International Monetary Fund database (IMF, 2022a), while the data on the openness of the banking market were achieved from the Heritage Foundation.

1.7 Contribution of the Thesis

1.7.1 In the theoretical aspect

This study contributes to the extant literature in several ways.

First, the findings confirm that previous research has primarily focused on one-way relationships between bank risk, charter value, and market discipline, often resulting in an incomplete understanding of their interactions. Bank management should study the interrelationships among these factors.

Second, in large banks, higher risk leads to stricter market discipline, aligning with the "too big to fail" theory. In contrast, small banks show an inverse relationship due to information asymmetry, engaging in riskier activities with less oversight. These differences should guide bank management strategies.

Third, the findings show that the Global Financial Crisis (CRISIS) significantly affects the relationship between bank risk (RISK), market discipline (MD), and charter value (CV). The crisis weakened market discipline and reduced charter value in ASEAN-5, increasing risk and value depreciation, making it a crucial factor in banking management strategies.

Fourth, market concentration has a major impact on the interrelationship among bank risk, market discipline, and charter value. Higher concentration increases moral hazard, raising interest rates and defaults, reducing efficiency, and weakening depositor discipline, supporting the concentration–fragility theory. Thus, market concentration should be a key focus in management strategies.

Fifth, the findings confirm that considering the impact of institutional quality clarifies the relationships among bank risk (RISK), market discipline (MD), and charter value (CV), highlighting the efficacy of governance indicators in reducing bank stock volatility. If these factors are neglected, banks will face biased management strategies. Effective governance contributes to improved bank operations. Clear and established regulations enhance market discipline, especially in countries with transparent and accessible banking information. Furthermore, governance indicators positively influence charter value by increasing bank stability, thus elevating charter value. Therefore, institutional quality should be considered in banking management strategies.

Finally, the findings show that COVID-19 heightened banking risks and reduced market discipline, as depositors were less concerned about safety during the pandemic. However, no

direct link between COVID-19 and charter value was found, but the pandemic's impact should still be factored into banking management strategies.

1.7.2 In the practical aspect

This study contributes to policy by suggesting several key measures to enhance bank stability in ASEAN-5 and similar markets. First, stronger market discipline through transparency can prevent excessive risk-taking. Second, promoting bank charter value helps reduce risks. Third, controlling market concentration is crucial to avoid systemic risks. Fourth, improving institutional quality ensures effective regulatory enforcement. Finally, developing crisis management frameworks ensures quick responses to financial crises. Additionally, this study explores the two-way relationships between bank risk, charter value, and market discipline in ASEAN-5, using cross-country data and accounting for factors like financial crises, market concentration, and institutional quality. It is the first to examine these dynamics in ASEAN-5 and suggests that authorities should focus on market discipline and charter value to strengthen their banking systems. The findings are also applicable to banks in the broader Asia-Pacific region for improving risk management and sustainable growth.

1.8 Structure of the topic

> Chapter 1 Introduction
> Chapter 2 Theories and empirical research on bank risk, market discipline and charter value
> Chapter 3 Methodology
> Chapter 4 Result and discussion
> Chapter 5 Conclusion and implications

CHAPTER 2 THEORIES AND EMPIRICAL RESEARCH ON BANK RISK, MARKET DISCIPLINE AND CHARTER VALUE

2.1 Bank risk, market discipline, and charter value

2.1.1 Bank risk

☐ **The definition of bank risk**

Risk has been defined in various ways over time. Some definitions focus on the likelihood of an event, while others include the unpredictability of outcomes, both positive and negative. Knight (1921) considered risk as measurable uncertainty, while Bessis (2015) defined financial risk as the unpredictability of investment returns. In finance, risk often refers to uncertainty that could negatively affect earnings or wealth. Regulators and risk managers view risk as the potential for loss from uncertainty, influenced by exposure to unpredictable factors like foreign exchange or interest rates. Managing risk involves recognizing, analyzing, and mitigating its impact.

Second, financial risks are determined based on the origins of unpredictability. Financial risks may be categorized as credit risk, market risk, liquidity risk, and interest rate risk, with

subclasses based on the specific events that cause losses (Bessis, 2015). Different types of risk are discussed in turn.

The present study primarily focuses on market risk measures, particularly, bank volatility. Volatility is a statistical measure of a share price tendency to change over time. Volatility has become an important issue for six following reasons (Daly, 2011). First, investors might have found it difficult to agree that the explanation for these changes lay in information about fundamental economic factors when asset prices fluctuated sharply over a time differential as short as one or less. This might have led to an erosion of confidence in the capital market and a reduced flow of capital into equity markets. Second, for individual companies, the company's volatility is a significant factor in determining the probability of bankruptcy. The higher the volatility for a given capital structure, the higher the probability of default. Third, volatility is a significant factor in determining the bid-ask spread. The higher the stock volatility, the wider the spread between the bid and asked prices of the market marker. The volatility of the stock thus affects the liquidity of the market. Fourth, hedging techniques such as portfolio insurance are affected by the volatility level, with insurance prices increasing with volatility. Fifth, financial and economic theory introduces the notion that consumers are risk-averse. Consequently, the increased risk associated with a given economic activity should see a reduced level of participation, which will have adverse consequences for investment. Finally, over time, increased volatility may induce regulatory suppliers of agencies of capital to force organizations to allocate a more significant percentage of available capital to cash-equivalent investments to the potential detriment of efficient allocation (Daly, 2011, 2019).

☐ The role of risk management in banking

First, risk management includes recognizing significant risks, assessing the probability of different forms of risk, and implementing procedures to oversee and manage the outcomes of those risks (Pyle, 1999). The risk management process typically includes four primary components: risk identification, risk assessment, risk estimate, and risk measurement.

Second, financial institutions face unique and complex risks, requiring a comprehensive risk management approach. This involves addressing compliance, financial, hazard, operational, and strategic risks within a set risk framework (Randeva et al., 2014). Al‑Tamimi and Al‑Mazrooei (2007) described bank risk management as overseeing and controlling activities to identify, manage, and minimize risks. Risk management in banks is guided by regulatory standards, such as those from the Basel Committee, which include risk identification, assessment, monitoring, and control (BCBS, 2011). Strong risk management aligns with corporate governance, and poor governance can lead to inadequate risk processes (Clark & Urwin, 2008). Effective risk management is crucial for balancing risk and return in decision-making (Aljughaiman & Salama, 2019; Sun & Liu, 2014).

Last, risk management is vital in banking due to its broad impact on the financial system. During the 2008 financial crisis, banks faced criticism for poor risk management and governance (Kirkpatrick, 2009). Tao and Hutchinson (2013) noted that the failure of one

institution could trigger a wider collapse. Aebi et al. (2012) highlighted the growing demand for stronger risk management after the 2007 and subprime crises, pushing regulators to urge banks to improve their governance and risk frameworks.

2.1.2 Market discipline

☐ **The definition of market discipline**

First, market discipline encompasses depositors' punitive actions towards banks to accept high risks (Berger, 1991). Depositors often demand high interest rates (including the risk premium compensation for credit risk) from banks pursuing risky investment policies or withdrawing their deposits. Market discipline is recognized as one of the three fundamental pillars of the new framework, the Basel II Accord (BIS, 2001). Market discipline puts pressure on less efficient banking operations and thus may enhance the efficiency of the banking system.

Second, market discipline may be categorized as shareholders, subordinated debt holders (so-called bondholders), and depositors.

This study focuses on depositor discipline, using the implicit interest rate as a proxy for market discipline for three reasons. First, due to limited data, the implicit interest rate is employed, as seen in Hadad et al. (2011) and Ghosh (2009a). Second, depositors not only withdraw but also monitor and influence banks by adjusting deposit amounts or negotiating rates, as noted by Bliss and Flannery (2002). Risk-averse depositors seek safer banks, while risk-takers prefer riskier banks offering higher returns. Third, the implicit interest rate reflects depositors' lending decisions without government or market distortion.

☐ The role of market discipline

Market discipline plays three key roles. First, it maintains financial system stability and efficiency through natural mechanisms like market signals, investor behavior, and competition, which encourage prudent management (Hasan et al., 2013). Unlike rigid government regulations, market discipline adapts to real-time market changes (Flannery, 2001). Investors and depositors monitor financial institutions, holding them accountable by withdrawing funds or demanding higher returns when risks rise. This feedback loop ensures sound practices (Flannery, 2001). As financial markets grow more complex, market discipline becomes crucial, addressing gaps that traditional regulations may miss due to lagging oversight (Landskroner & Paroush, 2008).

Second, as government regulation becomes less effective, market discipline can step in by offering a more flexible and timely response to risks. Market forces, driven by informed participants, adapt quickly to new information, helping prevent financial instability. This discipline complements regulations by promoting transparency and accountability, encouraging institutions to adopt better risk management and governance practices. This self-regulation is vital in a financial system where interdependencies can increase systemic risks.

Lastly, market discipline is not a cure-all. Bliss and Flannery (2002) highlight that effective supervision and influence are essential for market discipline to work efficiently. This requires participants to be motivated and capable of monitoring and using information to influence managers' decisions, relying on transparency and competence in interpreting the data (Bliss, 2004).

2.1.3 Charter value

☐ The definition of charter value

Charter value is defined as the present value of the future profits (revenues and overall costs, including the cost of capital) that a firm is expected to earn as a going concern (Demsetz et al., 1996; Haq et al., 2019). The charter value represents the value created by a bank as an enterprise. It denotes the bank's competitive advantage over competing banks and other financial intermediaries, which allows them to earn sustainable revenues in the future (Keeley, 1990).

This study, the thesis uses the charter value variable, specifically the charter value (Tobin Q), to represent charter value for the following reasons. Tobin's Q compares the market value of a company to its replacement cost, offering a broader view of the company's worth. Traditional accounting-based performance measures, like profitability ratios, often fail to capture the total value of a bank's charter, missing out on both bank-specific factors and monopoly rents (González-Rodríguez, 2008). By using charter value based on market value, researchers can achieve a more comprehensive measure of bank performance that includes these important factors. Additionally, a significant advantage of charter value is its ability to offer an alternative perspective to traditional accounting-based performance measures. Studies indicate that it often shows smaller average errors and a higher average correlation with a company's performance compared to purely accounting-based metrics like profitability (Mc Farland, 1988). In summary, using Tobin's Q to measure charter value gives a more complete and accurate picture of a bank's performance, capturing aspects that traditional financial ratios might overlook.

☐ The role of charter value

Charter value plays a key role in reducing excessive risk-taking by banks. Banks with high charter value, which represents the expected future profits of a firm, are less likely to take aggressive lending risks because they have more to lose in case of default (Keeley, 1990). Charter value acts as a disciplinary mechanism, encouraging banks with strong franchises to adopt risk-reducing strategies to protect their brand, profitability, and stability (Demsetz et al., 1996; Marcus, 1984). These banks prioritize long-term sustainability over short-term gains, recognizing that maintaining financial stability benefits both their interests and the broader financial system.

Charter value can help mitigate moral hazard and promote banking stability. It represents the present value of a bank's future earnings and serves as a tool against the moral hazard created by federal safety nets. These safety nets, while ensuring financial stability, can lead banks to

take excessive risks, expecting government bailouts if they fail. However, banks with high charter value have more to lose from risky behavior due to their established reputation and financial stability. To protect their franchise, these banks adopt responsible practices, hold more capital, and maintain diversified loan portfolios, reducing the need for government intervention.

2.2 Relevant theories
2.2.1 Asymmetric Information Theory

Akerlof (1978) highlights that in financial transactions, banks often have more information than depositors or investors, leading to adverse selection and moral hazard. Adverse selection arises when investors cannot accurately assess a bank's risks, causing overreactions to negative signals and threatening liquidity (Diamond & Dybvig, 1983). This weakens market discipline and allows risks to go unnoticed (Hadad et al., 2011). Enhanced transparency and disclosure are critical solutions (Nier & Baumann, 2006). Moral hazard occurs when banks, protected by deposit insurance or bailouts, are incentivized to pursue high-risk strategies to maximize profits (Keeley, 1990). Deposit insurance reduces depositor oversight, while its absence encourages risk monitoring (Demirgüç-Kunt & Huizinga, 2004). In summary, these issues underscore the need for greater transparency, stronger regulatory frameworks, and improved market discipline to mitigate the negative impacts of asymmetric information.

2.2.2 Stakeholder theory

Stakeholder theory highlights conflicts of interest between managers and other key contributors to a company's success, including shareholders, creditors, employees, suppliers, and customers (Cyert & March, 1963; Freeman et al., 2020). Freeman (2010) defined stakeholders as any group that can influence or be influenced by a company's actions. This is particularly important in the banking sector, where stakeholder perspectives, such as those of regulatory agencies and depositors, are crucial. The theory emphasizes that depositors discipline banks by demanding higher interest rates or withdrawing funds when their interests are threatened, limiting risky investments (Hoang et al., 2014; Gruben et al., 2003).

2.2.3 Charter value hypothesis

The charter value hypothesis, introduced by Keeley (1990), suggests that banks with high charter value are incentivized to avoid risky behavior. This value serves as a buffer against risk-taking, particularly in the banking sector, by mitigating the negative effects of the government's safety net (Demsetz et al., 1996). Keeley (1990) found an inverse relationship between bank risk-taking and charter value, with high charter value encouraging more prudent risk strategies. Regulations that enhance charter value promote caution, while deregulatory actions that increase competition can reduce charter value and elevate risk-taking (Saunders & Wilson, 2001).

2.2.4 Theory of substitution Effects

The substitution effect theory, introduced by Hicks (1939), classifies goods based on their relationship as substitutes or complements, providing insights into consumer behavior. This concept has been applied to financial stability, where charter value and market discipline are seen as complementary forces promoting prudent risk management (Keeley, 1990; Flannery, 2001). However, research suggests a substitutive relationship between them (Haq et al., 2013). When a financial institution has a high charter value, depositors may monitor the institution less closely, assuming its high value ensures safety, even if it engages in riskier behavior (Ghosh, 2009a).

2.3 Empirical evidence and hypothesis development.

2.3.1 Empirical studies in the relationships between bank risk and market discipline

In the first strand, there seemingly appears a continuing agreement on the inverse relationship between market discipline and bank risk. In the second strand, few studies have investigated the determinants of market discipline when controlling for the impact of bank risk. In sum, the present study differs from prior studies in several ways. First, most studies have primarily investigated the one-way relationship between bank risk and market discipline, whereas this study will examine the two-way relationship between them. Second, prior studies have mainly focused on banks in a single country, such as Hadad et al. (2011) in Indonesia, Le (2020a) in Vietnam, and Ghosh (2009a) in India. This study will be conducted within the context of the ASEAN-5 countries.

Overall, based on theoretical analysis and empirical research, it is anticipated a potential two-way relationship between bank risk and market discipline. Therefore, the following hypotheses relating to RQ1 will be tested:

$H_{1:}$ There is a bi-directional relationship between bank risk and market discipline.

2.3.2 Empirical studies in the relationships between bank risk and charter value

The literature on the relationship between bank risk and charter value can be divided into two strands. The first strand has focused on the one-way relationship of charter value impact on bank risk. The second strand has attempted to examine the impact of bank risk on charter value. These will be discussed in turn.

In sum, theoretical analysis and empirical research indicate a potential two-way relationship between bank risk and charter value. Therefore, the following hypotheses relating to RQ2 will be tested:

$H_{2:}$ There is a bi-directional relationship between bank risk and charter value.

2.3.3 Empirical studies in the relationships between charter value and market discipline

In the first strand, several studies have attempted to examine the impact of market discipline on bank charter value and show a positive association between them. The second strand examines the impact of banks' charter value on market discipline. In sum, theoretical analysis

and empirical research suggest a sign of a potential two-way relationship between charter value and market discipline. Hence, the following hypotheses relating to RQ3 will be tested:

H_3: There is a bi-directional relationship between charter value and market discipline.

2.4 Research gaps

To sum up, three gaps in the literature on the relationships between bank risk, charter value, and market discipline have been identified.

First, this is the first study to investigate the bidirectional relationships among bank risk, charter value, and market discipline in ASEAN-5. Second, the robustness check will investigate whether the bidirectional relationship between bank risk, charter value, and market discipline holds when taking into account factors such as bank size, the global financial crisis, market concentration, institutional quality, and the Covid-19 pandemic. By incorporating these variables, the study aims to ensure the reliability of its findings and to explore the stability of these relationships under different condition. Last, the present study closes the gap in empirical research and offers policy measures that could be implemented in decision-making processes to promote bank stability in ASEAN-5 and other developing markets with similar banking structures.

CHAPTER 3 METHODOLOGY

3.1 Research models

A SEM with 3SLS estimation

Equations 1-3 in a SEM can be written as follows:

$$RISK_{i,t} = \alpha_0 + \alpha_1 MD_{i,t} + \alpha_2 CV_{i,t} + \alpha_3 X_{i,t} + \alpha_4 Z_{1t} + \varepsilon_{1i,t} \tag{1}$$

$$CV_{i,t} = \beta_0 + \beta_1 RISK_{i,t} + \beta_2 MD_{i,t} + \beta_3 Y_{i,t} + \beta_4 Z_{2t} + \varepsilon_{2i,t} \tag{2}$$

$$MD_{i,t} = \gamma_0 + \gamma_1 RISK_{i,t} + \gamma_2 CV_{i,t} + \gamma_3 K_{i,t} + \gamma_4 Z_{3t} + \varepsilon_{3i,t} \tag{3}$$

where $RISK_{i,t}$, $CV_{i,t}$, and $MD_{i,t}$ are three endogenous variables of bank i in year t and other regressors on the right hand side are exogenous variables that are discussed in turn.

3.2 Variables measurement

Bank risk (RISK). RISK can be proxied by different measures. The most common measure for listed bank is the annual volatility of weekly stock price (Galloway et al., 1997; Ghosh, 2009a; Hovakimian & Kane, 2000) because listed banks are the focus of this investigation.

Charter value (CV): It is evident that the prevalent methods for measuring charter value (charter value) include Ghosh (2009a) approach, which utilizes the ratio of the market value of equity to the book value of equity, and Niu (2012) method, which employs the ratio of the

market value of assets to the book value of assets. However, this thesis opts to adopt the formula proposed by (González-Rodríguez, 2008) instead of relying solely on these existing methodologies. The rationale behind this choice is that González-Rodríguez's (2008) formula integrates the book value, the market value of common stock, and deferred taxes, thereby providing a more comprehensive reflection of the key factors influencing the expected profitability of banks.

Market discipline (MD): The adoption of the ratio between interest expenses (IE) / total deposits (TD) as a proxy for Market Discipline (MD) is not solely dictated by data limitations but is firmly rooted in robust theoretical frameworks, including the theories of market discipline and moral hazard.

3.3 Research methodology

3.3.1 Simultaneous equations model

A simultaneous equations model (SEM) is a statistical method traditionally used in fields like consumer psychology and behavioral sciences (Ramlall, 2016), but it is increasingly applied in finance (Chang et al., 2009) due to its ability to address complex data questions. SEM's development in economics originated from the Cowles Commission at the University of Chicago in the late 1940s, with Haavelmo (1944) pioneering the application of probability methods to econometric models. Koopmans and Hood (1953) extended this work, establishing the theory and estimation methods for SEM (Anderson, 1991; Baltagi, 2021). This study utilizes SEM to address multiple interdependencies simultaneously (Adesete, 2018). The general form of SEM model is constructed as follows:

$$RISK = f(MD, CV, Control\ variables) \tag{10}$$

$$CV = f(RISK, MD, Control\ variables) \tag{11}$$

$$MD = f(RISK, CV, Control\ variables) \tag{12}$$

3.3.2. Justification of three least square (3SLS) estimation within SEM

In summary, 3SLS is an advanced econometric estimation method used for systems of interrelated equations (Belsley, 1988; Intriligator, 1978). It combines the strengths of SUR (Altunbas et al., 2007) and 2SLS (Kwan & Eisenbeis, 1997) to model complex economic relationships more effectively. As an instrumental variables estimation technique, 3SLS addresses endogeneity and measurement errors. Its key advantage lies in accounting for correlations among unobserved disturbances across equations, improving the accuracy of parameter estimates. Additionally, 3SLS allows for imposing restrictions on coefficients, enhancing estimation efficiency by incorporating theoretical and empirical insights (AlDakhil, 1998).

3.3.3 Granger causality test

The following pairwise Granger causality model is formed:

$$RISK_{i,t} = \alpha_{0,i} + \sum_{j=1}^{k} \alpha_{1,i} RISK_{i,t-j} + \sum_{j=1}^{k} \alpha_{2,i} MD_{i,t-j} + \sum_{j=1}^{k} \alpha_{3,i} CV_{i,t-j} + \varepsilon_{i,t} \quad (20)$$

$$CV_{i,t} = \gamma_{0,i} + \sum_{j=1}^{k} \gamma_{1,i} CV_{i,t-j} + \sum_{j=1}^{k} \gamma_{2,i} RISK_{i,t-j} + \sum_{j=1}^{k} \gamma_{3,i} MD_{i,t-j} + \mu_{i,t} \quad (21)$$

$$MD_{i,t} = \beta_{0,i} + \sum_{j=1}^{k} \beta_{1,i} MD_{i,t-j} + \sum_{j=1}^{k} \beta_{2,i} RISK_{i,t-j} + \sum_{j=1}^{k} \beta_{3,i} CV_{i,t-j} + v_{i,t} \quad (22)$$

where i denotes the number of banks ($i = 1, 2, 3..., N$), t is the time period ($t = 1, 2, 3, ..., T$), and j represents the lag length. ε_t, v_t and μ_t represent error terms considering white noise and are possibly correlated each other for a bank i. The statistically significant coefficients in equations 32-34 suggest the Granger causality between perspective variables (Granger, 1969). Thornton and Batten (1985) indicated that the results of Granger-causality tests are extremely sensitive to the lag condition. The tests are based on panel regression and are undertaken using one, two and three lags as commonly suggested by econometric literature Nguyen (2012) and Wooldridge (2001).

3.3.4 Unit root test

Prior studies have suggested that the unit root test should be carried out prior to the SEM estimation (Le, 2020b; Nguyen, 2012). Therefore, testing the presence of non-stationary variables used in this study is essential.

3.4 Source and reliability of data

The requisite data for this study were acquired from four principal sources. Bank-specific information was collected from the Thomson Refinitiv Eikon database. Additionally, data pertaining to economic growth and inflation rates were sourced from the International Monetary Fund database (IMF, 2022b). Data regarding the openness of the banking market were obtained from the Heritage Foundation. Information on institutional quality was extracted from the Worldwide Governance Indicators, which are maintained within the World Bank database. Lastly, data on market concentration were retrieved from the World Bank database. Therefore, the data provided are reliable for the study.

3.5 The research framework

Figure 3.1 The research framework
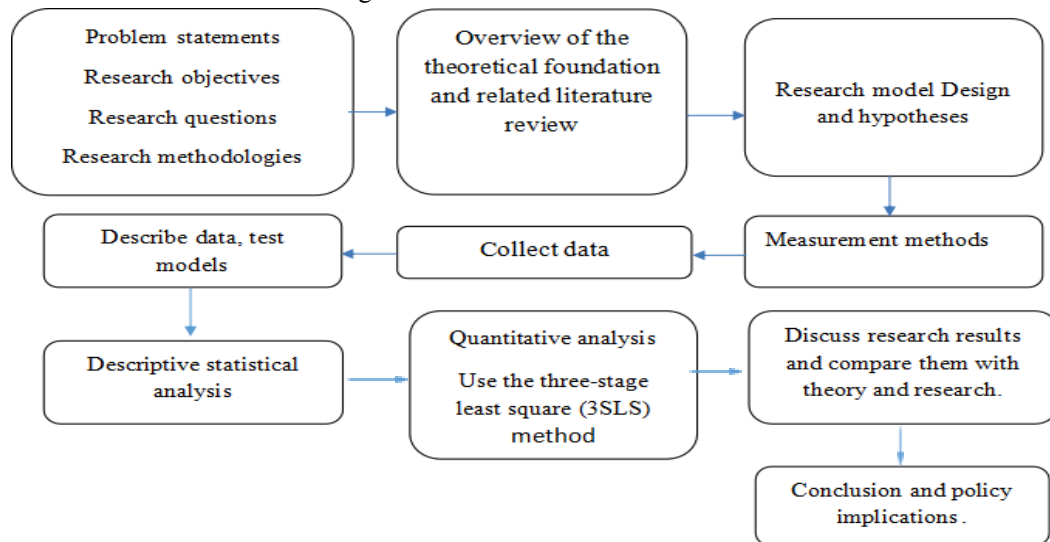
Source: proposed by the author

CHAPTER 4 RESULT AND DISCUSSION

4.1 Data analysis

4.1.1 An overview of the relationship among Bank Risk, Market Discipline, and Charter Value in ASEAN 5

The analysis of banking data in five ASEAN countries (2006–2022) shows rising bank risk during crises like the 2008 financial crash and the COVID-19 pandemic, while market discipline declined, especially from 2020 to 2021 due to government interventions. Despite increased risks, bank charter values grew steadily, suggesting higher profitability or less competition. The weakening of market discipline appears linked to greater bank risk, even as charter values continued to rise.

4.1.2 Descriptive statistics

Table 4.1: The descriptive statistics of variables used in this study

Variables	Definitions	Obs.	Mean	SD	Min	Max
RISK	The yearly volatility of weekly stock returns	1,252	0.32	0.211	0.048	1.284
MD	The ratio of interest expenses to total deposits	1,252	0.041	0.023	0.007	0.104
CV	The book value of assets minus the book value of equity minus deferred taxes plus the market value of common stock to book value asset	1,252	2.9	0.358	0.909	3.506
SIZE	The natural logarithm of total assets	1,252	22.663	1.772	18.203	25.683
ROA	Returns on assets	1,252	0.009	0.012	-0.057	0.031
LATA	The ratio of liquid assets to total assets	1,252	0.339	0.271	-0.557	0.991
LEV	The proportion of equity capital to total assets	1,252	0.122	0.052	0.045	0.35
LOANGR	A change in loans over the previous year	1,163	0.001	0.003	-0.01	0.014

DEPO	The proportion of total deposits to total assets	1,252	0.77	0.082	0.49	0.905
GRDEP	A change in deposits over the previous year	1,209	0.004	0.059	-0.223	0.201
NIETA	The proportion of non-interest expenses to total assets	1,252	0.029	0.015	0.009	0.091
NIC	The proportion of non-interest income to total income	1,252	0.296	0.147	0.032	0.677
FREE	The banking freedom index	1,252	51.486	10.235	30	70
GDP	The growth rate of gross domestic products	1,252	0.047	0.029	-0.095	0.087
INF	The inflation rate	1,252	0.038	0.028	-0.014	0.199

Source: Author's calculation

4.1.3 Correlation matrix

Table 4.2: Correlation Matrix between variables used in the study

RISK	MD	CV	SIZE	ROA	LATA	LEV	DEPO	LOANGR	GRDEP	NIETA	NIC	FREE	GDP	INF
0.307***														
0.172***	0.489***													
-0.364***	-0.477***	0.047*												
-0.268***	-0.191***	0.099***	0.353***											
0.108***	0.157***	0.212***	-0.355***	-0.078*										
0.225***	0.001	-0.015	-0.446***	-0.069**	0.125***									
-0.034	0.025	0.056**	-0.091***	-0.133***	0.107***	-0.427***								
0.065**	0.062**	0.121***	-0.127***	0.119**	-0.103**	0.019	-0.005							
-0.094**	-0.095***	-0.024	0.052*	-0.022	0.015	-0.173***	0.343***	0.057**						
0.144***	0.230***	0.112***	-0.363***	-0.215***	-0.008	0.307***	-0.125**	-0.008	-0.047*					
-0.222***	-0.356***	-0.264***	0.449***	0.027	-0.057**	-0.277***	-0.102**	-0.136***	0.014	-0.126***				
0.011	-0.353***	-0.303***	0.041	-0.113**	-0.232***	0.353***	-0.240***	-0.232***	-0.101**	0.022	-0.009			
-0.135***	0.149***	0.173***	-0.091**	0.099***	0.180***	-0.110**	0.122***	0.162***	0.001	0.034	-0.084**	-0.295***		
0.051*	0.396***	0.278***	-0.228***	0.091***	0.177***	-0.034	0.061**	0.202***	0.127	0.127***	-0.221**	-0.432***	0.342***	

Source: Author's calculation

4.1.4 The result of the unit root test

Before conducting pairwise Granger causality tests, we need to check the variables' stationarity to ensure the regression results are reliable. The unit root test results are shown in Table 4.3 using the Im, Pesaran, and Shin test (Im et al., 2003). The test results indicate that a few variables are non-stationary at their levels but become stationary when transformed into their first differences. These results suggest that the *p*-value (Prob) < 0.05. Therefore, we reject the null hypothesis (H_0) that the data is non-stationary. This implies that the data is stationary at the first differences. Thus, the data can be analyzed using pairwise Granger causality tests.

Table 4.3 The result of the unit root test

Null hypothesis: The data is non-stationary	Level		1st difference	
Variable	Intercept	Intercept and trend	Intercept	Intercept and trend
RISK	-14.06***	-7.82***	-34.09***	-15.89***
MD	-2.25***	-1.47*	-18.58***	-6.74***
CV	-10.68***	-5.42***	-27.08***	-15.39***
SIZE	-0.71	1.66	-14.78***	-7.09***
ROA	-7.03***	-2.37***	-23.65***	-12.20***
LATA	-6.91***	-2.17***	-22.46***	-11.58***
LEV	-0.62	-0.93	-20.51***	-9.68***
LOANGR	-17.83***	-9.59***	-35.07***	-16.74***
DEPO	-3.04***	-2.81***	-22.71***	-10.93***
GRDEP	-22.99***	-11.44***	-38.51***	-18.77***
NIETA	-3.077***	-1.14***	-21.42***	-10.07***
NIC	-6.41***	-2.73***	-22.09***	-9.68***
FREE	-5.3***	-2.4***	-15.40***	-6.48***
GDP	-2.98***	-5.73***	-25.04***	-11.23***
INF	-9.76***	-2.72***	-25.21***	-12.29***

Source: Author's calculation

4.1.5 The result of the Granger causality test

Table 4.4 presents results from pairwise Granger causality tests using panel regression with one to three lags (Nguyen, 2012; Wooldridge, 2001; Le & Pham, 2021). The findings indicate a potential bi-directional relationship between bank risk (RISK), charter value (CV), and market discipline (MD), where changes in one variable may Granger-cause changes in another. This highlights the interconnectedness of these variables and the complex dynamics within the banking sector, emphasizing the need to consider both their individual and mutual influences.

Table 4.4 Pairwise Granger-causality tests

Number of Lags	1		2		3	
Null Hypothesis	F-Statistics	Prob.	F-Statistics	Prob.	F-Statistics	Prob.
RISK does not Granger cause MD	0.986	0.32	4.546	0.01	6.907	0.000
MD does not Granger cause RISK	110.741	0.00	52.898	0.000	32.165	0.000
RISK does not Granger cause CV	1.032	0.309	18.444	0.000	14.577	0.000
CV does not Granger cause RISK	12.055	0.000	5.817	0.003	4.439	0.004
MD does not Granger cause CV	19.408	0.000	6.622	0.001	5.604	0.000
CV does not Granger cause MD	24.491	0.000	11.332	0.000	7.66	0.000

Source: Author's calculation

4.1.6 The result of identification test

The information presented in Table 4.5 provides insight into the stable values exhibited by both endogenous and exogenous variables within the equations. Specifically, the structural coefficients, ranging from -0.5 to 0.5, as depicted in the table, hold significance as they serve as benchmarks for identification within SEM methodologies. The significance of these coefficients lies in their role in determining the identifiability of the model.

Table 4.5 the results of identification test in SEM

Endogenous coefficients matrix			
	RISK	MD	CV
RISK	-1		
MD	0.5	-1	
CV	0.5	0.5	-1

Exogenous coefficients matrix													
	SQCV	SIZE	ROA	LOANGR	DEPO	LATA	LEV	GRDEP	NIETA	NIC	FREE	GDP	INF
RISK	0.5	0.5	0	0.5	0	0.5	0	0	0	0	0.5	0.5	0
MD	0.5	0.5	0	0	0	0.5	0.5	0.5	0.5	0	0.5	0.5	0.5
CV	0	0	0.5	0	0.5	0	0	0	0	0.5	0	0.5	0.5

Source: Author's calculation

4.2 The results of simultaneous equations model

Table 4.6 The results of baseline model

Part 1A. First equation of SEM		Part 1B. First equation of SEM	
	RISK		ZSCORE
Constant	-11.835(4.612)	Constant	19.745(2.441)
MD	-4.595 ***(0.929)	MD	1.680*** (0.455)
CV	11.46***(3.315)	CV	-14.728***(1.781)
SQCV	-1.682***(0.487)	SQCV	2.117***(0.264)
SIZE	-0.302 ***(0.057)	SIZE	0.265*** (0.030)
LOANGR	0.003 (0.015)	LOANGR	-0.023*** (0.005)
LATA	-0.000 (0.038)	LATA	0.005 (0.023)
FREE	-0.001 (0.001)	FREE	-0.001*** (0.000)
GDP	-0.016 ***(0.002)	GDP	0.002** (0.001)
Bank fixed effects	Yes	Bank fixed effects	Yes
No. Obs	1,163	No. Obs	1,162
Part 2A. Second equation of SEM		**Part 2B. Second equation of SEM**	
	MD		MD
Constant	27.716(5.741)	Constant	34.523(4.011)
RISK	0.628***(0.117)	ZSCORE	-1.481*** (0.159)
CV	-21.625 ***(4.476)	CV	-25.014***(2.950)
SQCV	2.966***(0.619)	SQCV	3.589***(0.430)

SIZE	0.477 ***(0.098)	SIZE	0.415*** (0.049)
GRDEP	-0.009 (0.021)	GRDEP	-0.049*** (0.011)
LATA	-0.052 ***(0.019)	LATA	-0.065*** (0.016)
LEV	0.478 ***(0.126)	LEV	0.644*** (0.115)
NIETA	0.638 ***(0.210)	NIETA	0.957*** (0.177)
FREE	0.001 ***(0.000)	FREE	0.001*** (0.000)
GDP	-0.008 ***(0.002)	GDP	0.000 (0.000)
INF	0.010 ***(0.002)	INF	0.008*** (0.001)
Bank fixed effects	Yes	Bank fixed effects	Yes
No. Obs	1,163	No. Obs	1,162
Part 3A. Third equation of SEM		**Part 3B. Third equation of SEM**	
	CV		CV
Constant	3.951(0.046)	Constant	3.799(0.045)
RISK	-0.427*** (0.064)	ZSCORE	0.903***(0.115)
MD	-5.333***(0.381)	MD	-7.914***(0.468)
ROA	-0.949*** (0.311)	ROA	-2.067***(0.355)
DEPO	0.197*** (0.0333)	DEPO	0.460***(0.055)
NIC	0.001 (0.019)	NIC	0.060*** (0.021)
GDP	0.007*** (0.001)	GDP	0.002 *** (0.001)
INF	0.003*** (0.001)	INF	0.005*** (0.001)
Bank fixed effects	Yes	Bank fixed effects	Yes
No. Obs	1,163	No. Obs	1,162

Source: Author's calculation

4.2.1 Investigating the interrelationships between bank risk and market discipline (RQ1)

Part 1A of Table 4.6 shows that the coefficient of MD is statistically significant and negative at the 1% level. Part 2A of Table 4.6 indicates that the coefficient of RISK is statistically significant and positive at the 1% level. Thus, the hypothesis 1 is not rejected. Alternatively, there is a bi-directional relationship between bank risk and market discipline. Part 1B and Part 2B also indicate the positive relationship between MD and ZSCORE and the negative one between ZSCORE and MD, thus confirming this conclusion.

4.2.2 Investigating the interrelationships between bank risk and charter value (RQ2)

Part 1A of Table 4.6 shows that the coefficient of CV is statistically significant and positive at the 1% level. Part 3A of Table 4.6 indicates that the coefficient of RISK is statistically significant and negative at the 1% level. Thus, the hypothesis 2 is not rejected. Alternatively, there is a bi-directional relationship between bank risk and charter value. Part 1B and Part 3B also indicate the negative relationship between CV and ZSCORE and the positive one between ZSCORE and CV, thus confirming this conclusion..

4.2.3 Investigating the interrelationships between charter value and market discipline (RQ3)

Part 2A of Table 4.6 shows that the coefficient of CV is statistically significant and negative at the 1% level. Part 3A of Table 4.6 indicates that the coefficient of MD is statistically significant and negative at the 1% level. Thus, the hypothesis 3 is not rejected. Alternatively, there is a bi-directional relationship between charter value and market discipline. When looking at Part 2B and Part 3B, there appears to be a two-way negative relationship between CV and MD.

4.3 Robustness test

4.3.1 Investigating whether the interrelationships among bank risk, charter value, and market discipline remain robust when controlling for bank size

In sum, the results presented in Table 4.7 indicate that the bi-directional relationships among bank risk, charter value, and market discipline mainly persist and differ between small and large banks.

Table 4.7. The results of subsamples

Part 1A. First equation of SEM		Part 1B. First equation of SEM	
	RISK		**RISK**
Constant	-3.668(3.407)	Constant	-8.146(14.226)
MD	2.142** (0.890)	MD	-8.194*** (1.557)
CV	4.407*(2.522)	CV	9.481(9.838)
SQCV	-0.625**(0.319)	SQCV	-1.479(1.574)
Bank fixed effects	Yes	Bank fixed effects	Yes
No. Obs	601	No. Obs	562
Part 2A. Second equation of SEM		**Part 2B. Second equation of SEM**	
	MD		**MD**
Constant	1.551(0.663)	Constant	4.877(2.064)
RISK	0.143***(0.034)	RISK	-0.047** (0.022)
CV	-0.127**(0.506)	CV	-3.142**(1.465)
SQCV	0.147**(0.064)	SQCV	0.479**(0.233)
Bank fixed effects	Yes	Bank fixed effects	Yes
No. Obs	601	No. Obs	562
Part 3A. Third equation of SEM		**Part 3B. Third equation of SEM**	
	CV		**CV**
Constant	3.857(0.067)	Constant	3.936(0.075)
RISK	-0.596***(0.136)	RISK	-0.232*** (0.066)
MD	-3.132***(0.882)	MD	-5.189***(0.432)
Bank fixed effects	Yes	Bank fixed effects	Yes

No. Obs	601	No. Obs	562

4.3.2 Investigating whether the interrelationships among bank risk, charter value, and market discipline remain robust when controlling for the global financial crisis

Table 4.8 The results of considering the global financial crisis

Part 1. First equation of SEM	
	RISK
Constant	-12.387(5.193)
MD	-3.524 *** (0.923)
CV	11.500 ***(3.673)
SQCV	-1.579***(0.550)
CRISIS	0.066 ***(0.024)
Bank fixed effects	Yes
No. Obs	1,163
Part 2. Second equation of SEM	
	MD
Constant	28.848(7.366)
RISK	0.779*** (0.163)
CV	-21.726*** (5.511)
SQCV	2.962***(0.768)
CRISIS	-0.132 ***(0.034)
Bank fixed effects	Yes
No. Obs	1,163
Part 3. Third equation of SEM	
	CV
Constant	3.876(0.048)
RISK	-0.194***(0.067)
MD	-4.927***(0.338)
CRISIS	-0.021**(0.010)
Bank fixed effects	Yes
No. Obs	1,163

Part 1 of Table 4.8 shows that the coefficient of MD is statistically significant and negative at the 1% level, while the coefficient of CV is statistically significant and positive at the 1% level. Part 2 of Table 4.8 shows that the coefficient of RISK is statistically significant and positive at the 1% level, while the coefficient of CV is statistically significant and negative at the 1% level. Part 3 of Table 4.8 shows that the coefficients of RISK and MD are statistically significant and negative at the 1% level. Together, the results confirm the existence of a bidirectional relationship between bank risk, charter value, and market discipline when considering the impact of the global financial crisis.

4.3.3 Investigating whether the interrelationships among bank risk, charter value, and market discipline remain robust when controlling for market concentration

Table 4.9 The results of considering the market concentration

Part 1. First equation of SEM		
	RISK	RISK
Constant	-13.218(4.651)	-11.537(4.501)
MD	-2.896***(0.913)	-3.258***(0.935)
CV	12.794***(3.394)	11.748***(3.307)
SQCV	-1.610***(0.486)	-1.416***(0.472)
CR3	0.002***(0.001)	
CR5		0.002**(0.001)
Bank fixed effects	Yes	Yes
No. Obs	1,077	1,077
Part 2. Second equation of SEM		
	MD	MD
Constant	14.840(2.955)	18.331(3.690)
RISK	0.357***(0.060)	0.452***(0.076)
CV	-11.891***(2.359)	-14.821***(2.964)
SQCV	1.474***(0.303)	1.817***(0.375)
CR3	-0.002***(0.000)	
CR5		-0.002***(0.000)
Bank fixed effects	Yes	Yes
No. Obs	1,077	1,077
Part 3. Third equation of SEM		
	CV	CV
Constant	3.989(0.050)	4.012(0.049)
RISK	-0.325***(0.051)	-0.283***(0.049)
MD	-5.281***(0.423)	-5.188***(0.402)
CR3	-0.000(0.000)	
CR5		-0.001(0.000)
Bank fixed effects	Yes	Yes
No. Obs	1,077	1,077

Source: Author's calculation

Part 1 of Table 4.9 shows that the coefficient of MD is statistically significant and negative at the 1% level, while the coefficient of CV is statistically significant and positive at the 1% level. Part 2 of Table 4.9 shows that the coefficient of RISK is statistically significant and positive at the 1% level, while the coefficient of CV is statistically significant and negative at the 1% level. Part 3 of Table 4.9 shows that the coefficient of RISK and MD are statistically significant and negative at the 1% level. Overall, the results confirm the existence of a bidirectional relationship between bank risk, charter value, and market discipline when considering the effect of the market concentration.

4.3.4 Investigating whether the interrelationships among bank risk, charter value, and market discipline remain robust when controlling for institutional quality

Table 4.10 The results of considering the institutional quality

Part 1. First equation of SEM			
	RISK		
Constant	-5.484(4.428)	-12.048(5.403)	-8.746(4.228)
MD	-3.343***(1.008)	-4.242***(0.961)	-3.947***(0.943)
CV	7.870** (3.299)	11.936***(3.894)	10.024*** (3.125
SQCV	-0.768 *(0.469)	-1.411**(0.558)	-1.200*** (0.446)
CL	0.003 (0.053)		
PL		-0.133***(0.038)	
VA			0.072(0.044)
Bank fixed effects	Yes	Yes	Yes
No. Obs	1,077	1,077	1,077
Part 2. Second equation of SEM			
	MD		
Constant	13.961(2.768)	19.488(2.923)	15.904(2.892)
RISK	0.362***(0.057)	0.457***(0.053)	0.385*** (0.059)
CV	-11.425 ***(2.236)	-15.092***(2.239)	-13.036*** (2.348)
SQCV	1.358 ***(0.282)	1.877*** (0.293)	1.591***(0.297)
CL	0.076 ***(0.019)		
PL		0.146***(0.020)	
VA			0.024***(0.011)
Bank fixed effects	Yes	Yes	Yes
No. Obs	1,077	1,077	1,077
Part 3. Third equation of SEM			
	CV		
Constant	3.891(0.041)	3.903(0.062)	4.078(0.055)
RISK	-0.163*** (0.039	-0.202*** (0.055)	-0.317*** (0.048)
MD	-4.290***(0.336)	-4.817*** (0.442)	-5.321*** (0.419)
CL	0.085 ***(0.015)		
PL		0.023* (0.014)	
VA			0.073***(0.018)
Bank fixed effects	Yes	Yes	Yes
No. Obs	1,077	1,077	1,077

Source: Author's calculation

Part 1 of Table 4.10 shows that the coefficient of MD is statistically significant and negative, while the coefficient of CV is statistically significant and positive. Part 2 of Table 4.10 shows that the coefficient of RISK is statistically significant and positive, while the coefficient of CV is statistically significant and negative. Part 3 of Table 4.10 shows that the coefficient of RISK and MD are statistically significant and negative. All in all, these findings confirm bidirectional relationships among bank risk, charter value, and market discipline when controlling for the impact of institutional quality.

4.3.5 I Investigating whether the interrelationships among bank risk, charter value, and market discipline remain robust when controlling for the Covid-19

Table 4.11 The results of considering the Covid 19 pandemic

Part 1. First equation of SEM	
	RISK

Constant	-2.670(4.013)
MD	-3.824***(0.884)
CV	4.647*(2.885)
SQCV	-0.34425
COVID	0.051***(0.019)
Bank fixed effects	Yes
No. Obs	1,163
Part 2. Second equation of SEM	
	MD
Constant	16.113(3.939)
RISK	0.378*** (0.083)
CV	-12.733***(3.093)
SQCV	1.772***(0.429)
COVID	-0.042***(0.006)
Bank fixed effects	Yes
No. Obs	1,163
Part 3. Third equation of SEM	
	CV
Constant	3.846(0.061)
RISK	-0.582***(0.065)
MD	-3.896***(0.583)
COVID	0.013(0.012)
Bank fixed effects	Yes
No. Obs	1,163

Source: Author's calculation

Part 1 of Table 4.11 shows that the coefficient of MD is statistically significant and negative at the 1% level, while the coefficient of CV is statistically significant and positive at the 10% level. Part 2 of Table 4.11 shows that the coefficient of RISK is statistically significant and positive at the 1% level, while the coefficient of CV is statistically significant and negative at the 1% level. Part 3 of Table 4.11 shows that the coefficients of RISK and MD are statistically significant and negative at the 1% level. Together, these results demonstrate bidirectional relationships among bank risk, charter value, and market discipline when considering the impact of the COVID-19 turmoil.

CHAPTER 5 CONCLUSION AND IMPLICATIONS

5.1 Summary of main findings

First, the results show a bidirectional relationship between bank risk, charter value and market discipline.

Second, when considering the impact of bank size. The results indicate a reciprocal connection between bank risk, charter value, and market discipline, which persists in both small and large banks.

Third, when considering the impact of CRISIS. The findings confirm the interrelationships among bank risk (RISK), market discipline (MD), and charter value (CV), supporting our main conclusions.

Fourth, when considering the impact of the market concentration. The findings confirm the relationships among bank risk (RISK), market discipline (MD), and charter value (CV), while also supporting our primary results

Fifth, when considering the impact of institutional quality. The findings confirm the relationships among bank risk (RISK), market discipline (MD), and charter value (CV), while underscoring the efficacy of governance indicators in reducing bank stock volatility.

Finally, when considering the impact of the covid19. The findings confirm the relationships among bank risk (RISK), market discipline (MD), and charter value (CV).

5.2 Recommendations of the present study
5.2.1 Recommendations to theory and original academic research

The findings confirm that previous research mainly focused on one-directional relationships between bank risk, charter value, and market discipline, which may overlook their interconnections. Bank strategies should consider the interplay of these variables. For large banks, market discipline positively correlates with risk, supporting the "too big to fail" theory, while small banks show an inverse relationship due to information asymmetry. Large banks enjoy better transparency, and small banks face risk with less oversight, highlighting the need for tailored strategies. The Global Financial Crisis (GFC) weakened market discipline and charter value in ASEAN-5, increasing risk and lowering value. Ignoring the GFC leads to biased strategies, so it should be a key consideration. Market concentration amplifies risk, raising interest rates and defaults in large banks, supporting the concentration–fragility theory. Concentration must be factored into management strategies. Institutional quality clarifies these relationships, with strong governance reducing stock volatility and enhancing market discipline and charter value. Governance should be prioritized in strategies. COVID-19 raised banking risks and reduced market discipline, but it didn't directly affect charter value. COVID-19 must also be considered in banking strategies.

5.2.2 Recommendations to Banks

The analysis highlights a two-way relationship between bank risk and market discipline. To mitigate risks, banks should enhance financial transparency and strengthen stakeholder oversight. Transparent disclosures help stakeholders assess risks and adjust behavior, promoting market discipline. By implementing accessible disclosure mechanisms and fostering active stakeholder involvement, banks can boost accountability, encourage prudent decisions, and contribute to a stable, sustainable financial system.

The analysis highlights a two-way relationship between bank risk and charter value, emphasizing charter value's strategic role in risk management and long-term growth. While higher charter values encourage aggressive strategies, excessive increases reduce risk-taking, necessitating balanced management. Banks should adopt advanced risk management

frameworks, enhance financial oversight, and invest in professional development. Optimizing charter value requires aligning it with long-term goals, fostering transparency, improving service quality, and complying with regulations. Collaboration with policymakers is essential for sustainable practices. Ultimately, charter value is a key element for achieving stability, competitiveness, and sustainable growth.

The findings reveal a negative bidirectional relationship between charter value and market discipline, emphasizing the need for balanced strategies. Banks should prioritize financial transparency and high-quality disclosures to strengthen trust and stability. Compliance with Basel III standards can enhance risk management and competitiveness. A flexible strategic framework is essential to balance charter value and market discipline, with high-charter-value banks focusing on ethical standards and lower-charter-value banks leveraging market discipline to optimize risk management. Combining transparency, international standards, and strategic flexibility will promote long-term sustainability and stability in the banking system.

Bank size significantly influences the relationship between risk, charter value, and market discipline, requiring tailored risk management strategies. Large banks, benefiting from scale but facing higher scrutiny and the "too big to fail" effect, should adopt advanced governance technologies, risk monitoring systems, and comply with international standards like Basel III. Small banks, hindered by information asymmetry, should enhance transparency through IT systems, improve internal controls, and collaborate with regulators. Both large and small banks must prioritize transparency, accountability, and sustainability to balance profitability and security, ensuring long-term growth and global financial stability.

In financial crises, banks should adopt proactive strategies to safeguard value, maintain confidence, and ensure stability. Priorities include enhancing risk management by developing robust assessment systems and reducing reliance on risky financial instruments. Strengthening market discipline through improved transparency reinforces trust and resilience. Preserving charter value and shareholder interests requires digital transformation and better customer service. Additionally, banks in low- and middle-income countries can leverage their limited exposure to toxic assets to build sustainable financial systems, improving resilience and creating long-term value for their communities.

Banks operating in highly concentrated markets should implement strategies that emphasize long-term stability and resilience to address the challenges posed by market concentration

Banks must enhance their governance quality and strictly adhere to international governance standards to improve operational efficiency and mitigate risks in an increasingly volatile financial environment.

Finally, in response to the profound impacts of the COVID-19 pandemic, banks must adopt comprehensive strategies to enhance resilience against potential risks. First, improving risk management (RISK) should be a top priority. Second, there is an urgent need to rebuild and reinforce market discipline (MD). The pandemic has reduced depositors' concern for banking safety, which could lead to long-term erosion of trust in the financial system. To restore confidence, banks must enhance transparency in financial disclosures, particularly concerning

their risk mitigation measures. Additionally, increasing engagement with customers, especially during crises, will help foster loyalty and trust within the community. Third, banks should seize the post-crisis period as an opportunity to restructure operations, emphasizing the enhancement of charter value (CV) and market competitiveness. While studies have not identified a direct link between COVID-19 and charter value, this remains a critical factor in maintaining brand strength and market share. Banks should consider innovating their product offerings, adopting advanced financial technologies, and developing solutions tailored to the evolving needs of customers in this new context. Lastly, collaboration between banks, regulators, and other financial institutions will play a crucial role in establishing a stable and sustainable financial ecosystem. This requires strong commitments from all stakeholders to ensure that regulations are flexible yet stringent enough to mitigate systemic risks.

5.2.3 Recommendations to Policy

First, the analysis shows a two-way relationship between bank risk and market discipline. Market discipline reduces risk, while risk-taking encourages transparency, suggesting that banks should improve disclosure and policymakers should enhance oversight to boost stability.

Second, a bidirectional link exists between bank risk and charter value. Higher charter values drive risk-taking up to a point, after which risk decreases, emphasizing the role of charter value in balancing risk. Policymakers should focus on charter value to ensure stability, particularly in large banks.

Third, a negative relationship exists between charter value and market discipline, with a U-shaped pattern suggesting that higher charter value may weaken market discipline until risk rises again. Policymakers should strengthen market discipline through improved financial disclosures and regulations aligned with Basel III.

Fourth, the significance of the relationships between bank risk, charter value, and market discipline varies by bank size. Large banks need stronger capital regulations and diversification, while small banks should improve transparency and regulatory oversight. Integrating fintech and AI can enhance both customer experience and operational efficiency, promoting better risk management.

Fifth, lessons from the global financial crisis and COVID-19 highlight the need to strengthen market discipline and boost charter values to protect against crises. Policymakers should encourage income diversification and financial innovation to improve bank resilience.

Sixth, governance indicators such as corruption control and political stability significantly influence the relationships between bank risk, charter value, and market discipline. Regulators should strengthen governance and account for new financial challenges to ensure stability.

Finally, to reduce risk and enhance competition, authorities should lower barriers for new banks and integrate regional banking systems. Cross-border cooperation and risk management practices are crucial for banking system resilience. Bank managers should

incorporate macroeconomic factors into their strategies to ensure long-term stability and growth.

5.2.4. Recommendations to practice

For bank management, the study offers a detailed understanding of the relationships between bank risk, charter value, and market discipline in the ASEAN-5 region. It underscores the importance of enhancing market discipline to reduce risk, promoting transparency, and accountability to boost investor and customer confidence. These insights can also be applied to banks across the Asia-Pacific region to improve risk management, enhance charter value, and promote sustainable growth in a complex financial landscape.

For policymakers, the research provides key insights for crafting more effective risk management policies. The findings can guide strategies to optimize charter value and strengthen market discipline, fostering stable financial system development. Policymakers can use this empirical evidence to make informed decisions that fit the region's economic and financial context.

5.3 Limitations of the present study

First, the scope of the research sample is restricted due to data availability. Specifically, the dataset includes only listed banks, thereby excluding a potentially important segment of unlisted banks. This omission may obscure differences in risk-taking and governance structures that could exist between listed and unlisted institutions. Furthermore, several key variables - particularly those capturing charter value and market discipline were excluded owing to insufficient data. This narrow focus risks overlooking other potential determinants or moderators of bank risk and may limit the comprehensive nature of the results. Future studies could address this limitation by expanding the sample to encompass both listed and unlisted banks, as well as by incorporating a broader array of explanatory variables that more thoroughly capture elements of charter value and market discipline.

Second, this research employs the Three-Stage Least Squares (3SLS) method as the primary analytical technique, which, while robust for addressing endogeneity and simultaneous equations, may constrain the breadth of possible insights. Adopting additional methodologies—such as Vector Autoregression (VAR), Two-Stage Least Squares (2SLS), or panel data techniques—could yield richer perspectives on dynamic interactions and causal relationships. By leveraging a more diverse suite of quantitative methods, future research could enhance the reliability, validity, and generalizability of findings.

Third, there remains to refine the selection of variables within the models. Although the current framework focuses on key constructs pertinent to bank risk, charter value, and market discipline, additional control variables such as macroeconomic indicators, regulatory changes, and institution-specific governance characteristics could add depth to the analysis. Identifying and incorporating these supplemental factors would enrich the understanding of how different dimensions of risk and governance interact within the banking sector

5.4 Suggestions for future research

Firstly, Future research should broaden its scope by including both listed and unlisted banks to enhance the robustness and generalizability of findings. Additionally, incorporating data from both developing and developed countries can provide insights into how variable relationships differ across economic and regulatory contexts, increasing the global relevance of the results.

Secondly, Future research should utilize advanced methods like modified panel vector autoregression (Camehl, 2023; Yang et al., 2023) to enhance findings from SEM. This approach captures dynamic relationships over time, accounts for data dependencies, and reveals latent variables or mediating effects, offering deeper insights and greater accuracy in analyzing complex interactions.

Finally, future research should consider bigtech and fintech credit factors when examining the association between bank risk, market discipline and bank charter value since the challenges of these digital lending platforms for the banking system are acknowledged (Le, 2022; Le et al., 2021).