



**MODERATING EFFECTS OF COUNTRY'S INCOME LEVEL ON
RELATIONSHIP BETWEEN COUNTRY GOVERNANCE, AND BANK'S
PROFITABILITY AND FINANCIAL STABILITY**

By

GHOSH PROTAP KUMAR

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,
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DEDICATIONS

To my parents:

Bimal Kanti Ghosh

Anuva Rani Ghosh

To my honorable teacher:

Prof. Dr. Madan Mohan Dey

University of Rajshahi

To my wife and son:

Tumpa Rani Ghosh

Anirban Protap Ghosh



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment
of the requirement for the degree of Doctor of Philosophy

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GHOSH PROTAP KUMAR

October 2024

Chairman : Associate Professor Fakarudin bin Kamarudin, PhD
School : Business and Economics

During the last decades, some commercial banks in different countries have suffered from lower profitability, and some have become bankrupt due to financial instability. However, the usual bank-specific and macroeconomic-based investigations could not resolve this problem. Eventually, some scholars connect country governance indicators and their elements with commercial banks' profitability and financial stability and find statistical relevance. Despite that, the limited scope and context fail to generalize the effect of country governance indicators on commercial bank profitability and financial stability. Correspondingly, this study aims to determine the impacts of country governance indicators on commercial banks' profitability and financial stability. As the values of country governance, profitability, and financial stability indicators differ based on the Country's Income Level (CIL), this study also measures the moderating effect of the CIL on the relationship between country governance indicators and commercial bank's profitability and financial stability.

This study uses panel data on the selected variables from 2010 to 2021 of 116 countries from the World Bank. To clean data from the outliers, this study employs the “rstudent” command using STATA-15. To identify multicollinearity, this study uses correlation matrices and VIF test statistics. Regression analysis starts with Ordinary Least Squares (OLS) estimation, and several models are developed to deal with multicollinearity among country governance indicators. Breusch-Pagan, Wooldridge, and Pesaran’s (2015) Cross-Sectional Dependence (CD) tests assess heteroskedasticity, first-order serial correlation, and CD, respectively. This study also uses the augmented component-plus-residual plot to identify nonlinearity. Based on the results of post-estimation tests, Panel Corrected Standard Error (PCSE) and Feasible Generalized Least Squares (FGLS) methods are used to measure direct and moderating effects.

From the direct effect analysis, this study discovered that country governance indicators have mixed impacts (mostly negative) on profitability indicators: Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM). Only the Voice and Accountability Index (VAI) significantly enhances banks’ ROE and NIM. This study also noted significant and insignificant mixed impacts of country governance indicators on financial stability indicators. Although some country governance indicators significantly or insignificantly reduce profitability, they significantly or insignificantly positively contribute to commercial banks’ financial stability. The resulting moderating effects of the country’s High-Income (HI), Upper-Middle-Income (UMI), and Lower-Middle-Income (LMI) are also mixed. The CIL significantly strengthens or weakens the effect of some country governance indicators on the profitability and financial stability of commercial banks.

The findings of this study have theoretical and practical implications for researchers, regulators, policymakers, and bank officials. This study will guide researchers in conducting further studies considering other relevant contexts. These findings will help regulators and policymakers in HI, UMI, and LMI countries formulate and implement effective rules, laws, and policies for commercial banks. Moreover, these findings will also help bank officials negotiate with the government for effective policies, regulations, and laws to reduce the negative effect of country governance on commercial banks' profitability and financial stability.

Keywords: Commercial Banks, Country Governance, Country's Income Level, Financial Stability, Profitability.

SDG: GOAL 8: Decent Work and Economic Growth, GOAL16: Peace, Justice and Strong Institutions

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**KESAN PEMODERASI TAHAP PENDAPATAN NEGARA TERHADAP
HUBUNGAN ANTARA TADBIR URUS NEGARA DENGAN KEUNTUNGAN
DAN KESTABILAN KEWANGAN BANK**

Oleh

GHOSH PROTAP KUMAR

Oktober 2024

Pengerusi : Profesor Madya Fakarudin bin Kamarudin, PhD
Sekolah : Perniagaan dan Ekonomi

Selama beberapa dekad yang lalu, beberapa bank komersial di pelbagai negara telah mengalami penurunan keuntungan, di mana ada yang menjadi muflis akibat ketidakstabilan kewangan. Kajian yang berasaskan faktor spesifik bank dan makroekonomi tidak dapat menyelesaikan masalah ini. Akhirnya, beberapa sarjana mengaitkan indikator tadbir urus negara dan elemen-elemennya dengan keuntungan serta kestabilan kewangan bank komersial dan mendapati wujud perkaitan statistik. Namun, skop dan konteks yang terhad gagal menggeneralisasikan kesan indikator tadbir urus negara terhadap keuntungan dan kestabilan kewangan bank komersial. Oleh itu, kajian ini bertujuan untuk menentukan kesan indikator tadbir urus negara terhadap keuntungan dan kestabilan kewangan bank komersial. Memandangkan nilai tadbir urus negara, keuntungan, dan kestabilan kewangan berbeza berdasarkan tahap pendapatan sesebuah negara, kajian ini juga mengukur kesan pemoderasi tahap pendapatan negara terhadap hubungan antara indikator tadbir urus negara dengan keuntungan dan kestabilan kewangan bank komersial.

Kajian ini menggunakan data panel bagi pembolehubah terpilih dari tahun 2010 hingga 2021 melibatkan 116 negara daripada pangkalan data Bank Dunia. Untuk membersihkan data daripada pencilan, kajian ini menggunakan arahan “rstudent” dalam STATA-15. Bagi mengenal pasti masalah multikolineariti, kajian ini menggunakan matriks korelasi dan statistik ujian VIF. Analisis regresi dimulakan dengan anggaran OLS, dan beberapa model dibangunkan untuk menangani multikolineariti dalam indikator tadbir urus negara. Ujian Breusch-Pagan, Wooldridge, dan Pesaran (2015) CD digunakan untuk menguji heteroskedastisiti, autokorelasi tertib pertama, dan kebergantungan rentas bahagian. Kajian ini juga menggunakan plot komponen-ditambah-sisa (augmented component-plus-residual plot) bagi mengenal pasti ketaklinearan. Berdasarkan keputusan ujian pascaanggaran, kaedah Ralat Piawai Terkoreksi Panel (PCSE) dan Kaedah Kuasa Dua Terkecil Generalisasi Boleh Diterima (FGLS) digunakan untuk mengukur kesan langsung dan kesan pemoderasi.

Daripada analisis kesan langsung, kajian ini mendapati bahawa penunjuk tadbir urus negara mempunyai kesan bercampur (kebanyakannya negatif) ke atas petunjuk keuntungan: ROA (pulangan aset), ROE (pulangan atas ekuiti), dan NIM (margin faedah bersih). Hanya indeks suara dan akauntabiliti (VAI) meningkatkan ROE dan NIM bank dengan ketara. Kajian ini juga mendapati kesan bercampur yang signifikan dan tidak ketara bagi penunjuk tadbir urus negara terhadap penunjuk kestabilan kewangan. Walaupun sesetengah penunjuk tadbir urus negara mengurangkan keuntungan secara signifikan atau tidak ketara, ia secara signifikan atau tidak ketara menyumbang secara positif kepada kestabilan kewangan bank perdagangan. Kesan penyederhanaan yang terhasil daripada pendapatan tinggi (HI), pendapatan sederhana

atas (UMI) dan pendapatan sederhana rendah (LMI) negara juga bercampur-campur. Tahap pendapatan negara secara ketara mengukuhkan atau melemahkan kesan beberapa penunjuk tadbir urus negara terhadap keuntungan dan kestabilan kewangan bank perdagangan.

Dapatan kajian ini mempunyai implikasi teori dan praktikal kepada penyelidik, pengawal selia, penggubal dasar, dan pegawai bank. Kajian ini akan membimbing pengkaji dalam menjalankan kajian lanjutan dengan mengambil kira konteks lain yang berkaitan. Penemuan ini akan membantu pengawal selia dan penggubal dasar di negara HI, UMI dan LMI dalam merumus dan melaksanakan peraturan, undang-undang dan dasar yang berkesan untuk bank perdagangan. Selain itu, penemuan ini juga akan membantu pegawai bank berunding dengan kerajaan untuk dasar, peraturan dan undang-undang yang berkesan untuk mengurangkan kesan negatif tadbir urus negara terhadap keuntungan dan kestabilan kewangan bank perdagangan.

Kata kunci: Bank Perdagangan, Tadbir Urus Negara, Tahap Pendapatan Negara, Kestabilan Kewangan, Keberuntungan.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy in Finance. The members of the Supervisory Committee were as follows:

Fakarudin bin Kamarudin, PhD

Associate Professor
School of Business and Economics
Universiti Putra Malaysia
(Chairman)

Saira binti Kharuddin, PhD

Senior Lecturer
School of Business and Economics
Universiti Putra Malaysia
(Member)

ZALILAH MOHD SHARIFF, PhD

Professor and Dean
School of Graduate Studies
Universiti Putra Malaysia

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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
ATM	Automated teller machine
BCIR	Bank cost-to-income ratio
BCTA	Bank capital to total assets ratio
BOCTA	Bank overhead costs to total assets
C_19D	COVID-19 dummy
CC_H	Control of corruption index in high-income countries
CC_L	Control of corruption index in lower-middle-income countries
CC_U	Control of corruption index in upper-middle-income countries
CCI	Control of the corruption index
CD	Cross-sectional dependence
CEO	Chief executive officer
CIL	Country's income level
CV	Control variable
DEA	Data envelopment analysis
DV	Dependent variable
EU	European Union
FE	Fixed effects
FGLS	Feasible generalized least squares
G20	The group of twenty
GCC	Gulf cooperation council
GDP	Gross domestic product
GDPG	Gross domestic product growth rate
GEI	Government effectiveness index

GMM	Generalized method of moments
GNI	Gross national income
H	Hypothesis
HI	High-income
IMF	International Monetary Fund
IR	Inflation rate
IV	Independent variable
LMI	Lower-middle-income
lnCCI	Natural log of control of corruption index
lnGEI	Natural log of government effectiveness index
lnPSAVTI	Natural log of political stability and violence/terrorism index
lnRLI	Natural log of the rule of law index
lnRQI	Natural log of regulatory quality index
lnVAI	Natural log of voice and accountability index
MAX	Maximum value
MDBs	Multilateral development banks
MENA	Middle East and North Africa
MIN	Minimum value
MV	Moderating variable
NII	Non-interest income
NIM	Net interest margin
NPL	Non-performing loans
NPL_H	Non-performing loans in high-income countries
NPL_L	Non-performing loans in lower-middle-income countries
NPL_U	Non-performing loans in upper-middle-income countries
OBS	Numbers of observations
OLS	Ordinary least squares

PCSE	Panel corrected standard error
PSAVTI	Political stability and absence of violence/terrorism
RLI	Rule of law index
ROA	Return on assets
ROE	Return of equity
RQI	Regulatory quality index
SD	Standard deviation
UK	United Kingdom
UMI	Upper-middle-income
US	United States
USD	United States Dollar
VAI	Voice and accountability index
VIF	Variance inflation factor

CHAPTER 1

INTRODUCTION

1.1 Introduction

Chapter one includes a background of the study, problem statement, research objectives, search questions, significance, and contribution of this study. Specifically, this chapter describes why country governance is crucial, in addition to bank-specific and macroeconomic factors, for the stable profitability and financial stability of commercial banks in different countries. Moreover, this chapter discusses the significance of a Country's Income Level (CIL) in explaining the relationship between country governance and the profitability and financial stability of commercial banks. Later, this chapter focuses on the research gap and the theoretical and practical contribution of this study governing banking sectors in different countries.

1.2 Background of the study

The banking sector is undoubtedly one of the fundamental sectors for any country to ensure economic progress and stability (Barseghyan, 2010; Bernanke et al., 1994; Calderon & Liu, 2003; Cheng & Degryse, 2010; Estrada et al., 2010; Kharel & Pokhrel, 2012; Tölö & Virén, 2021; Westermann, 2009). In particular, commercial banks are significant for the economy as they supply business loans and ensure the security of business capital and household savings in the form of bank deposits. Thus, ensuring profitability and financial stability in commercial banks is critical to

guarantee the smooth economic development of a country. However, commercial banks in various economic zones still suffer from substantial profitability and financial stability volatility. More specifically, during the last decade, a major number of commercial banks became insolvent in developed and developing countries due to a sudden fall or falsification in profitability and severe problems in financial stability. For example, Wirecard Bank in Germany became insolvent due to falsified profitability. Meanwhile, First Republic Bank, Silicon Valley Bank, and Signature Bank in the United States (US) became insolvent from huge withdrawals of funds by the depositors, expecting a potential profit fall. This is attributed to interest rate hikes by the US Federal Reserve and losses in asset value. Some other banks, such as Icelandic Banks in Iceland, Banco Popular Español in Spain, Greensill Bank in Germany, and Yes Bank in India, faced insolvency as a result of huge Non-Performing Loans (NPLs) and poor debt management.

Bank failures create distrust among the stakeholders and bring uncertainties to the money market, ultimately hampering a country's financial development. Therefore, ensuring profitability and financial stability in commercial banks is crucial for a country's sustainable financial development. Although unstable profitability and financial instability contribute to bankruptcy, they have distinct significance in financial analysis. As such, Gibson (2012) stated that profitability represents an organization's ability to generate earnings, which is considered operating efficiency. This is essential to stockholders, as they receive earnings in the form of dividends. Moreover, increased profitability enhances share prices and offers security to creditors and bondholders. Weygandt et al. (2015) also mentioned that profitability measures a company's income or operating success for an allocated period. However, income

generation or failure thereof affects the company's ability to obtain debt and equity financing. Additionally, it also affects the liquidity position and the firm's ability to grow, and the value of a firm depends on its profitability and growth (Palepu & Healy, 2012).

On the other hand, financial stability measures a firm's financial strength or solvency to sustain business in the long run. Subramanyam (2014) described profitability measurement as conveying separate messages to creditors and stockholders over the long-term financial strength or solvency measurement. In financial stability analysis, researchers attempt to predict a firm's future financial distress- chances of bankruptcy. Several accounting ratios and Z-Score are used for this purpose. Ozili (2018) mentioned no universal definition of bank stability. Note that financial stability is crucial to paying back long-term debt and ensuring the security of stockholders' contributed capital. In this study, financial stability refers to the chances of future financial bankruptcy.

Researching the profitability and financial stability of commercial banks is not novel. Given this perspective, researchers investigate profitability and financial stability from multiple points of view, considering the relevant contexts and issues. Some focus on macroeconomic factors with profitability and financial stability (Beck et al., 2015; Hada et al., 2020; Skarica, 2014). Meanwhile, some focus on bank-specific factors (Al-Matari, 2021; Ali & Puah, 2019; Alqahtani et al., 2022; Duho et al., 2020; Ghosh et al., 2018; Khan et al., 2020; Le & Ngo, 2020; Mishi & Khumalo, 2019; Silva, 2019) and some even focus on both macroeconomic and bank-specific factors to explain the changes in volatility and financial stability (Almaqtari et al., 2019; Chand et al., 2021;

Dimitrios et al., 2016; Jabbouri & Naili, 2019; Kjosevski & Petkovski, 2021; Louzis et al., 2012; Mishra et al., 2021; Saif-Alyousfi, 2022; Yahaya et al., 2022).

Some commercial banks in different countries became bankrupt on account of fraudulent practices in investing and financial reporting, changes in policies in government agencies, and strict enforcement of rules. Even in some countries, such as Bangladesh, some commercial banks are on the verge of bankruptcy due to corrupt practices in lending and operating activities. Eventually, researchers (Asteriou et al., 2016; Gropper et al., 2015; Jiang et al., 2018; Mollagholamali & Rao, 2022; Schiantarelli et al., 2020; Sufian & Habibullah, 2014) discovered a connection between country governance and volatility in profitability and financial stability of commercial banks. They also investigated how the elements of country governance affect commercial banks' profitability, financial stability, and other financial issues.

Country governance refers to all aspects of governing a country. It includes economic and regulatory policies, regulatory frameworks, and adherence to the rule of law, to name a few. A country's governance demonstrates government effectiveness, overall regulatory quality, level of law enforcement, and effectiveness in controlling corruption. Accordingly, to measure the quality of a country's governance, Kaufmann et al. (2010) developed six country governance indicators: Control of Corruption Index (CCI), Government Effectiveness Index (GEI), Rule of Laws Index (RLI), Regulatory Quality Index (RQI), Voice and Accountability Index (VAI), and Political Stability and Absence of Violence/Terrorism Index (PSAVTI), under the supervision the World Bank¹. Considering the significance of country governance for the banking sector,

¹ The six country-level governance indicators were developed by Daniel Kaufmann, Nonresident Fellow, Brookings Institution, and President Emeritus, Natural Resource Governance Institute (NRGI),

some researchers investigate its effect on banks' financial aspects, while a few even attempt to highlight the differences in their relationship at various income levels.

1.2.1 Connection between country governance and financial aspects of commercial banks

Some researchers claim that the socio-political and regulatory environment could play a vital role in the financial performance indicators of the bank (Eichler & Sobański, 2016; Jackowicz et al., 2013; Şanlısoy et al., 2017). The quality of a country's governance significantly impacts the value of the firms (Saona & San Martín, 2016), and even a few studies noted the connection of country governance with the financial performance of banks. Thus, Kamarudin (2015) measured the effect of country governance on the revenue efficiency of Islamic and conventional commercial banks. At the same time, Ozili (2018) investigated the effect of country governance indicators on the financial stability of commercial banks in Africa, and both discovered diverse effects.

Gropper et al. (2015) concluded that economic freedom and the political environment significantly influenced the banking performance in the US. Likewise, Schliephake (2016) asserted that capital regulation can affect the cost of funds, eventually affecting the costs of funding and bank performance. Similarly, Jiang et al. (2018) noted that government intervention through public policy can control the level of NPLs of

and Aart Kraay, World Bank, Development Economics. These indicators are developed based on over 30 individual data sources produced by various survey institutes, think tanks, non-governmental organizations, international organizations, and private sector firms. <http://info.worldbank.org/governance/wgi/>. Accessed on 13/05/2024

commercial banks. In another European investigation, Cerulli et al. (2020) highlighted that a country's judicial efficiency can significantly prevent the growth of NPLs. Schiantarelli et al. (2020) also added that selective loan payback delays occur more when legal enforcement of collateral recovery is slow. Consequently, this poor enforcement encourages borrowers to avoid payment even if they have the ability to pay lenders.

Almaqtari et al. (2022) highlighted that country governance indicators have a mixed effect on the profitability of commercial banks in India. Kumar et al. (2023) concluded that higher corruption and political instability are harmful to the banking sector. Meanwhile, Khan et al. (2023) and Tran et al. (2023) also noted that country governance plays a vital role in the country's financial sector development. The findings of the above studies undoubtedly proved the relationship between country governance and various financial aspects of commercial banks. However, those studies are conducted in multiple contexts, suffer from limited scopes, and fail to generalize the effect of each country's governance indicator on the profitability and financial stability of commercial banks. Ultimately, this study contributes to the existing literature benchmarking the effect of each country's governance indicator on the profitability and financial stability of commercial banks.

1.2.2 Role of country's income level

Usually, a CIL is measured based on its per capita Gross National Income (GNI). The World Bank classifies all countries into four categories: High-Income (HI), Upper-Middle-Income (UMI), Lower-Middle-Income (LMI), and Low-Income (LI)

countries. This classification is updated every July 1st based on the previous year's per capita GNI in USD (Hamadeh et al., 2022). According to the Resource Dependence Theory (RDT), organizations are influenced by the external environment and depend on external resources. Likewise, commercial banks are highly regulated, and their operating activities are highly influenced by central banks and government regulatory and financial policies. Moreover, commercial banks mostly depend on external deposits for their investable funds. Those funds more likely come from household income and savings, which are closely associated with a CIL.

Daly et al. (2008) concluded that regional economic conditions significantly affect the financial performance of the banking sector. Meanwhile, Rinaldi and Sanchis-Arellano (2006) stated that sound household financial condition is critical in explaining household NPL. This denotes the significance of sound individuals and a CIL in reducing a country's NPL. Ting (2017) also mentioned that financial development and the strong involvement of governments in the banking sector positively affect banks' profitability and asset quality. Moreover, Dietrich and Wanzenried (2014) investigated how the determinants of bank profitability differ in HI, middle-income, and LI countries and concluded that the relationship between explanatory and response variables varies significantly based on a CIL.

Likewise, Kamarudin (2015) also investigated the relationship between country governance indicators and the revenue efficiency of both conventional and Islamic banks controlling the CIL. The author also reported differences in the relationship between individual governance indicators and the revenue efficiency of conventional and Islamic banks based on the CIL. Furthermore, Khan et al. (2023) concluded that

development in country governance at LI levels has greater influences on the country's financial system. More specifically, Tran et al. (2023) stated that better country governance enhances the financial stability of the banking sector in developing and emerging countries than in developed countries. In essence, a CIL can play a vital role in explaining the relationship between country governance indicators and financial performance indicators of commercial banks.

Following the findings of the above studies, this study explores the differences in the values of country governance indicators and profitability and financial stability indicators based on different income levels. The studies emphasize the differences in yearly average values of country governance indicators and the profitability and financial stability indicators of commercial banks. For example, Figure 1 displays the changes in the yearly average NPL (indicator of financial stability) of commercial banks. Notably, the changes in yearly average NPL in these three groups of countries, HI, UMI, and LMI, represent distinct changing behavior of NPL in commercial banks during the selected study period.

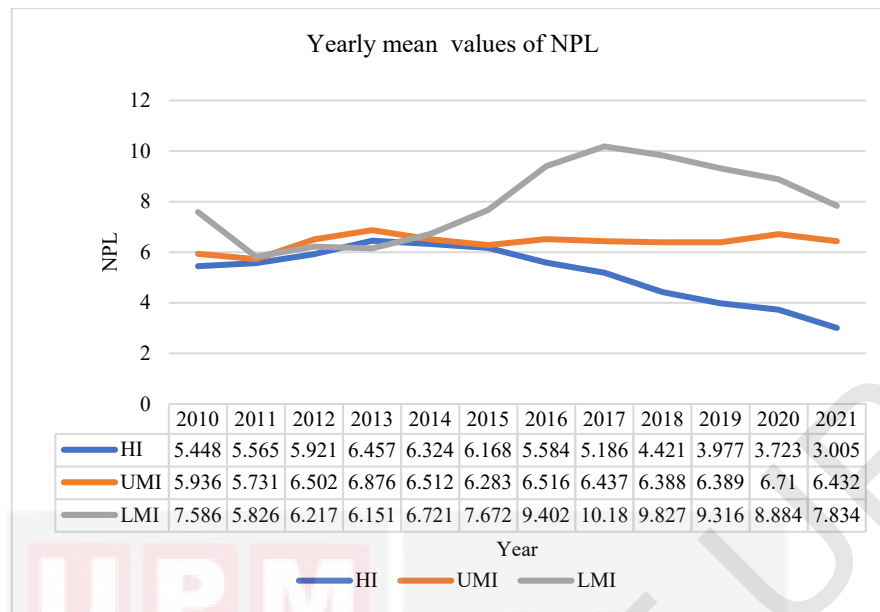


Figure 1: Comparative mean values of NPL in HI, UMI, and LMI countries

Likewise, the primary investigation also finds differences in the yearly average values of different countries' governance indicators in these groups of countries. For example, Figure 2 illustrates how the yearly average values of the CCI vary in these three groups of countries, and their changes are distinct.

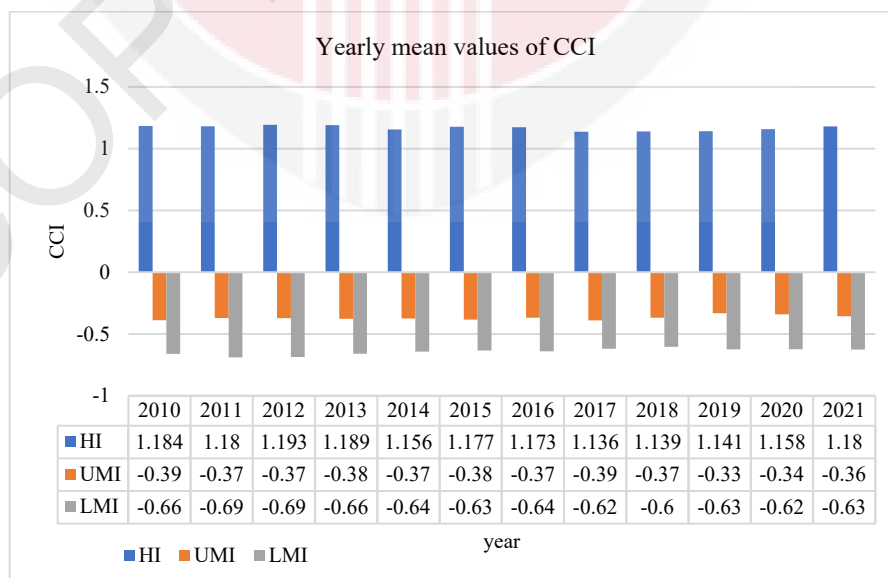


Figure 2: Comparative mean values of the Control of Corruption Index in three groups of countries

Similarly, Figure 3 illustrates that the yearly average values of the GEI vary widely in HI, UMI, and LMI countries. Moreover, the yearly average value changes do not follow the same pattern in those three counties.

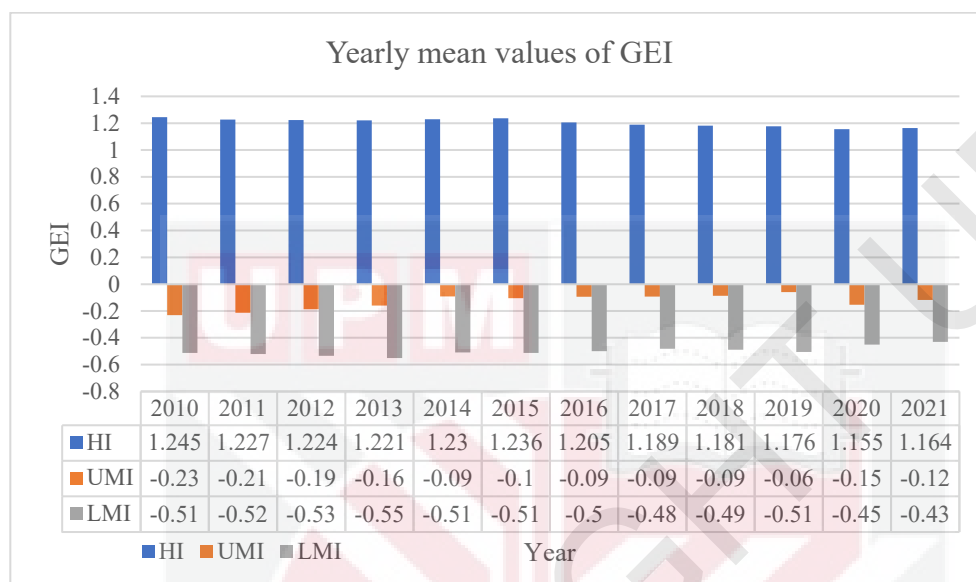


Figure 3: Comparative mean values of the Government Effectiveness Index in three groups of countries

Figures 1, 2, and 3 display that commercial bank performance and country governance indicators differ widely in HI, UMI, and LMI countries. In particular, the quality of country governance is much higher in HI countries than in LMI countries. Inversely, the level of NPL is higher in LMI countries than in HI countries. Correspondingly, this study expects that a CIL moderates the relationship between country governance indicators and commercial banks' profitability and financial stability.

From the above discussion, including sub-sections 1.2.1 and 1.2.2, this study observes that changes in the regulatory and financial policies, rules and laws, and sociopolitical environment affect the profitability and financial stability of commercial banks. However, the investigation on the effect of country governance indicators, which

represent the quality of regulatory and financial policies, rules and laws, and sociopolitical environment of a country, on the profitability and financial stability of commercial banks is minimal and suffers from the limited contexts and scope. Accordingly, this study aims to contribute to the existing literature by generalizing the effect of country governance indicators on commercial banks' profitability and financial stability. Since only a few existing literature revealed diversified effects of country governance indicators on various performance indicators of commercial banks at various income levels, this study also measures the moderating effect of a CIL on the relationship between country governance indicators and commercial banks' profitability and financial stability. The findings of this study will contribute to policies and strategy formulation at regulatory and bank levels for the sustainable development of the commercial bank industry in HI, UMI, and LMI countries.

1.3 Problem statement

Managing profitability and financial stability is crucial for long-term sustainability. However, commercial banks in different nations have suffered from lower profitability and chances of potential insolvency due to corrupted practices and regulatory policy changes and influences. Some commercial banks, such as Silicon Valley Bank², First Republic Bank³, and Signature Bank⁴ in the US, even went bankrupt in 2023 as a result of possible lower profitability due to interest rate hikes of the US Federal Reserve.

²For details, please visit <https://www.law.uw.edu/news-events/news/2023/svb-collapse>. Accessed on 29/11/2014

³ For details, please visit <https://www.forbes.com/sites/tylerroush/2024/04/27/heres-what-led-to-republic-firsts-collapse-and-why-its-different-from-2023-failures/>. Accessed on 29/11/2014

⁴ Please visit <https://www.reuters.com/markets/us/signature-bank-failure-due-poor-management-us-fdic-report-says-2023-04-28/>. Accessed on 29/11/2014

This created panic in the US financial market. Likewise, Deutsche Bank⁵ in Germany went almost bankrupt due to poorer financial performance and legal enforcement. Some commercial banks (e.g., Greensill Bank in Germany in 2021, Banca Monte Dei Paschi Di Siena in Italy in 2017, Banco Popular Español in Spain in 2017, and Yes Bank in India in 2020) became insolvent due to huge NPLs. Similarly, a few other banks (e.g., Wirecard Bank in Germany in 2020, Punjab and Maharashtra Cooperative (PMC) Bank in India in 2019, and Banco Espírito Santo in Portugal in 2014) went bankrupt due to fraudulent practices in reporting and investing activities. These recurring bankruptcies in different countries created distrust among stakeholders and uncertainties in the financial market differently.

The steady profitability and financial stability of commercial banks are significant for the sustainable economic development of a country. Due to the ongoing globalization, technological advances, and digitalization, commercial banks face regulatory and operational challenges, contributing to earning volatility and financial instability. To resolve profitability and bankruptcy issues, most of the research studies are conducted based on macroeconomic and bank-specific factors. Nevertheless, macroeconomic factors, such as real Gross Domestic Product (GDP) growth, Inflation Rate (IR), and exchange rate, to name a few, and bank-specific factors, such as cost efficiency, bank liquidity, size of the bank, capital adequacy, and overhead cost, amongst others, based investigations (Al-Matari, 2021; Ali et al., 2019; Azmi et al., 2019; Erdas & Ezanoglu, 2022; Khan et al., 2020; Kumar et al., 2023; Saif-Alyousfi, 2022; Siddique et al., 2022;

⁵ For details, please visit <https://www.worldfinance.com/banking/deutsche-banks-fall-from-grace-how-one-of-the-worlds-largest-lenders-got-into-hot-water>. Accessed on 29/11/2014

Yahaya et al., 2022) fail to resolve those issues. Instead, these issues have worsened for commercial banks in some countries or economic zones as a result of fraudulent practices, political manipulation, and regulatory influence. For example, nine out of 57 commercial banks are at risk of high insolvency in Bangladesh⁶ (one of the first growing economies in the world).

Occasionally, lower profitability results from changes in government policies, and high NPLs are generated from faulty regulatory and judicial systems. Notably, some bankruptcies result from the lack of control over corruption. All these things prove the significance of country governance for the stable profitability and financial stability of commercial banks. Accordingly, few scholars focused on the connection of elements of country governance indicators with the performance indicators of banks (Cerulli et al., 2020; Eichler & Sobański, 2016; Jiang et al., 2018; Kumar et al., 2023; Schiantarelli et al., 2020). Few of them directly connected each country's governance indicator with profitability (Almaqtari et al., 2022), revenue efficiency, and productivity (Kamarudin, 2015; Kamarudin et al., 2016a, 2022), and financial stability (Muizzuddin et al., 2021; Ozili, 2018) of commercial banks. However, all those studies suffer from limited contexts and scopes, failing to generalize the effects of country governance indicators on commercial banks' profitability and financial stability.

In the primary investigation, this study highlights that the profitability and financial stability indicators and values of country governance indicators vary in HI, UMI, and LMI countries (refer to Figures 1, 2, and 3). Commercial banks depend heavily on the

⁶ Please visit <https://www.thedailystar.net/business/economy/banks/news/bb-rescue-problem-banks-3698031> for more information. Accessed on 23/01/2025

external environment for their deposits and favorable working environment, influenced by sociopolitical and regulatory systems. Moreover, a CIL could enhance or impair fund supply to commercial banks, ensure a better or worse working environment, and shape the better or impaired quality of country governance. This, ultimately, affects commercial banks' profitability and financial stability. Some studies also suggested that the financial performance of banks and their determinants widely differ in countries based on their income level (Dietrich & Wanzenried, 2014; Kamarudin, 2015; Rinaldi & Sanchis-Arellano, 2006; Ting, 2017). Considering the significance of a CIL, the World Bank classifies all countries into four categories: HI, UMI, LMI, and LI countries.

Continuous globalization and technological changes create operational challenges and opportunities for commercial banks. Building on this, government financial and regulatory policies affect managing relationships with foreign banks, investment in international markets, and international fund transfers, directly and indirectly affecting commercial banks' performance. Moreover, policy and regulatory changes that are effective for commercial banks in HI countries may be ineffective in LMI countries and vice versa. Khan et al. (2023) and Tran et al. (2023) demonstrated that improvement in country governance has different impacts on the banking sector at different income levels. Thus, this study assumes that a CIL could moderate the relationship between country governance indicators and the profitability and financial stability of commercial banks.

This study contributes to the existing literature, filling two research gaps. Firstly, overcoming the limited scope and contexts of previous studies, such as Almaqtari et

al. (2022), Cerulli et al. (2020), Kumar et al. (2023), Muizzuddin et al. (2021) and Ozili (2018) and Schiantarelli et al. (2020). This study generalizes the effects of country governance indicators on the profitability and financial stability of commercial banks based on country-level data. This study also examines the moderating effect of a CIL on the relationship between country governance indicators and the profitability and financial stability of commercial banks. Additionally, the findings of this study will help the regulatory authorities and policymakers in different nations formulate and implement effective regulatory and financial policies. This is to ensure stable profitability and financial stability for the sustainable development of commercial banks. Accordingly, it also helps big financial institutions, e.g., the World Bank, International Monetary Fund (IMF), and Asian Development Bank (ADB), to develop effective supervision frameworks based on the CIL.

1.4 Research objectives

Based on the background and problem statement, this study aims:

1. To measure the impact of country governance on the profitability of commercial banks.
2. To determine the impact of country governance on the financial stability of commercial banks.
3. To examine the moderating effect of a CIL on the relationship between country governance and the profitability of commercial banks.
4. To explore the moderating effect of a CIL on the relationship between country governance and the financial stability of commercial banks.

1.5 Research questions

Based on the background, problem statement, and research objectives, the following research questions are set for empirical investigation.

1. What are the impacts of country governance indicators on the profitability of commercial banks?
2. What are the impacts of country governance indicators on the financial stability of commercial banks?
3. What are the moderating effects of a CIL on the relationship between country governance indicators and the profitability of commercial banks?
4. What are the moderating effects of a CIL on the relationship between country governance indicators and the financial stability of commercial banks?

1.6 Scope of the study

This study focuses on the impacts of country governance on the profitability and financial stability of commercial banks, as well as how a CIL moderates the relationships between country governance indicators and the profitability and financial stability of commercial banks. The profitability of commercial banks is measured by Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM), while financial stability is measured by NPLs and Z_Score. Meanwhile, country governance is measured by six country governance indicators, such as CCI, GEI, RQI, RLI, PSAVTI, and VAI, developed by Kaufmann et al. (2010).

According to the World Bank, there are four categories of countries based on their levels of per capita GNI: HI countries, UMI countries, LMI countries, and LI countries. According to the 2022-2023 report of the World Bank, there are 80 HI countries, 54

UMI countries, 54 LMI countries, and 28 LI countries. The study proposed to include a maximum number of countries from each category. However, after verifying the data availability, this study excluded LI countries due to the unavailability of data at the source (the World Bank website). This study explored alternative sources (e.g., theglobaleconomy.com and DataStream) for bank performance-related data in LI countries. However, of 26 LI countries, only a few have data on profitability and financial stability indicators. Eventually, LI countries are excluded from the investigation.

All countries under the first three groups had an equal chance to be included in the data set if the required data were available on the selected variables, and the study period covered from 2010 to 2021, twelve years altogether. We started in 2010, since the period prior to that was affected by the global financial crisis that started in mid-2007 and ended in early 2009. This study uses aggregate country-level data of commercial banks from the World Bank rather than individual bank-level data.

1.7 Significance of the study

The investigation of profitability and financial stability is always a current topic in the field of corporate governance of commercial banks. Several studies have been conducted based on traditional macroeconomic and bank-specific factors to help regulators and policymakers formulate and implement effective policies and regulations. Despite that, the problem of volatility in profitability and financial stability cannot be resolved, and a few big banks in different countries become insolvent in the last decade due to lower profitability, high NPLs, and false reporting

in financial statements. Moreover, this study reveals that lower profitability and high NPLs come from changes in monetary policies and fraudulent practices in investment and reporting. The recurring bankruptcy of some big banks in various developed and developing countries creates a major threat to the financial sector in those countries, economic zones, and international money markets.

To resolve those issues, some researchers (Cerulli et al., 2020; Schiantarelli et al., 2020) have connected a few elements of country governance with the NPL. Meanwhile, some connect a country's governance indicators with profitability (Almaqtari et al., 2022), revenue efficiency (Kamarudin et al., 2016b), bank productivity (Kamarudin et al., 2022) and financial stability (Ozili, 2018) of commercial banks. Nonetheless, their findings are inconsistent as a result of limited scope and contexts, and they fail to generalize the effects of country governance indicators on the profitability and financial stability of commercial banks.

In line with this, this study has theoretical significance, contributing to the existing theories on the governance of the financial sector in two ways. Firstly, the study benchmarks the effects of each country's governance indicator on the profitability and financial stability of commercial banks based on country-level data overcoming limited scope and contextual issues. Secondly, this study highlights the individual effect of a CIL on commercial banks' profitability and financial stability. This study also reveals how a CIL moderates the relationship between country governance indicators and commercial banks' profitability and financial stability.

More specifically, the CCI demonstrates how public power is exercised for private gain through diverse ways of corruption, capturing nations by elites, and private interests affecting the profitability and financial stability of commercial banks. Meanwhile, the GEI emphasizes how the quality of public services, civil service, policy formulation, and the government's credibility and contribution to such services and policies affect profitability and financial stability. Moreover, the RLI presents how the quality of contract enforcement, property rights, police, and courts affect profitability and financial stability. Simultaneously, the RQI demonstrates how the government's ability to formulate and implement sound policies and regulations to promote private sector development affects the profitability and financial stability of commercial banks.

The PSAVTI analyzes how the political environment, such as the destabilization of the government resulting from politically motivated violence and terrorism, affects the profitability and financial stability of the same. Finally, the variable VAI notes how the freedom of selecting the government, expressing opinions, creating associations, and the freedom of the media influence the profitability and financial stability of commercial banks. Moreover, this study specifically demonstrates how a CIL (HI, UMI, or LMI) moderates the relationship between each country's governance indicator and the profitability and financial stability of commercial banks mentioned above.

This study has practical significance besides its theoretical significance. The findings will motivate macroeconomic policymakers, regulators, and other government agencies, such as the central bank, to modify their financial and regulatory policies, strategies, rules, and laws to ensure the sustainable profitability and financial stability

of commercial banks. Furthermore, the findings of this study will help commercial bank officials in HI, UMI, and LMI countries to set appropriate strategies and policies. This aims to mitigate the adverse effects of country governance indicators and to take advantage of the positive effect of the same on the profitability and financial stability of commercial banks.

1.8 Chapter outlines the study

This study is divided into five major chapters. The first chapter is the 'Introduction' chapter, comprising the background of the study, problem statements, research objectives and questions, scope, and significance of the study.

The second chapter is the 'Literature Review and Theoretical Framework' chapter, representing the review of existing literature on the evolution of the banking sector, bank performance, country income level, country governance, determinants of profitability and financial stability of commercial banks, theoretical supports to conduct this study, hypotheses development, and ends with a research framework.

The third chapter, 'Methodology,' describes the statistical procedures followed by this study, such as variable selection, data collection, and data analysis, to resolve the research questions developed in the first chapter. This chapter also includes how regression models are selected and used to measure direct and moderating effects.

The fourth chapter is the ‘Result and Discussion’ chapter. In this chapter, the statistical analysis outputs are presented and discussed systematically. The regression outputs will be employed to assess the hypotheses developed in Chapter Two.

The fifth chapter is the ‘Conclusion and Recommendation’ chapter, summarizing the overall findings of this study, theoretical and practical contribution to the existing literature, implications of the findings, and direction of future studies. It also details the limitations of this study.

1.9 Chapter summary

The first chapter of this study briefly describes the profitability and financial stability issues of commercial banks and why country governance is critical in this regard. Moreover, this study also focuses on how commercial banks’ profitability and financial stability, as well as country governance indicators, differ based on a CIL. In the problem statement, this chapter presents existing problems with commercial banks’ profitability and financial stability, the gap in the existing literature to resolve issues with volatility in profitability and financial stability, and how this study can help resolve those issues. Then, based on a short literature review and primary investigation, this chapter specifies its objectives in Section 1.4 and research questions in Section 1.5. Later, this chapter reveals the overall scope of this study and possible theoretical and practical contributions. Lastly, it describes how other chapters of this study are organized.

CHAPTER 2

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

This part of this study focuses on the intensive review of published literature, theory selection, research gap, developing research hypotheses, and research framework. More specifically, this chapter starts with a review of past research studies on the determinants of Non-Performing Loans (NPLs), profitability, and financial stability of banks. Then, it represents the theoretical discussion on the connection of country governance with the performance of banks. The research gap is identified based on the review of existing literature and relevant theories. Moreover, following the literature review and research gap, hypotheses are developed and presented through the research framework.

2.2 Evolution of the banking sector

2.2.1 Early banking

The origin of the word “bank” in the modern sense is traced to the German word “Banck,” meaning joint stock fund, and the Italian word “Banco,” meaning heap of money. Some believe that the word “bank” is derived from the French words “bancus” or “banque,” meaning a “bench” (Kandasami et al., 2013). Notably, banking has a long history, beginning in 2000 BC in Babylonia. In Assyria, Phoenicia, and Egypt,

evidence can be found of credit; in ancient Greece and Rome, it was widespread. At the same time, the Sanskrit lawgiver Manu books contain regulations relating to credit, judicial proceedings, interest on loans, and renewal of commercial papers. The full development of the system in Greece and Rome is observed in the ancient texts (Shekhar & Shekhar, 2013). In fact, banking-style institutions have been present for more than two millennia, with early examples being found in ancient civilizations (Forbes, 2004).

In Mesopotamia, temples and royal palaces were centers for commodity deposits and redistribution, which was a security of wealth from as early as the 8th century BCE (Naik, 2014). Trapezitai, a form of deposit banking, originated in the 5th century BCE in Athens, and argentarii, a deposit banking in Rome near the 4th century BCE (Dressen, 2002). In Rome, bankers were called Argentarii, Mensarii, or Callybistoe, and banks were called Tabernae Argentarioe. Some banks operated independently; the government appointed others to receive taxes. In many cases, they did business like modern banks, having accounts settled by cheques or drafts. Prescribers used the draft to pay money, and attribution was a draft. Some loan banks offered loans to poor citizens without interest (Shekhar & Shekhar, 2013). Interestingly, grain silos and state warehouses performed the same function as banks in ancient Egypt and Mesopotamia since workers received pay in barley, which could be withdrawn for purchases (Forbes, 2004). An early banking system was developed in India as early as the 4th century BCE (Nanavati, 1944), starting with money lending and progressing to both credit instruments for trade financing. Building on this, the practice of these early banking helped shape today's financial systems.

Banking has changed over time for different functions and services. It can be viewed as a storehouse of money, a house of finance, and a savings depository. According to the Banking Regulation Act of 1949, banking is an activity of accepting deposits repayable on demand from the depositor. During the early periods, banking was done by individual people, but in the background, many countries opened pebbles to help commerce or to assist the government. The most ancient of banks is the Bank of Venice (1157), which was initially an office for transferring public debt. The “three bankers of Venice” are the three public loans or Monte, of which a Monte in Florence was established in 1336. In Barcelona, banking was already taking place as early as 1349, subject to official regulation by the drapers. Barcelona Public Bank was created in 1401, allowing people and foreigners to exchange money, oversee deposits, and discount bills of exchange.

Medieval and Renaissance banking, almost exclusively in Venice and Bruges, was fundamental in European economic history between the 13th and 16th centuries. At the crossroads of East and West, the powerful Venice created specialized financial institutions, deposit banks, foreign exchange banks, and a public debt bureau (Osheim, 1998). In particular, they were vital for controlling panics, war among territories, and market competition. Accordingly, extensive studies have been undertaken on the Venetian money market, banks, and public debt system between 1200 and 1500 (Lane & Mueller, 1997). Bank of Amsterdam was set up in 1609 to fulfill the retail needs of merchants in Amsterdam, accepting various types of deposits and allowing withdrawal on demand or transfer (Kandasami et al., 2013).

Banking practices in Bruges antedated the 17th-century London goldsmiths, made through book transfers rather than negotiable instruments (Redlich, 1949). The pioneers of English banking were the London Goldsmiths, who received customers' valuables and funds for safe custody and issued receipts suggesting that both had been received. They had a wide circulation, for these notes were payable to the bearer on demand. However, Charles II's treatment under the Cabal ministry did much to spoil the goldsmiths' business. The Exchequer was shut down by Charles II, causing goldsmiths' ruin. With this, the Bank of England was established in 1694, which in turn marked an epochal change in the English bank's history. Henceforth, private banking rose, and this trend continued to the modern days (Kandasami et al., 2013).

2.2.2 Modern banking

The modern banking system began factually in the 17th century in London. It evolved as goldsmith bankers developed paper credit money in a trust scheme, which is still the centerpiece of banking (Kim, 2011). This innovation in medieval Italian city-states and Catalonia (Brugger, 2020) allowed modern banks, including private, public, and nonprofit institutions, to emerge. Modern banking originated from three important sources: goldsmiths, money lenders, and merchant bankers. Correspondingly, money lenders lent their surplus funds to those who had surplus funds but did not need them for the long run, and goldsmiths had facilities for the safe custody of valuables. Traders Bankers were essentially traveling specialists to whom merchant bankers (who carried out banking services) lent their money for safe custody (Kandasami et al., 2013). Bencivenga and Smith list the basic activities of banks as the acceptance of deposits, lending to a large number of agents, holding liquid reserves for the anticipated

withdrawal demand, issuance of liabilities more fluid than their main assets, and the removal of or reduction in the need for self-financing investments (Azolibe, 2020).

Modern banking, from the last decades of the 19th and the beginning of the 20th century, marked the significant development of universal banking, i.e., the combination of commercial and investment banking activities (Feldman, 2016; Tilly, 1998). The trust institution on which the model originated was the institutionalization of trust by London goldsmith bankers in the 17th century through paper credit money (Kim, 2011). In most countries in the 19th century, universal banking became widespread, except in England, where it served as an efficient response to informational asymmetry (Tilly, 1998). After the Banking Act of 1823 was passed in England, the growth of joint stock commercial banking was accelerated (Kandasami et al., 2013). However, in the interwar years, commercial and investment banking started to part ways with each other in most countries until finally, universal banking reappeared in the late 20th century in the shape of the banking conglomerates. Both during and after this period, state regulation and the role of banks in industrial financing had important consequences for the development of commercial banking.

2.2.3 Evolution of the Central Bank

As reflected in their evolution over nearly 400 years, central banks have changed roles and functions and adopted different policy regimes. By the end of the 1600s, the two central banks were formed. Riksbank opened in 1668 and became the oldest, and the Bank of England began banking in 1694. The Bank of England and other central banks were created by political and economic entanglement (Prieto, 2022). According to

Dudchenko (2020), the evolution can be characterized by the stages corresponding to shifts in target setting, relations with government, and internal management processes. Most importantly, central banks, along with nation-building and political liberation, were formed from the 16th to 19th centuries (Borio et al., 2008). The early central banks, for example, Swedish, United Kingdom (UK), French, and Italian, were the government's banks and were responsible for maintaining currency convertibility (Goodhart, 1995). Central banks have generally copied the courses of the leading institutions, such as the Bank of England and the Federal Reserve.

In 1900, there were only 18 central banks worldwide, but by the early 21st century, there were nearly 180 (Borio et al., 2008). Central banks evolved to fulfill two main functions: macroeconomic management through monetary policy and microeconomic support for the banking system (Goodhart, 1987). Later, it acts as a lender of last resort and provides regulatory and supervisory services to maintain financial stability (Goodhart, 1987, 1995). Meanwhile, nonprofit maximization and non-competitive central banks are considered natural and necessary functions in the voluntary development of central banking to supervise and regulate the commercial bank system (Goodhart, 1990). Recent global financial crises further influence the evolution, prompting central bank mandates to expand and reform policies (Dudchenko, 2020). This ongoing development emphasizes the changing financial and economic landscapes upon which central banking drives its dynamic development.

2.2.4 Development of Islamic banking

The emergence of Islamic banks is a significant evolution in the pathway of commercial banking development, and they offer financial services that imply Islamic

values that are different from conventional banking systems (Alafianta et al., 2021). Early in its history, Islam practiced lending without charging interest, starting in the 1800s (Islahi, 2018). In the 1960s, Egypt was the country's first Islamic bank to open up the tradition of Islamic finance. Two significant milestones in Islamic banking occurred during the 1970s: The Islamic Development Bank started its operations, and Dubai Islamic Bank was opened to business (Iqbal & Molyneux, 2016). However, Indonesia faced problems with political disputes, legal obstacles, and economic problems, which hindered the growth of Islamic banking (Sari et al., 2016). Actively with their member countries, the Organization of Islamic Conference promoted Islamic banking (Alafianta et al., 2021). Nowadays, many Islamic countries, e.g., Bangladesh, Malaysia, and Pakistan, are practicing Islamic banking.

2.2.5 Evolution of global bank

Since their creation post-World War II, development banks have evolved considerably. The original model for Multilateral Development Banks (MDBs) was the World Bank, established to facilitate global development and the transfer of resources from developed to developing countries. Some regional development banks, e.g., the Asian Development Bank (ADB) and the African Development Bank, were also established to boost the regional economy (Kapur & Webb, 1996). Likewise, the New Development Bank (NDB) and the Asian Infrastructure Investment Bank (AIIB) were established. However, the World Bank has a larger operational agenda than other regional banks. The global banks work for poverty, good governance, climate change, and infrastructure development, to name a few. These global banks provide long-term credit at a cheaper interest rate, and they need to cooperate with each other rather than

compete (Wang, 2017). However, MDBs need to be well-capitalized to support developing and emerging countries and collaborate with national-level development banks (Ocampo & Ortega, 2022).

2.2.6 Digital Banking

Digital technology has greatly changed how people manage money since the 1980s, making fast online transfers replace old banking methods. Mobile apps, biometric security, artificial intelligence, and blockchain technology have powered the digital banking shift with technological advances (Wewege et al., 2020). Digital transformation helps people now have better financial clarity along with the services of modern banks. Due to technological development and digitalization, people are towards cashless transactions using debit and credit cards like Visa and Mastercard, mobile banking, and online banking. The introduction of digital currencies is also being processed in many countries (Dhande et al., 2022; Sharma & Piplani, 2017). However, there are still a few barriers: digital security problems and unequally distributed technology across various parts of the country due to inadequate internet facilities (Dhande et al., 2022; Wewege et al., 2020). However, Chauhan et al. (2022) concluded that the future of digital banking and customer satisfaction depends on functionality and mechanical feasibility. Furthermore, Alzoubi et al. (2022) added that cyber security threats have become a significant issue in the expansion of digital banking as customers use the internet and mobile apps in this regard since many people are not well aware of hacking and other cyber security risks.

2.3 Importance of the banking sector

The development of the financial sector strengthens the root-level economic development of a country, and commercial banks play an important role in this regard (Cheng & Degryse, 2010). Some studies indicate that financial sector development enhances the economic progress of a country (Kharel & Pokhrel, 2012; Rushchyshyn et al., 2021; Westermann, 2009). Some studies also report that the impact of financial sector development on the economy of developing countries is more significant than that of industrialized and developed countries (Calderon & Liu, 2003; Estrada et al., 2010). Moreover, Koivu (2002) stated that the efficiency of the banking sector is important for the economic development of a country. Similarly, Caporale et al. (2010) added that an efficient banking sector accelerates economic growth in ten new European Union members compared to underdeveloped stock and credit markets.

To describe the importance of the financial sector for the economic development of a country, Levine (2005) stated that financial institutions and markets foster a country's economic growth in several ways. This includes easing the exchange of goods and services through secured payment systems, mobilizing and pooling savings from various sources, ensuring fund supply for productive uses in investment projects, and providing guidance for effective corporate governance. Jokipii and Monnin (2013) mentioned that stability in the banking sector is vital for the economy's real output growth, while instability in this sector creates uncertainties about future real output growth. Additionally, Ward and Naude (2019) asserted that the banking sector is important to the economy as it links savers and borrowers. The authors also provided a range of financial services for a country's sustainable socioeconomic development.

To sum up, a stable banking sector is crucial for providing the financial services necessary to households and business firms to ensure a country's sustainable economic development.

2.4 Performance of the banking sector

Commercial banks have various stakeholders: stockholders, bondholders, borrowers, depositors, employees (management), regulators, and governments, to name a few. Stockholders are highly interested in their return on investment and investment security. Similarly, bondholders also want their interest revenue and principal investment to remain secured. While return on investment depends on commercial banks' profitability, investment security depends on financial stability. That is, profitability and financial stability have distinct significance to them. Thus, the management of commercial banks has to deal with various financial aspects, such as liquidity, profitability, financial stability, and management capability, to protect and ensure the interests of various stakeholders. Moreover, regulators are interested in the sustainable growth of this sector.

Liquidity demonstrates the firm's ability to pay its current obligation by generating adequate cash from its operating activities (Weygandt et al., 2015). Thus, maintaining adequate liquidity is essential for profitability and financial stability. Profitability represents the earning capability of the organization (Gibson, 2012), which is significant in ensuring the return of the investors. On the other hand, financial stability (solvency) refers to the firm's ability to survive in the business over a long period. It represents the firm's capability to pay back the principal amount of the investors,

including the return on their investments (Weygandt et al., 2015). Although steady profitability contributes to financial stability, both have separate importance in financial statement analysis (Subramanyam, 2014). The author also mentioned that measuring profitability has several advantages over measuring long-term financial stability. Although they are in financial statement analysis, they convey different messages to the stakeholders. Hence, profitability conveys information about the return on invested capital, whereas financial stability conveys information about the long-term sustainability of the firm's payment of its long-term obligations.

Some scholars (Banu & Vepa, 2021; Daboh & Duramany-Lakkoh, 2023; Kulshrestha & Srivastava, 2022; Kumar et al., 2023; Wanke et al., 2022) use the CAMELS rating system to measure the financial performance of the banking sectors. In the CAMELS rating, C stands for capital adequacy, A stands for asset quality, M stands for management capability, E stands for earnings, L stands for liquidity, and S stands for sensitivity to market risk. However, in the literature (Al-Matari, 2021; Boussaada et al., 2022; Kjosevski & Petkovski, 2021; Saif-Alyousfi, 2022; Yahaya et al., 2022), most of them are used as the determinants of commercial banks' profitability and financial stability. As profitability and financial stability are very crucial and have separate importance and implications for most of the stakeholders, this study focuses on measuring the effect of country governance indicators on the profitability and financial stability of commercial banks, as well as the moderating effect of the Country's Income Levels (CILs) on those effects.

2.5 Country governance

There is no universally well-accepted definition of country governance. Different scholars define it in diverse ways. As such, some define it with a narrow scope, while others with a broad scope. Zeng (2019) stated that country governance represents government effectiveness, overall regulatory quality, level of law enforcement, and effectiveness in controlling corruption in a country. According to the International Monetary Fund⁷ (IMF), country governance includes all the aspects of governing a country. This includes economic policies, regulatory frameworks, and adherence to the rule of law. However, poor governance stimulates corruption, which reduces the public's trust in the government, endangering a country's economic development.

To represent the quality of country governance, some scholars (Almaqtari et al., 2022; Kamarudin et al., 2016b, 2022; Mollagholamali & Rao, 2022; Ozili, 2018) use six country governance indicators developed by Kaufmann et al., (2010) and reported by the World Bank. Some authors (Barra & Papaccio, 2024; Eldomiaty et al., 2023; Elfeituri, 2022; Khan et al., 2023; Rahi et al., 2023; Tran et al., 2023) also utilize these six indicators to represent the country's institutional quality of a country. Some also use the average of six country governance indicators to represent the quality of country governance or institutional quality.

⁷ Visit International Monetary fund at <https://www.imf.org/en/About/Factsheets/Sheets/2023/The-IMF-and-Good-Governance#:~:text=Governance%20covers%20all%20aspects%20of,Video%20Player%20is%20loading>. Accessed on 10/12/2024

Kaufmann et al. (2010) defined country governance as “the traditions and institutions by which authority in a country is exercised. This includes (a) the process by which governments are selected, monitored, and replaced; (b) the capacity of the government to effectively formulate and implement sound policies; and (c) the respect of citizens and the state for the institutions that govern economic and social interactions among them.” From the definition, the government election process, regulatory agencies, effective financial and regulatory policies, and how people perceive them are the major driving forces of efficient governance of a country.

To measure the quality of country governance, Kaufmann et al. (2009, 2010) developed six worldwide governance indicators, such as the Voice and Accountability Index (VAI), Political Stability and Absence of Violence/Terrorism Index (PSAVTI), Government Effectiveness Index (GEI), Regulator Quality Index (RQI), Rule of Law Index (RLI) and Control of Corruption Index (CCI) through their series of investigations by the World Bank from 1996. Of the six governance indicators, VAI and PSAVTI relate to government selection, monitoring, and replacement processes. Meanwhile, GEI and RQI relate to the government’s ability to effectively formulate and implement sound public policies. Conversely, RLI and CCI involve the general public’s and the state’s perceptions of regulatory agency functions.

Those investigations are conducted under the macroeconomic and growth team, the development research group of the World Bank, based on the hundreds of specific and disaggregated individual variables on the various governance dimensions collected from 35 data sources generated by 33 organizations. The collected data represents the views on various governance dimensions of the public sector, private sector, Non-

Profit Organization experts, and thousands of individual and firm-level respondents from various parts of the world (Kaufmann et al., 2009, 2010). The definitions of governance indicators are detailed below.

Kaufmann et al. (2009, 2010) defined the CCI as “capturing perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as “capture” of the state by elites and private interests.” This index is developed to measure how public power is used for individual-level gain through different forms of corruption at the national level.

Kaufmann et al. (2009, 2010) defined GEI as “capturing perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government’s commitment to such policies.”

Kaufmann et al. (2009, 2010) defined regularity quality as “capturing perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.” In the definition, they focused on the formulation and execution of those regulatory policies that accelerate private sector development.

Kaufmann et al. (2009, 2010) defined the RLI as “capturing perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.” The rule of law measures how everyone

(individuals or firms) admires and follows the rules of the country, the law enforcement level by the police and the courts, and the possibility of crime and violence in a country.

Kaufmann et al. (2009, 2010) defined the PSAVTI as “capturing perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism.” Using an agent-based model, Vallier (2017) stated three concepts of political stability: durability, balance, and immunity. Note that durability exists when a high degree of mutual trust and cooperation is present among the citizens, durability is related to lower short-term variability, and immunity exists when members of the society resist the destabilization of the ideal system by non-compliant agents.

Kaufmann et al. (2009, 2010) defined the VAI as “capturing perceptions of the extent to which a country’s citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.” The quality of voice and accountability plays a vital role in country governance. It causes positive changes in the behavior and practices of the citizens and different government and non-government institutes and agencies (Rocha & Sharma, 2008).

The government in various countries influences the banking sector through various rules, regulations, and socioeconomic policies. Various scholars (Almaqtari et al., 2022; Kamarudin et al., 2016b, 2022; Khan et al., 2023; Ozili, 2018; Tran et al., 2023) have already investigated how the quality of country governance indicators affects various financial aspects of different kinds of banks and reported diverse impacts on

them based on the context. This study plans to measure the effect of each country's governance indicator on the profitability and financial stability of commercial banks.

2.6 Country's income level

A CIL is determined by its per capita Gross National Income (GNI) in US Dollars (USD). According to the World Bank⁸, the GNI per capita is calculated by dividing the GNI by the country's mid-year population. Furthermore, GNI includes gross domestic production plus net income from foreign countries (compensation for employees and property income). The World Bank calculates GNI in USD using the Atlas⁹ conversion factor rather than market exchange methods. This decreases the effect of exchange rate fluctuation when comparing a country's GNI. Under the Atlas method, the conversion factor is the average of the country's current and last two years' exchange rate, which is adjusted for the difference between the country's Inflation Rate (IR) and the international IR.

The World Bank classifies all countries into four categories based on the per capita GNI: Low-Income (LI), Lower-Middle-Income (LMI), Upper-Middle-Income (UMI), and High-Income (HI) countries. A CIL is updated each July 1st based on the GNI per capita of the previous year, 2021 (Hamadeh et al., 2022). According to World Bank

⁸<https://databank.worldbank.org/metadataglossary/world-development-indicators/series/NY.GNP.PCAP.KD.ZG> . Accessed on 15/12/2024

⁹ For details about the Atlas method, please visit <https://datahelpdesk.worldbank.org/knowledgebase/articles/378832-the-world-bank-atlas-method-detailed-methodology>. Accessed on 15/12/2024

classification 2022-2023¹⁰, countries with a GNI less than 1,085 USD are classified as LI countries, those with a GNI between 1,086 and 4,255 USD are classified as LMI countries, those with a GNI between 4,256 and 13,205 are classified as UMI countries, and those with a GNI above 13,205 are classified as HI countries. Table 1 represents the classification of a CIL.

Table 1: World Bank countries' income level calculation 2022-2023

Type	Criteria	No. of countries
Low- income	GNI less than \$ 1085	28
Lower-middle-income	GNI between \$1086 and \$4255	54
Upper-middle-income	GNI between \$ 4256 and \$13205	54
High-Income	GNI above \$13205	80

(Source: World Bank)

In the primary investigation, this study mentions that the values of country governance, profitability, and financial stability indicators differ based on the CIL. Building on this, this study expects the potential moderating effects of the CIL on the relationship between country governance indicators and commercial banks' profitability and financial stability.

2.7 Literature review

2.7.1 Literature on bank profitability

Banks' profitability depends on some internal and external factors. Various authors explain bank profitability from various points of view under different contexts. Some

¹⁰ <https://blogs.worldbank.org/en/opendata/new-world-bank-country-classifications-income-level-2022-2023> . Accessed on 17/03/2023

authors use macroeconomic factors, some use bank-specific factors, and some use bank-specific and macroeconomic factors. Alternatively, some authors use external non-economic factors, such as political, regulatory, and judicial factors, to explain bank profitability. This section of the literature review conducts a systematic review of existing literature on banks' profitability and seeks to demonstrate the factors affecting profitability.

Yahaya et al. (2022) conducted a study on the relationship between liquidity risk and the financial performance of banks. They use Return on Assets (ROA) and Return on Equity (ROE) to measure financial performance. Using a two-step system, the Generalized Method of Moments (GMM) estimation, they conclude that liquidity risk has a significant negative impact on the financial performance of banks. If the liquidity risk increases, the bank's performance will decrease. That is, if a bank suffers from a liquidity crisis, it cannot provide prompt financial services to the customers, which ultimately reduces bank profitability. Moreover, they also noted that NPL, deposit ratio, bank size, and interaction between NPL and liquidity risk had a negative association with the ROA and ROE. Actually, increased NPL reduces the earnings of the banks and, eventually, profitability. They also mentioned that inflation has a positive association with ROA yet a negative one with ROE. On the other hand, lag one of ROE and ROA, the capital adequacy ratio and GDP positively correlate with the ROA and ROE of banks.

Hunjra et al. (2022) used bank-specific factors to measure the financial performance of 76 commercial banks in India, Pakistan, Sri Lanka, and Bangladesh. ROA and ROE are used to measure financial performance. This study discovered that NPL and loan-

to-deposit ratio is negatively associated with the ROA and ROE of the commercial banks during the study period. In contrast, credit risk (measured by Z_Score), liquidity risk (measured by current ratio), operation risk, firm age, and firm growth positively affect ROA and ROE. Moreover, lag-1 and lag-2 of ROA and lag-1 of ROE are positively associated with ROA and ROE, respectively, but lag-2 of ROE is negatively associated with ROE of the commercial banks.

In a study on 47 Asian banks, Saif-Alyousfi (2022) examined the determinants of the profitability of banks. Using the two-step system GMM, the author concludes that cost-income ratio, NPL, loan loss provision, credit to the private sector, and financial crisis negatively affect banks' ROA, ROE, and Net Interest Margin (NIM). The increased cost-income ratio implies that commercial banks are incurring more expenses compared to their income, which ultimately reduces profitability, indicating operating inefficiency. The author also revealed that Non-Interest Income (NII) positively affects ROA and ROE but negatively affects NIM. This is attributed to the fact that whenever commercial banks focus on increasing NII, their focus on NIM reduces as well. On the other hand, opportunity cost, liquidity risk, demand deposit, market risk, capital adequacy ratio, loan growth, loan-to-asset ratio, bank size, GDP growth, real interest rate, IR, and stock market capitalization positively affect ROA, ROE, NIM, and NII of the commercial banks. However, liquidity risk affects NII negatively during the study period.

Rathnayake et al. (2022) conducted a study in China to examine the impact of interest rate liberalization on the financial performance of commercial banks and conclude that interest rate liberalization increases the competitiveness of Chinese banks and

profitability. Actually, interest rate liberalization helps commercial banks balance the interest rate paid on deposits and the interest rate charged on lending. Moreover, based on the market demand and supply of funds, they can set competitive interest rates for depositors and borrowers. All these increase bank profitability; however, if the interest rate is very high for lending, it can reduce loan demand. They also highlighted that NIM, NPL, and asset size are the key determinants of bank profitability. More specifically, they demonstrated that NPL negatively affects the profitability of both joint-stock and city commercial banks. Still, the size of the assets negatively affects joint-stock banks but positively affects city commercial banks. They emphasized that the loan-to-deposit ratio positively affects joint-stock banks but negatively affects the city commercial banks. This study also noted similarities with Saif-Alyousfi (2022) and Yahaya et al. (2022) regarding the positive association of NIM, capital adequacy ratio, and GDP growth with banks' profitability.

Almaqtari et al. (2022) examined how a country's corporate governance affects the profitability of the Indian banking sector. They collected data from 61 banks, 42 private banks, and 19 public banks from 2008 to 2017 and used Ordinary Least Squares (OLS) regression analysis along with a two-way random effects model and GMM estimation (for robustness check). This study used ROE, ROA, and NIM as profitability indicators and six country governance indicators were core Independent Variables (IV). From the empirical analysis, they concluded that country governance significantly affects the profitability of Indian banks. They revealed that control of corruption has a significant negative impact on profitability. In developing countries like India, excessive control of corruption can reduce investment opportunities for commercial banks. In contrast, the rule of law, regulatory quality, and voice and

accountability significantly impact profitability. At the same time, political stability and the absence of violence positively and significantly affect ROA and ROE but negatively and significantly affect NIM. Furthermore, government effectiveness negatively affects the ROA, ROE, and NIM of Indian banks. This is due to the fact that government intervention in the banking sector can reduce bank earnings by reducing interest rates and service charges for the prioritized sector. They also expressed that private banks performed better than public banks and eventually concluded that a country's corporate governance positively affects the profitability of the private banks, and the impact is greater than that of the public sector banks.

Al-Matari (2021) conducted a study to explain the determinants of bank profitability, taking bank liquidity as a Moderating Variable (MV) and focusing on internal factors to explain the same. Using OLS regression estimation, the author concluded that bank size and asset management are important for Gulf Cooperation Council (GCC) banks' performance. As a result, bank liquidity positively moderates the relationship between capital adequacy and bank profitability, as well as asset quality and bank profitability. Nippani and Ling (2021) concluded that bank size, GDP, and prime rate positively influence bank profitability measured in terms of ROA, ROE, and NIM. Li et al. (2021) also added that NII positively affects banks' profitability, as measured by ROA and ROE, during COVID-19.

In a study, Le and Ngo (2020) investigated banks' profitability in 23 countries. They include NIM, ROA, card, Automated Teller Machine (ATM), the overhead cost of total assets, capital to risk-weighted assets, NPL as bank-specific factors, Gross Domestic Product (GDP) growth rate, inflation, market power, and crisis as

macroeconomic factors. Using GMM estimation, this study highlights that the number of bank cards, ATMs, and points of sale influence the bank's profitability. This study also noted a negative impact of market power and inflation on bank profitability but a positive effect of capital market development and GDP growth on bank profitability. However, this study discovered a positive relationship between NPL and ROA. This may be attributed to the fact that earnings from higher loan growth in fast-growing countries can counter losses on NPL.

Ali and Puah (2019) conducted a study on the internal determinants of bank profitability and financial stability of the banking sector in Pakistan. Their sample size was comprised of 24 banks, and data were collected from 2007 to 2015 on selected variables: ROE, ROA, bank size funding risk, credit risk, liquidity risk, and a dummy variable for the financial crisis. The regression analysis revealed that credit risk and funding risk negatively influence bank profitability. However, the liquidity risk did not significantly affect the profitability of the Pakistani banking sector. On the other hand, bank size, credit risk, and bank stability positively and significantly affect the ROE of banks. Similarly, Bolarinwa and Soetan (2019) examined the effect of corruption on bank profitability. Using both difference and system GMM, they emphasized a mixed effect of corruption on bank profitability (measured by ROA and ROE) in emerging countries but a positive impact in developed nations. In emerging countries, the level of corruption is higher than in developed countries on average. Consequently, excessive focus on controlling corruption in emerging countries can reduce the opportunities for private gains. This, ultimately, demotivates investments at the individual level and the bank's profitable investment.

Almaqtari et al. (2019) conducted a study on the Indian banking sector to find the determinants of profitability in the banking sector. This study used pooled, fixed-effect, and random-effect regression models. They measured profitability using ROA and ROE. The bank-specific factors included bank size, asset quality, capital adequacy, liquidity, operating efficiency, deposits, leverage, assets management, and number of branches. At the same time, GDP, inflation, interest rate, exchange rate, financial crisis, and demonetization are macroeconomic variables. The regression analysis revealed that some bank-specific factors, such as bank size, operating efficiency, asset management ratio, and liquid, significantly impact ROE. On the other hand, some macroeconomic factors such as IR, interest rate, and exchange rate have statistically significant impacts on the ROE and ROA of the Indian banking industry. However, demonization has only a significant impact on ROA, not ROE.

Al-Homaidi et al. (2018) examined how bank-specific and macroeconomic factors affect the profitability of Indian banks. The profitability is measured by ROE, ROA, and NIM. Collecting data from 60 banks over ten years and using pooled, Fixed Effects (FE), random effects, and GMM estimation, they concluded that all the macroeconomic variables such as GDP, IR, interest rate, and real exchange rate negatively affected ROA, ROE, and NIM during the study period. On the other hand, bank-specific factors such as capital adequacy ratio, asset quality, bank size, liquidity, operating efficiency, deposits, and asset management positively affected the ROA, ROE, and NIM of Indian commercial banks. Hence, leverage negatively affects ROA but positively affects ROE.

Likewise, Adelopo et al. (2018) conducted a study on West African states to explain how bank-specific and macroeconomic factors affect bank profitability before, during, and after the financial crisis. Bank size, capital strength, cost management, and liquidity were their bank-specific variables - GDP, inflation, and market power are their macroeconomic variables, and ROA and NIM are their Dependent Variables (DV). Using FE estimation, they concluded that bank size, cost management, and liquidity significantly influence bank profitability before, during, and after the financial crisis. Moreover, they also concluded that other bank-specific and macroeconomic factors are also sensitive to the analysis periods.

Tan et al. (2017) investigated how risk, competition, and efficiency affect Chinese banks' profitability. ROA, ROE, and NIM were their DV. At the same time, credit risk, security risk, liquidity risk, capital risk and insolvency, bank diversification, bank size, bank sector, and cost efficiency were used as bank-specific IV. Meanwhile, GDP, stock market development, and inflation are used as macroeconomic IV. Using the two-step system GMM estimation, they concluded that credit risk, security risk, liquidity risk, capital risk, and insolvency risk significantly influence the profitability of the Chinese commercial bank industry. They reported that credit risk is negatively connected with the bank's profitability, while liquidity risk is positively linked with the profitability indicators ROA and NIM but negatively connected with ROE. They also stated that capital risk negatively influences ROA and NIM but positively affects ROE. In addition, this study suggested that banks with higher insolvency risk suggest higher profitability, but higher competition presents lower profitability.

Ting (2017) studied how financial development and the government's role affected bank profitability. Macroeconomic variables included real GDP growth and IR, and the bank-specific factors are loan growth, equity to assets, deposits to assets, loans to assets, and total loans. From this study, the author noted that a large banking sector improves bank profitability, which supports financial development, but financial liberalization is negatively related to bank profitability and asset quality. Moreover, the author also concluded that strong or weak government involvement with the bank demonstrates significant differences in the impacts of financial development and financial liberalization on bank profitability. Şanlısoy et al. (2017) also emphasized that political risk, political instability, and policy uncertainty negatively affect banks' profitability in Türkiye. They also mentioned that the negative impact of political risk on public banks is more substantial than that of private banks. Political instability and policy uncertainty generate uncertainties in the financial markets regarding lending, interest rates, and service charges, ultimately reducing bank profitability.

Asteriou et al. (2016) examined the impact of economic freedom, business regulation, and corruption on banks' profitability and financial stability. Collecting data from 681 financial institutions from 2000 to 2012 and using two-stage least squares regression estimation of causality, they discovered a mixed impact of economic freedom, business regulation, and corruption on the ROA, ROE, and NIM for real estate and mortgage, saving, and other financial institutions. For example, economic freedom negatively impacts ROA, ROE, and NIM in real estate and mortgage institutions but positively affects ROA and ROE in saving institutions. Likewise, corruption negatively impacts ROA in real estate and mortgage and savings institutions but positively impacts other financial institutions.

Menicucci and Paolucci (2016) investigated the determinants of bank profitability in the European banking sector. In this study, ROE, ROA, and NIM are used to determine bank profitability. They also included five bank-specific factors, such as bank size, equity to assets ratio, total loans to assets ratio, total deposits to total assets ratio, and loan loss provision to total loans ratio, as their IV. From the estimation, they revealed that all the IVs significantly influence bank profitability in the European banking sector. Still, the effects vary among all the profitability indicators. Specifically, bank size and capital ratio significantly affect bank profitability, while higher loan loss provision results in lower profitability.

Another study is conducted by Garcia and Guerreiro (2016) in Portugal to determine the internal and external determinants of bank profitability. In their study, they employed unbalanced panel data and OLS with FE for estimation. Profitability is measured by ROA, ROE, and NIM. Meanwhile, internal bank-specific variables are the cost-income ratio, loan loss provision, growth of deposits, the difference between bank market growth of total loans, interest expenses to total deposits, and interest income. Real GDP growth, effective tax rate, interest rate, and yearly household disposable income growth are external IV. Using OLS with FE for estimation, they concluded that both internal bank-specific and external macroeconomic factors significantly influence the profitability of Portugal's banking sector.

Ekpu and Paloni (2016) studied business lending and bank profitability in the UK. They investigated the significance of business lending as a source of bank profit in the UK banking industry. They collected bank-level data from the bankscope database, and their sample size is 83 UK banks. Using FE estimation, this study asserted that

business lending significantly affects the profitability of UK banks. They noted that business lending is highly considerable for small banks but negligible for large-size banks. Furthermore, they did not demonstrate any significant effect of ownership (domestic and foreign banks) on bank profitability.

Kamarudin et al. (2016b) researched how a country's governance affects the revenue efficiency of convention and Islamic banks in GCC countries. In this study, the authors used the Data Envelopment Analysis (DEA) method to measure the revenue efficiency of banks rather than using traditional profitability indicators. Using GMM estimation, they discovered that greater government effectiveness, rule of law, and voice and accountability have a significant positive impact on the revenue efficiency of both conventional and Islamic banks. At the same time, regulatory quality positively influences the revenue efficiency of Islamic banks only, while control of corruption and political stability positively affects the same as that of conventional banks.

Gropper et al. (2015) investigated the determinants of bank performance from different perspectives, including political power, economic freedom, and Congress's effects as independent regressors. Using FE estimation, they asserted that the economic freedom of the state positively affects bank profitability. They also concluded that political connections influence bank performance; however, the impact is low, and where the degree of economic freedom is low, political connections could benefit banks.

From the review of existing literature, most authors used macroeconomic and bank-specific factors to explain the changes in the profitability of commercial banks. To measure the profitability of the commercial bank, they use ROE, ROA, and NIM.

GDP, inflation, interest rate, and exchange rate, to name a few, are the most popular macroeconomic indicators. In contrast, the cost-income ratio, loan loss provision, growth of deposits, capital adequacy ratio, growth of total loans, interest expenses to total deposits, and interest income, amongst others, are bank-specific factors that explain the profitability of commercial banks. Conversely, the findings from Asteriou et al. (2016), Gropper et al. (2015), Rathnayake et al. (2022), Şanlısoy et al. (2017), and Ting (2017) proved the connection between a country's governance with the profitability of banks and its significance for the banking sector.

Although Almaqtari et al. (2022) investigated the impacts of a country's governance indicators on bank profitability, this study's findings suffer from limited context. Moreover, the findings from Kamarudin et al. (2016b) also suffered from limited scope and measurement differences. Due to the limited literature, it is exceedingly challenging to generalize the overall impact of country governance on bank profitability.

2.7.2 Literature on financial stability

Some scholars use NPL, Z_Score, and several accounting ratios to measure the financial stability of commercial banks. However, most studies focus on Z_Score. Few recent studies also include NPL. Eventually, this study uses two indicators: NPL and Z_Score.

2.7.2.1 Literature on non-performing loans (NPLs)

NPLs have become a matter of concern over the last couple of decades, and many countries and economic zones have been struggling with the higher level of NPLs in their banking sector. Consequently, controlling NPL is still a burning issue in banks' corporate governance. Many authors claimed that controlling the level of NPL at the national level is crucial to ensure greater financial stability in the banking sector. As various nations have been suffering from huge NPL, researchers have continually sought to investigate the causes of huge NPL from various points of view.

Erdaş and Ezanoglu (2022) conducted a study on the determinants of NPL based on bank-specific and macroeconomic factors in G20 countries from 1998 to 2017. Using dynamic panel data analysis, they concluded that the lagged value of NPL, ROE, credit cost, and credit growth positively affect NPL, and the relationship is statistically significant. On the other hand, capital adequacy and GDP growth negatively affect the same. Increased capital adequacy refers to the bank's financial efficiency and strength, which helps them select a secured loan portfolio. On the other hand, increased GDP growth enhances individual and firm-level loan payment capability, ultimately reducing NPL.

In an investigation of the determinants of NPL in GCC economies, Kumar et al. (2023) used data from 53 conventional banks for the period 2000 to 2018. Using a two-step system GMM estimation, they reported that GDP growth and inflation have significant negative associations with the level of NPL. In contrast, domestic credit to the private sector and volatility in the market have significant positive impacts on the same. They

also highlighted that the financial crisis (as a global economic factor) has a significant positive effect on the NPL of banks, and the determinants of NPL vary between pre-crisis and post-crisis periods. The reason behind the significant positive impact of the financial crisis on NPL may be that the financial crisis destabilizes the firm's and individual level income, which reduces loan payback capability. Moreover, Barra and Ruggiero (2023) investigated how bank-specific factors affect bank credit risk. This study used the NPL ratio as a proxy for credit risk. The empirical analysis suggested that regulatory credit policy, volume of credit, capitalization, and intermediation costs significantly affect bank NPL levels.

Gaur et al. (2022) studied how national policies formulated and implemented through bank regulators affect banks' credit quality in the Indian banking sector. Collecting data from 37 domestic commercial banks and using the two-step system GMM, they concluded that the strict capital requirement policy imposed by the Indian banking regulator enhances the credit quality of the banking sector by reducing the level of NPL. This is attributed to the fact that the strict capital requirement policies reduce risky loan payments. In an investigation, Mollagholamali and Rao (2022) contended that policies or regulations under country corporate governance that protect investors' interests could extend the business firm's use of a line of credit. It is assumed that the level of NPL is related to the extended line of credit of inefficient business firms. Ravirajan and Shanmugam (2021) added that excessive credit growth due to prioritized sectoral loans creates substantial non-performing assets in the Indian banking sector. This is attributed to the fact that whenever the government forces the banking sector to pay loans to the prioritized sector, bankers sometimes have to ignore the worthiness of the borrowers.

Boussaada et al. (2022) examined the relationship between liquidity risk and NPL of Middle East and North Africa (MENA) banks. They revealed that loan-to-deposit ratio and liquidity risk significantly increase the level of NPL in these countries. Moreover, the size of the bank, bank capital, and inflation have a significant negative relationship with the level of NPL. The association between GDP and NPL is positive yet statistically insignificant. Meanwhile, Mdaghri (2021) examined how liquidity creation affects the level of NPL in the MENA regions. After collecting data for 111 banks from 2010 to 2017 and using the two-step system GMM estimation for regression analysis, the author concludes that liquidity creation negatively affects the level of NPL of banks in the short term and long term, and the relationship is statistically significant.

Mishra et al. (2021) performed a study on the determinants of NPL in Indian banks. They collected data on political, macroeconomic, and bank-specific factors from 40 public and private sector banks from 2010 to 2019. Using both static and dynamic panel data analysis, they concluded that the index of industry production, inflation, consumer price index, exchange rate, and policy repo rate as macroeconomic factors significantly affect the level of NPL of banks. Of them, only the exchange rate has a positive relationship with NPL; however, the GDP growth rate in this study is not reported as statistically significant to explain the level of NPL. They also posited that the lag of NPL, gross loan and advance, provisions and contingencies, sector of banks, and income on investments as bank-specific factors significantly affect the level of NPL of Indian banks. Of them, only income of investment is negatively associated with the NPL. Lastly, the role of demonetization in 2016 had a significant positive impact on the level of NPL in Indian banks since demonetization reduces liquidity at individual and firm levels in paying back existing bank loans.

Kjosevski and Petkovski (2021) studied NPL in the Baltic states, focusing on the macroeconomic and bank-specific factors. This study utilized three models: FE models, difference GMM, and system GMM. They used GDP growth, inflation, unemployment rate, and public debt as a percentage of GDP as macroeconomic variables and the ratio of equity to total assets, ROA, and ROE as bank-specific factors. They concluded that GDP, public debt, inflation, unemployment, and the selected bank-specific factors significantly affect NPL.

Cincinelli and Piatti (2021) focused on investigating NPL as a reason for faulty credit processes. Using FE and two-step system GMM models, they concluded that higher levels of NPL are connected with the severe and prolonged recession in Italy, representing the macroeconomic connection with NPL. On the other hand, they also claimed that banks' lending process and monitoring policies are faulty, suggesting that the management's inefficiency regarding selecting good loans could enhance the level of NPL in the banking sectors. Conversely, Thomas and Thakur (2021) concluded that although macroeconomic factors affect NPL, the quality of bank management is significant for recovering and controlling the level of NPL.

In a study, Schiantarelli et al. (2020) focused on bank quality, judicial efficiency, and loan repayment from borrowers in the Italian banking industry. In this study, the authors reported that the financial health of the lending bank is related to delayed loan repayment. That indicates borrowers intentionally delay loan payments to the bank even though they have the ability to pay it. They also added that the local judicial system has a more significant influence on loan repayment, especially poor legal enforcement, since judicial inefficiency in recovering the collateral from the borrowers

causes intentional loan repayment to be lengthier. Lastly, they concluded that the level of NPL worsens due to weak banks and faulty judicial systems.

Likewise, Cerulli et al. (2020) conducted a study on NPL in the European banking industry. They focused on judicial inefficiency, a key determinant of NPL, by controlling some country- and bank-specific factors. Collecting data from 2006 to 2017 and using a dynamic generalized method of moments for regression analysis, they concluded that contract enforcement inefficiency due to judicial failure enhances NPL in European banks, which plays a key role in this regard. They also mentioned that GDP growth has a significant negative association with NPL, while sovereign bond has a significant positive association. On the other hand, capitalization, profitability, and loan growth significantly negatively affected the level of NPL during the study period. In essence, they recommended reforms in the judicial systems that would reduce lag time to enforce contract execution in the financial sector.

In their investigation, Khan et al. (2020) noted that NPL plays a vital role in the financial stability of banks and tried to determine the determinant of the NPL in developing countries. From the regression analysis, they concluded that operating efficiency and profitability indicators have a statistically significant negative impact on the level of NPL in developing countries. However, they discovered an insignificant negative association between capital adequacy and income diversification and the level of NPL of banks. Hada et al. (2020) focused on how macroeconomic factors affect NPLs in Romanian banks. Using collected data from 2009 to 2019, they concluded that the exchange rate, IR, and unemployment rate significantly affected the level of NPL during the study period. They also added that instability in the exchange rate

plays a key role in increasing the level of NPL in this country due to high foreign currency loans during the study period.

Jabbouri and Naili (2019) conducted a study on the determinants of NPL based on some bank-specific and macroeconomic factors in emerging economies. They collected data from 2003 to 2016 from 98 banks in the MENA countries. The regression analysis revealed that some bank-specific factors, such as the size of the bank, operating efficiency ratio, capital adequacy ratio, and profitability indicators, significantly affected the NPL in this region. Moreover, some macroeconomic factors, i.e., GDP growth rate, inflation, unemployment rate, and public debt, had statistically significant associations with the level of NPL during the study period. Of them, the size of the bank, capital adequacy ratio, operating efficiency ratio, and GDP growth rate have a negative relationship with NPL. Meanwhile, the remaining variables have a positive association.

Similarly, Mazreku et al. (2018) conducted a study on the determinants of NPL in transition economies. Using pooled OLS, FE, and random effects as estimation methods, they concluded that the GDP growth rate and inflation negatively affect the NPL of commercial banks. In contrast, the unemployment rate is positively associated with the same. However, they did not determine any significant association between export and NPL. In another study, Dimitrios et al. (2016) posited that the role of income tax as a percentage of GDP and its lag have a statistically significant positive impact on the level of NPL in Europe. Using GMM estimation, they also discovered that Lag-NPL, unemployment rate, and lag have a significant positive impact on NPL. On the other hand, the lag of real GDP growth, lag of government debt, output gap

based on the Hodrick-Prescott filter and proxies, ROA, ROE, and its lag have significant negative impacts on the level of NPL during the study period. However, this study did not observe a significant association between inflation and NPL.

In a study on African commercial banks, Ozili (2018) investigated the determinants of NPL. By controlling some macroeconomic (i.e., IR, GDP growth rate, and unemployment ratio) and bank-specific factors (i.e., bank efficiency ratio, regulatory capital ratio, and size of the banking sector), the author tries to examine how country governance indicators affect the level of NPL in African commercial banks before, during and after the financial crisis. Using FE analysis, the author claimed that regulatory quality negatively and significantly affects the level of NPL during the crisis; however, its impact is insignificant in post-crisis and pre-crisis periods. The effect of government effectiveness on NPL in the pre-crisis period is positive and significant. Despite that, it is negative and significant in the post-crisis period and insignificant during the crisis period. The impact of the rule of law on NPL is negative and significant in pre-crisis and post-crisis periods but insignificant during the crisis. Meanwhile, the positive impact of controlling corruption on NPL was only significant in the post-crisis period. At the same time, the negative impact of political stability is only significant in the pre-crisis period. In particular, bank-specific and macroeconomic factors have significant or insignificant mixed impacts on NPL. The diverse impacts of various country governance indicators on NPL may be due to the changing financial conditions and other macroeconomic conditions during pre-crisis, during-crisis, and post-crisis periods.

Using the quarterly data from 1990 to 2015 and GMM estimation, Dimitrios et al. (2016) highlighted that ROA, ROE, and GDP growth significantly reduce NPL in

Euro-area banks. By contrast, the unemployment rate, taxes, and lag-1 of NPL significantly increase it. Conversely, inflation is discovered to be negative but statistically insignificant in explaining the changes in NPL. Makri et al. (2014) conducted a study on the determinants of NPL in the Eurozone using macroeconomic and bank-specific factors. Macroeconomic variables include public debt as a percent of GDP, government budget deficit or surplus as a percent of GDP, growth in GDP, IR, and unemployment. At the same time, the bank-specific factors were bank capital and reserves to total assets ratio, ROA, and ROE. Using a different GMM estimation model, they stated that public debt, unemployment, and lag-1 of NPL significantly increase NPL. In contrast, bank capital and ROE significantly reduce it.

Using dynamic GMM estimation, Louzis et al. (2012) studied the determinants of NPL in Greece. The empirical analysis revealed that macroeconomic variables such as real GDP growth rate, interest rates, unemployment rate, and public debt affect bad loans in the Greek banking industry. Castro (2013) conducted a study on five European countries to examine how unfavorable economic and financial conditions affect bank credit risk. Credit risk is measured by the NPL ratio. Eventually, the author concluded that credit risk is significantly affected by some macroeconomic factors. GDP growth, share, and house prices significantly reduce credit risk. In contrast, real exchange rates, unemployment rates, interest rates, credit growth, and financial crises significantly increased credit risk. Finally, the author suggested appropriate policy formulation and implementation to promote economic growth, employment, and productivity to reduce credit risk.

Using panel data from some European countries, Rinaldi and Sanchis-Arellano (2006) conducted a study on household debt sustainability in European countries. They concluded that some macroeconomic variables, such as disposable income, unemployment, and monetary condition, influence bank credit risk. They also emphasized that some bank-specific variables (such as managerial efficiency, risk preference, etc.) have a significant impact on the NPL of banks. Similarly, Berge and Boye (2007) also investigated the fact that bad loans in the Nordic banking industry are highly related to real interest rates and unemployment in the same zone. Some macroeconomic factors (i.e., GDP and inflation, to name a few) have notable bearings on the profitability of a bank, which were reported in several studies.

Berger and DeYoung (1997) investigated the linkage between bank-specific efficiency indicators and problem loans of United States (US) commercial banks from 1985 to 1994. They utilized Granger-causality techniques to evaluate their hypotheses. After a critical analysis, they concluded that decreased cost efficiency causes future problem loans, and problem loans cause reduced cost efficiency. Finally, they concluded that reduced cost efficiency might be the early signal of problem loans, and reduction in capital in thinly capitalized banks might cause future problem loans. Moreover, when commercial banks offer loans without proper assessment, the chance of default and NPLs increases (Skarica, 2014). Accordingly, Podpiera and Weill (2008) conducted a study on transition countries to examine whether NPL and cost inefficiency cause bank failure. Collecting data from Czech banks from 1994 to 2005 and using GMM estimation, they concluded that reduced managerial efficiency causes inefficiency in cost and bad loan management, which ultimately causes bank failure in transition countries.

Most authors use macroeconomic and bank-specific factors to investigate the causes of NPL. Of the macroeconomic factors, real GDP growth, inflation, exchange rate, interest rate, and unemployment rate are given supreme importance by the various authors. Meanwhile, equity to total assets, cost-to-income ratio, ROA, ROE, gross loan and advances, provisions and contingencies income on investment, and sector of banks are the bank-specific factors to explain NPLs. However, only a few authors relate country governance or its elements with NPL. The findings from some studies (Cerulli et al., 2020; Gaur et al., 2022; Mollagholamali & Rao, 2022; Schiantarelli et al., 2020) suggested the connection between country governance and NPL. Moreover, although Ozili (2018) used country governance indicators to explain the changes in NPL, the findings from this study suffer from contextual limitations and fail to generalize the effect of each country governance indicator on the NPL of commercial banks.

2.7.2.2 Literature on Z_Score for financial stability

Financial stability in the banking sector is essential to ensure the sustainable economic growth of a country. This sector acts as a financial intermediary, collects funds from individuals' levels, and ensures smooth supply and security of funds for the business firms and individuals. Therefore, its long-term sustainable development and financial stability are crucial for the whole economy. To identify the causes of the financial instability or insolvency of banks, some authors use Z_Score (developed by Hesse and Cihák (2007). Some use accounting ratios or unique techniques (Adusei, 2015; Ali & Puah, 2019; Azmi et al., 2019; Chand et al., 2021; Chen, 2022; Ghosh et al., 2018; Hesse & Cihák, 2007; Ozili, 2018) to explain what factors affect the changes in financial stability or solvency of banks in different contexts, countries, and economic zones.

In a study in Africa, Ofori-Sasu et al. (2023) investigated the effect of bank risk exposure on the financial stability of banks using an interaction effect of regulations. In this study, Z_Score is used to measure bank stability, and they also controlled some bank-specific and macroeconomic variables. They also used a variable named “Institutions” as the weighted value of six countries’ governance indicators to proxy the quality of macro-prudential action and monetary policies. Collecting data from 54 African countries from 2006 to 2020 and using the two-step system GMM estimation, they discovered that the relationships between credit risk and bank stability, as well as insolvency risk and bank stability, are non-linear and statistically significant. They posited that credit risk and insolvency risk above the threshold value have a significant negative impact on bank stability and vice versa. They also claimed that macro-prudential action and monetary policies have a significant positive impact on bank stability. Hence, bank size and bank funding have a significant positive impact on bank stability, but capital ratio and GDP growth have significant negative associations.

Chen (2022) researched how bank interconnectedness affects bank financial stability (measured by Z_Score). The author concluded that a higher level of bank interconnectedness negatively affects financial stability since high interconnectedness increases the banking sector’s systematic risk, and the adequacy of capital cannot reduce this systematic risk of the bank. Similarly, Wang (2022) investigated the bankruptcy tendency of Chinese and American commercial banks using their liquidity risk and reported that traditional loan projects, committed loan projects, and demand deposits influence banks’ liquidity risk. The author also added that due to the low capital ratio, high demand deposit ratio, rapid loan growth, high NPL, and lack of risk prevention awareness, liquidity risk is remarkably high in China. Furthermore, the

authors asserted that financial integration may be harmful to financial stability, and the negative effect of bank interconnectedness on bank stability is greater when the economy moves to recession. This is attributed to the fact that financial integration may increase external shock, regulatory challenges, and severe competition in the market.

Chand et al. (2021) conducted a study on the determinants of bank stability in Fiji. They measured bank stability in terms of Z_Score, risk-adjusted ROA, and risk-adjusted equity-to-assets ratio. The FE method model is used to control for bank heterogeneity, and they demonstrated that bank size, credit risk, funding risk, and the Herfindahl-Hirschman index have a significant positive effect on bank stability. In contrast, the loan-to-assets ratio has a significant negative association with the financial stability of banks. They also revealed that inflation and GDP are positively linked with bank stability; however, inflation was statistically significant only. Furthermore, they concluded that NIM and remittance inflow are negatively associated with bank stability.

Azmi et al. (2019) conducted a study on the impact of competition and income diversification on the financial stability of Islamic and conventional banks, collecting data from 14 dual banking economics from 2005 to 2016. Using system GMM estimation, they analyzed that lag-1 of Z_Score, ROA, gross loans to total assets, and the bank's size positively affect banks' financial stability. On the other hand, cost-to-income ratio, liquidity-to-total assets ratio, GDP growth rate, inflation, and crisis negatively affect the financial stability of banks. Chand et al. (2021) mentioned a positive effect of GDP growth on financial stability, while Azmi et al. (2019) noted a

significant negative effect of GDP growth. The reason behind the positive effect is that increased GDP increases the loan payback capability of the borrowers and the demand for bank services, reducing loan default risk. On the other hand, increased GDP growth may increase the risk-taking tendency of commercial banks and investors, leading to bad loans and bank insolvency. Simultaneously, Ghosh et al. (2018) conducted a study on how earning volatility affects the bankruptcy of financial institutions. Thus, using random effects model estimation, they discovered that ROA and ROE have significant positive associations with banks' financial stability. This is due to the fact that steady profitability increases commercial banks' financial strength and capital adequacy, ultimately increasing financial stability.

Ali and Puah (2019) examined the determinants of bank profitability and financial stability in Pakistan. In this study, they used Z_Score to measure financial stability and only included bank internal factors as IV, ignoring external factors. The regression analysis suggested that bank size, funding risk, credit risk, and bank profitability significantly affect bank stability in Pakistan, but liquidity risk is insignificant. Abad-González et al. (2018) also studied the determinants of bank solvency in the European Union. In this study, capital, assets, earnings, management, and liquidity were bank-specific variables. GDP, unemployment, changes in long-term interest, changes in short-term interest, IR, exchange rate, and changes in commercial property prices were macroeconomic variables. Their statistical analysis presented that capital strength, asset quality, and earnings significantly positively affect bank solvency in the EU. In contrast, management inefficiency, short-term interest rates, and inflation significantly negatively affect it.

Ozili (2018) conducted a study in Africa to find the determinants of bank stability. In the study, Z_Score measured bank stability along with financial ratios such as loan loss coverage ratio, asset quality ratio, level of financial development, and insolvency risk. Some bank-specific, macroeconomic, and country governance indicators were explanatory variables. Collecting data from 48 African countries and using FE estimation, this study revealed that government effectiveness and control of corruption have a significant positive impact on the financial stability of banks. This is attributed to the fact that controlling corruption can reduce intentional loan default and fraudulent behavior in society and bank governance. Moreover, if the government can effectively control and promote the banking sector, it can increase the quality of bank-level corporate governance, ultimately increasing bank stability. In contrast, political stability has a significant negative effect on the same. This significant negative effect may be due to prolonged rulings by the same party, which may increase undue political pressure on commercial banks to offer loans to less creditworthy customers. Consequently, this can generate excessive bad loans or intentional delays in loan payback.

Berger et al. (2016) investigated how corporate governance affects bank failure during the financial crisis. They used multivariate logistic regression, using 0/1 as an indicator for bank failure, and suggested that capital ratio, ROA, and percentage of NPLs could explain bank failure. The bank's ownership structure could be another critical indicator of bank failure. Shareholding of lower-level and non-Chief Executive Officer (CEO) higher-level managers significantly enhances the probability of bank failure, indicating that non-CEO managers take substantial risks, which causes bank failure. Similarly, Sufian and Habibullah (2014) demonstrated that greater economic freedom

in a country to start new businesses affects the efficiency of banks. However, restrictions on these activities could negatively affect them. Toader et al. (2018) mentioned that banks and their country's characteristics are significant for financial stability. They also noted that a lower level of corruption in a country positively affects bank financial stability. In addition, they asserted that despite a country's higher level of corruption, good corporate governance practices can enhance a bank's financial stability.

In a study of 33 European countries collecting data from 681 financial institutions covering the period from 2000 to 2012, Asteriou et al. (2016) stated that bank performance and financial stability are negatively related. Despite that, economic freedom, regulation, corruption, and transparency have mixed effects on financial stability. They mentioned that the effects of the same on financial stability may differ based on economic zone, CIL, and size of the financial institutions. They also concluded that formulating policies that promote greater economic freedom, reduce regulation and corruption, and enhance transparency in European banking enhances better performance. Moreover, Eichler and Sobański (2016) argued that the political environment significantly affects the financial stability of European banks. Specifically, the national electoral cycle, the nature of national politics, and the power of the government affect the bank default risk in the Eurozone.

Compared to studies on bank profitability, studies on financial stability are minimal. To measure financial stability, scholars (Adusei, 2015; Azmi et al., 2019; Chand et al., 2021; Ofori-Sasu et al., 2023; Ozili, 2018) mostly use Z_Score developed by Hesse and Cihák (2007). In addition to bank-specific and macroeconomic factors, some

authors (Asteriou et al., 2016; Eichler & Sobański, 2016; Mishi & Khumalo, 2019; Ozili, 2018) focus on country governance indicators or their elements to explain changes in financial stability. Nonetheless, those findings suffer from limited context and scope and do not provide adequate evidence to generalize the impact of country governance indicators on the financial stability of commercial banks.

2.7.3 Moderating effect of Country's income level

A country's enhanced income increases the money supply in the open economy, and increased money supply enhances commercial banks' investable funds. That is, a CIL influences commercial banks' functions, which affects profitability and financial stability. To investigate the determinants of bank profitability in LI, middle-income, and HI countries, Dietrich and Wanzenried (2014) used ROA, ROE, and NIM as DVs. Capital ratio, cost-to-income ratio, deposit growth, loan loss provision, bank size, funding cost, interest income, bank ownership, and nationality are bank-specific regressors. Meanwhile, GDP growth, GDP per capita, effective tax rate, and inflation are macroeconomic regressors. Using GMM estimation, they discovered significant differences in the determinants of bank profitability among low, middle, and HI countries. For example, inflation positively impacts low- and middle-income countries but negatively affects HI countries, while GDP growth negatively affects banks in LI countries but positively affects the same in middle- and HI countries. Although bank capital in low- and middle-income countries does not contribute significantly to bank profitability, it positively and significantly affects the same in HI countries. In LI countries, the banking sector must face low competitiveness and higher profitability; however, in developed countries, individual banks face severe competition and,

eventually, lower profitability. Moreover, private banks are more profitable than state-owned banks in low- and middle-income countries but not in HI countries.

Likewise, Kamarudin (2015) investigated the effects of country governance on bank productivity in Islamic and conventional banks. To ensure the robustness of the original regression analysis between country governance indicators and bank productivity, the author explored how the relationship between country governance indicators and bank productivity in Islamic and conventional banks varies among low-, middle-, and HI countries. From the regression analysis, he observed the coefficients and p-values of the same change in those groups of countries. Asteriou et al. (2016) also noted that the impacts of economic freedom, regulation, corruption, and transparency on commercial banks' profitability and financial stability vary based on a CIL. Furthermore, Toader et al. (2018) contended that a country's characteristics are fundamental to the financial stability of banks. Meanwhile, Daly et al. (2008) concluded that a country's economic condition significantly affects the banking sector's overall performance.

In an investigation, Ting (2017) analyzed that financial development at the national level, with weak or strong government involvement, significantly affects the bank's performance. Rinaldi and Sanchis-Arellano (2006) discovered that household financial conditions, which are very much related to the CIL, affect NPLs at the household level and, ultimately, at the bank level. Tran et al. (2023) asserted that institutional quality (country governance) is significant for the financial stability of the banking sectors. In addition, the impact of the same in developing and emerging countries is highly crucial. This finding also supports the fact that the impact of country governance varies

in different countries based on their income level. Furthermore, Khan et al. (2023) mentioned that country governance (institutional quality) is a vital factor for the development and efficiency of the financial sectors. However, they revealed that the effect of country governance, based on the country's level of income and country governance indicators, on the efficiency of the financial system widely differs. Eldomiaty et al. (2023) posited that G-8 countries have higher-quality country governance than MENA countries, and G-8 countries have higher income levels than MENA countries. This finding also suggested that the CILs could shape the quality of the country's governance.

Accordingly, the findings of Asteriou et al. (2016), Daly et al. (2008), Dietrich and Wanzenried (2014), Khan et al. (2023), Kamarudin (2015), Ting (2017), Toader et al. (2018), and Tran et al. (2023) indicated that the effects of country governance indicators on commercial banks' profitability and financial stability vary depending on the CIL and the quality of its governance. This study posited that the values of country governance indicators, as well as profitability and financial stability indicators, widely differ in HI, UMI, and LMI countries (refer to Figures 1, 3, and 3 in Chapter One). That is, the quality of country governance and commercial banks' profitability and financial stability differ in those income levels. Therefore, the differences in the impacts of country governance indicators on the profitability and financial stability of commercial banks based on the CILs demonstrate the potential moderating effects of the CILs on the relationship between country governance indicators and profitability and financial stability of commercial banks.

2.8 Theoretical framework and hypothesis development

2.8.1 Resource Dependence Theory

According to the Resource Dependence Theory (RDT), the organization's behavior is affected by the external environment. At the same time, the organization must deal with the external parties to have control over the resources they use. 'RDT' was first introduced by Pfeffer and Salancik (1978) to demonstrate the external control of the organization and how access to external resources affects the organization's behavior. This theory also explains how organizations negotiate with the external environment to ensure access to external resources that help them to survive. Moreover, RDT acknowledges the role of the board of directors in ensuring inter-organizational relations as a means of securing required resources and enhancing control over those resources. This includes information, a skilled workforce, and access to different social groups and government financial and regulatory agencies for favorable rules and regulations.

According to Pfeffer and Salancik (2003), "RDT was originally developed to provide an alternative perspective to economic theories of mergers and board interlocks. It also aims to understand precisely the type of inter-organizational relations that have played such a large role in recent market failures." To describe the past and future of RDT in social science research studies, Davis and Cobb (2010) stated that there are three ideas of this theory- "(1) social context matters, (2) organizations have strategies to enhance their autonomy and pursue interests, and (3) power (not just rationality or efficiency) is vital for understanding internal and external actions of organizations." They also noted that external control affects managerial and other business activities in bank governance.

The quality of corporate governance in the banking sector is crucial for the financial success of banks (Berger et al., 2016; Kamarudin et al., 2022; Wang et al., 2012; Williams & Nguyen, 2005). That is, effective internal and external corporate governance mechanisms enhance the bank's performance during crises (El-Chaarani et al., 2022). In particular, corporate governance denotes a set of rules, regulations, policies, and operational procedures that will be followed to manage a corporation's functions to achieve corporate goals and protect the interests of all stakeholders. It also describes the functions and responsibilities of all organization employees to protect the interests of all stakeholders, such as depositors, stockholders, and bondholders (Mostepaniuk, 2017; Shleifer & Vishny, 1997).

The banking sector differs from traditional corporate governance as a result of its multi-constituency organizational nature and complex financial and operational issues. Most of the bank's funds are supplied by the depositors and bondholders. However, decisions are made by the bank's managers, board of directors, and other bank officials without getting approval from the suppliers of funds about the changing risk profile of banks (Becht et al., 2011). Haan and Vlahu (2016) also accepted the uniqueness of corporate governance in banks. They concluded that the distinguished characteristics of banks' regulation, capital structure, and complexity in their business operations make corporate governance more complex in banks than in non-financial organizations.

The banking sector is highly regulated, and its functions, such as fund collection, lending, interest rates, contract enforcement, and the nature of corporate governance, are directly and indirectly influenced by the different government regulatory and

financial policies, rules, and laws. Correspondingly, Reaz and Arun (2006) explained that political interference and regulatory failure create severe problems in the internal corporate governance of banks. Moreover, Mechelli and Cimini (2018) concluded that governance in banks is influenced by the quality of the country's legal system in which they are functioning. They also mentioned that countries with high-quality legal systems ensure better firm-level corporate governance. In a study on how public legal protection impacts internal corporate governance in the banking sector in MENA and European countries, El-Chaarani and El-Abiad (2022) reported that a country with strong legal protection can ensure better internal corporate governance mechanisms to protect the interests of depositors, stockholders, and other stakeholders.

On the other hand, El-Chaarani and El-Abiad (2022) emphasized that banks operating in countries with lower-quality public legal protection have lower-quality internal corporate governance and cannot ensure greater protection against private benefits through better corporate governance mechanisms. As this sector is significant for a country's overall economic development, the government controls its operation through monetary, fiscal, and regulatory policies, rules, and laws. At the same time, government intervention, the political system, the level of corruption, and the level of accountability also affect the smooth functioning of banks.

According to the RDT, the external control or contexts and resources affect the banking sector. Given this perspective, this theory best explains the effects of country governance indicators, such as the CCI, GEI, RQI, RLI, PSAVTI, and VAI, on the profitability and financial stability of commercial banks. Additionally, Eldomiaty et al. (2023), Khan et al. (2023), and Tran et al. (2023) demonstrated that the quality of

country governance indicators and their impacts on banks differ based on the CIL. Thus, this theory is used to explain the moderating effects of the CIL on the relationship between country governance and the profitability and financial stability of commercial banks.

2.8.2 Effect of country governance

This study uses six country governance indicators reported by the World Bank, such as the CCI, GEI, RQI, RLI, PSAVTI, and VAI, to represent the quality of country governance. The following section presents the effect of country governance indicators on the banking sector and theoretical explanations.

2.8.2.1 Effect of Control of Corruption Index (CCI)

According to the **theory of corruption** by Macmullan (1961), higher levels of corruption have adverse consequences on efficiency, trust in the government by the citizens, political stability, and enterprises. A high level of corruption hurts the whole society. So, controlling corruption is especially important to reduce the evil consequences on society as a whole. On the other hand, Mancur Olson's **collective action theory** explains that corruption persists in a highly corrupted society despite all anti-corruption activities. This is especially true when people justify their activities based on what other people perform in the same situation rather than doing what they should do ethically. Even anti-corruption activities can backfire when corruption becomes a usual social norm.

The control of overall corruption at the national level is vital for a country's financial sector as it occasionally directly or indirectly affects financial performance. Hence, Bolarinwa and Soetan (2019) concluded that corruption is an essential indicator of bank profitability and reported that corruption has mixed effects on bank profitability in emerging economies. In particular, they stated that corruption significantly increases bank profitability in developed countries with the least corruption. Furthermore, they asserted that the effect of corruption on bank profitability is limited to weak institutional environments like emerging countries; rather, it is a global issue. This might be attributed to the fact that the level of corruption in emerging countries is very high, making an unfavorable environment for the banking sector compared to developed countries with low corruption. Similarly, Bougatef (2017) indicated a significant positive relationship between corruption and commercial bank profitability in Tunisia. The author concluded that the Tunisian banking sector profited from the higher level of corruption at the national level. In contrast, Zaman et al. (2020) concluded that the country's corruption and money laundering negatively affect the profitability of banks.

Toader et al. (2018) also demonstrated that a lower level of corruption increases financial stability in emerging markets, with few credit losses. They stated that the effect of corruption on financial stability differs based on the country's bank governance and macroeconomic environment. In line with this, higher-quality bank corporate governance can ensure greater financial stability in countries even with higher levels of corruption. Ali et al. (2019) claimed that corruption has a positive impact on the financial stability of banks. Meanwhile, Ozili (2018) concluded that CCI significantly increases the financial stability of commercial banks in Africa. In Africa,

most countries are developing and emerging countries, and the level of corruption is very high. As control of higher-level corruption generates greater accountability and responsibility and reduces fraudulent behavior in society, it increases bank-level efficiency and revenue generation and reduces NPL. Notably, all these things increase financial stability.

On the other hand, Addai et al. (2022), in their investigation of 715 banks from 52 countries, reported a negative impact of higher levels of corruption on banks' financial performance. The study concluded that higher levels of corruption at the national level reduce banks' financial performance, especially in African local and regional banks, but less in non-African banks. Osei-Tutu (2021) supported the fact that higher levels of corruption cause banks of all sizes in countries with various economic statuses to have lower cost efficiency. Simultaneously, Almaqtari et al. (2022) observed that controlling corruption significantly reduces the profitability of commercial banks. Eventually, the effects of corruption on commercial banks are diverse, and the effects of controlling corruption on profitability and financial stability could be mixed.

The level of corruption widely differs in HI, UMI, and LMI countries, and its impacts on profitability and financial stability also vary based on the context. According to the RDT, the control of corruption could create a distinct context in HI, UMI, and LMI countries to strengthen or weaken the relationship between CCI and the profitability and financial stability of commercial banks.

2.8.2.2 Effect of Government Effectiveness Index (GEI)

Government effectiveness is related to the quality of government agencies' public services and freedom from political pressure, the formulation and implementation of effective policies, and credible government assurance. Chen et al. (2021) examined that government support through effective policies significantly affects the bank's performance, especially during crises. Jiang et al. (2018) also explored that governments' formulation of corrective public policy and its rapid application in banking could enhance banks' financial performance. Ozili (2018) discovered that improvement in GEI significantly positively impacts commercial banks' financial stability, increases Z_Score, and reduces the NPL of commercial banks in Africa. Collectively, this finding proves that improvement in GEI increases bank-level efficiency, which positively contributes to the financial stability of commercial banks.

On the other hand, Almaqtari et al. (2022) mentioned that GEI significantly reduces commercial bank's profitability in India. The reason behind this negative impact may be that India is a developing country. Overall, corporate governance at the bank level is relatively poor, and increased government intervention in the banking sector may restrict revenue generation. However, Kamarudin et al. (2016) stated that GEI significantly increases the revenue efficiency of commercial banks, as measured by DEA analysis in the GCC countries, which is favorable for bank profitability. Unlikely, in an investigation in Malaysia, Indonesia, Brunei, and Singapore, Kamarudin et al. (2022) observed that GEI significantly reduces bank productivity, which is unfavorable for bank profitability. Nevertheless, all the above studies represent the mixed impact of GEI on the financial stability and profitability of commercial banks in different contexts.

As GEI values differ based on a CIL (Eldomiaty et al., 2023), an improvement in GEI could create different contexts (favorable or unfavorable) for commercial banks in HI, UMI, and LMI countries. This can modify the effect of GEI on profitability and financial stability. As the RDT explains the impact of various contexts on a firm's performance, the moderating effects of HI, UMI, and LMI on the relationship between GEI and the profitability and financial stability of commercial banks are supported by this theory.

2.8.2.3 Effect of Regulatory Quality Index (RQI)

The regulatory quality is considered an effective governance indicator that accelerates economic growth (Jalilian et al., 2007) as well as the development of the country's financial sector (Lee et al., 2020). Ghosh et al. (2018) concluded that executing effective regulatory policies by central banks could influence commercial banks' operating activities specifically for operations essential for sustainable banking practice. This aligns with Jalilian et al. (2007), who discovered that developing effective regulatory structures suffers from technical issues, such as not having the right regulatory instruments, the quality of regulatory institutes, and their ability. Notably, the banking sector is a highly regulated sector whose financial performance is directly affected by the regulatory policies and practices of the country (Özkan-Günay et al., 2014; Schliephake, 2016; Williams & Nguyen, 2005). Thus, Pasiouras et al. (2009) concluded that banking regulation has both positive and negative effects on banks' cost reduction and profit efficiency. Accordingly, the positive or negative impacts depend on the quality of the regulation that improves or reduces market discipline and supervisory power of the concerned authorities.

Pathrose (2022) deduced that the government needs to evaluate the regulatory policies regularly and try to find ways to upgrade them to reduce the firms' administrative burden and accelerate a country's economic development. The author also emphasized that reforming regulatory policies and practices makes business much more competitive, reduces regulatory costs, increases efficiency, and makes the economy more adaptable. In addition, the quality of bank regulation makes a significant positive contribution to the financial development of a country. Hence, the regulators must trade off conflicting interests among the participating groups, i.e., consumers and investors (Hertog, 2010). In essence, the quality of regulatory institutions and instruments is essential for the banking sector.

Almaqtari et al. (2022) stated that RQI has an insignificant negative effect (insignificantly reduces) on ROA and ROE but a positive effect (insignificantly increases) on NIM in Indian commercial banks. Meanwhile, Eldomiaty et al. (2023) revealed that RQI significantly reduces non-financial earnings in G-8 countries. In contrast, it increases the same in MENA countries. At the same time, Kamarudin et al. (2016b) suggested that RQI significantly increases the revenue efficiency of Islamic banks but insignificantly reduces the same of conventional commercial banks. In another study, Kamarudin et al. (2022) mentioned that RQI significantly increases the productivity of both kinds of banks. Similarly, Ozili (2018) reported an insignificant negative impact of RQI on commercial banks' Z_Score and NPL. However, the study observed a marginally significant negative impact of RQI on Z_Score and an insignificant negative impact on NPL before the financial crisis period. After the financial crisis, the negative effect of RQI on Z_Score is insignificant, but it has an insignificant positive impact on NPL. Correspondingly, the impact of RQI on profitability and financial stability will be mixed and will depend on the context.

As the banking sector is highly regulated, the government directly or indirectly influences commercial banks through regulatory policies, rules, and regulations. The quality of regulatory influence also differs based on the CIL. As the external control is explained under the domain of the RDT, eventually, this can better explain the effects of RQI on profitability and financial stability and the moderating effect of HI, UMI, and LMI.

2.8.2.4 Effect of Rule of Law Index (RLI)

The quality of the rule of law and its application in a country could influence the banking sector. Favorable financial laws can increase banks' financial performance, while unfavorable laws can limit operating activities and reduce banks' productivity. Roxas et al. (2012) noted that the rule of law that controls corruption, theft, crime, and tax administration significantly affects the firm's performance. Meanwhile, Eldomiaty et al. (2023) discovered that improvement in RLI significantly reduces the earnings of non-financial firms in G-8 countries, whereas it significantly increases them in MENA countries. Furthermore, Almaqtari et al. (2022) asserted that it significantly increases the profitability of Indian banks. In addition, Kamarudin et al. (2016b) mentioned that RLI increases the revenue efficiency of Islamic and conventional banks in GCC countries. This finding suggested that improvement in RLI in developing and emerging countries, e.g., India, GCC countries, and MENA countries, can improve the working environment (for example, it can reduce bank operating costs by recovering NPL) and bank-level efficiency. This, ultimately, increases bank profitability in some countries. However, excessive restrictions through strict rules and laws on commercial banks can reduce their performance (Chalid et al., 2019).

Notably, the quality of a country's rule of law is a vital country governance indicator that plays an active role in the well-functioning of commercial banks. Tomita (2022) concluded that the rule of law directly affects the size of bank credit and the bank's economic performance. A weak judicial system can negatively affect bank performance. On the other hand, Schiantarelli et al. (2020) noted that poor legal enforcement, caused by the weak judicial system, to recover collateral causes intentional loan repayment by the borrowers despite their capability to pay back. Meanwhile, Chalid et al. (2019) observed that higher levels of the strict rule of law can decrease a bank's financial stability. In contrast, Puspitasari and Prasetyo (2019) stated that favorable financial laws that increase stakeholders' security could increase the banking sector's stability. Ozili (2018) asserted that RLI had an insignificant negative effect on Z_Score and a significantly negative effect on NPL. The author also implied that RLI insignificantly increases the Z_Score of commercial banks after the financial crisis.

As a result, the effect of RLI on commercial banks' profitability and financial stability is mixed and varies based on the context. Building on this, the quality of RLI can create favorable or unfavorable contexts for commercial banks, which are in the domain of the RDT. As the quality of RLI differs in HI, UMI, and LMI countries, this study utilizes the RDT to explain the effects of RLI on profitability and financial stability and the moderating effect of HI, UMI, and LMI on those effects.

2.8.2.5 Effect of Political Stability and Absence of Violence/Terrorism Index (PSAVTI)

Political instability and violence create political risks for the financial sector. Şanlısoy et al. (2017) concluded that political risk from an unstable political environment negatively affects overall bank profitability. They also noted that ensuring a stable political environment is essential for the financial stability of the banking sector. Kouzez (2022) explored that political uncertainty reduces bank performance significantly, and small banks are especially more vulnerable than large banks to the negative effects of political risk. Moreover, political connection with the top management of banks has positive (Gropper et al., 2015) and negative (Chen et al., 2018) impacts on banks. Using an agent-based model, Vallier (2017) listed three concepts of political stability: durability, balance, and immunity. In particular, durability exists when a high degree of mutual trust and cooperation is present among the citizens. At the same time, balance is related to lower short-term variability, while immunity exists when members of the society resist the destabilization of the ideal system by non-compliant agents.

Ake (1975) stated that defining political stability starts with clarifying the concepts of politics and political structure. Political behavior is considered the activities of each member of society that influence the distribution of power to ease the decision-making for that society. The research also contended that compliance with the law enhances political behavior and maintains a traditional power distribution process. This, ultimately, upholds the authority of those who make laws and policies that will be implemented for the betterment of society. However, compliance with the law disrupts the political behavior and regular power distribution process of those who decide for

society. If the violation of law increases continually, political authority disrupts and causes political instability. Damania et al. (2004) concluded that political instability enhances judicial inefficiency, and corruption reduces regulatory compliance in a country. In other words, excessive corruption and judicial inefficiency negatively affect the country's banking sector (Bolarinwa & Soetan, 2019; Schiantarelli et al., 2020).

Likewise, Almaqtari et al. (2022) noted that political stability significantly increases ROA and ROE but reduces the NIM of Indian banks. Kamarudin et al. (2016b) also supported the fact that political stability increases the revenue efficiency of Islamic and conventional banks. Later, Kumar et al. (2023) added that political instability negatively affects the earnings of the banking sector. However, Eldomiaty et al. (2023) reported that political stability significantly reduces the earning yield of non-financial firms in both G-8 and MENA countries. Similarly, Ozili (2018) suggested that political stability negatively affects the financial stability of commercial banks in Africa. As political stability influences the working environment, banking activities, and its profitability and financial stability differently, and it also differs in HI, UMI, and LMI countries, the RDT can better explain the impacts of PSAVTI on profitability and financial stability and the moderating effect of HI, UMI, and LMI on those impacts.

2.8.2.6 Effect of Voice and Accountability Index (VAI)

The quality of voice and accountability plays a vital role in country governance. It causes positive changes in the behavior and practices of the citizens and different government and non-government institutes and agencies (Rocha & Sharma, 2008).

Suppose general people can participate in the government selection process freely and with accountability. In that case, it can better ensure citizens' rights, demands, and desired changes in the overall transparency and accountability of government practices based on the feedback from the citizens. Hence, Huynh and Jacho-Chávez (2009) concluded that voice and accountability cause better governance, which ensures the economic growth of a country. Moreover, regional economic conditions directly affect the aggregate banking performance of that region (Daly et al., 2008).

How voice and accountability work in country governance is consistent with the theory of change. The theory of change describes what goals need to be achieved, what resources need to be ensured to achieve those goals, how task achievement is evaluated after a certain period to determine the current situation, and what adjustments are necessary to achieve the desired goals. Funnell and Rogers (2011) used the theory of change to describe what factors act as driving forces to explain the behavioral changes in individuals, groups, and communities. Accordingly, the theory of change is also employed by Tembo (2012) to discuss how the citizens' voice establishes accountability at the state level of governance and how different contextual aspects play an active role in this. Furthermore, Silverstein (2021) used the theory of accountability to describe how accountability inspires true commitment to others and ensures the high performance of individuals and organizations. Notably, greater accountability can enhance performance at individual and institutional levels. In line with this, improvement in VAI creates a favorable working environment for commercial banks.

Almaqtari et al. (2022) stated that improvement in VAI significantly increases the profitability of Indian banks. In another study, Kamarudin et al. (2016b) mentioned that VAI significantly increases the revenue efficiency of Islamic and conventional banks. Kamarudin et al. (2022) also asserted that VAI significantly increases bank productivity, which is favorable for bank profitability. Likewise, Tran et al. (2023) discovered that VAI significantly enhances the financial stability of the banking sector. Improvement in VAI increases society's accountability, creating a favorable context for commercial banks. Moreover, the level of VAI differs in HI, UMI, and LMI countries. As the RDT explains the effects of external contexts on a firm's performance, this study uses this theory to explain the impact of VAI on financial stability and the moderating effects of HI, UMI, and LMI on those effects.

2.8.3 Hypothesis development

2.8.3.1 Hypothesis development for profitability

This study demonstrates, throughout Section 2.9.2, the effects of country governance indicators on bank profitability and eventually finds a mixed impact of CCI, GEI, RQI, and RLI. In particular, CCI, GEI, RQI, and RLI limit the revenue generation of commercial banks. Occasionally, they increase operational expenses and tax burden. However, they also have several positive effects on bank profitability. Considering their comparative positive and negative effect, this study hypothesizes that CCI, GEI, RQI, and RLI negatively affect bank profitability indicators. On the other hand, this study also observes that political instability and lack of accountability in the country can generate an unfavorable working environment for commercial banks. Therefore,

this study hypothesizes that improvement in PSAVTI and VAI positively affects bank profitability. Based on research objective one and research question one, the following hypotheses were developed for testing.

H₁ Country governance indicators significantly affect the profitability of commercial banks.

H_{1a} Country governance indicators significantly affect ROA.

H_{1a1} CCI significantly negatively affects ROA.

H_{1a2} GEI significantly negatively affects ROA.

H_{1a3} RQI significantly negatively affects ROA.

H_{1a4} RLI significantly negatively affects ROA.

H_{1a5} PSAVTI significantly positively affects ROA.

H_{1a6} VAI significantly positively affects ROA.

H_{1b} Country governance indicators significantly affect ROE.

H_{1b1} CCI significantly negatively affects ROE.

H_{1b2} GEI significantly negatively affects ROE.

H_{1b3} RQI significantly negatively affects ROE.

H_{1b4} RLI significantly negatively affects ROE.

H_{1b5} PSAVTI significantly positively affects ROE.

H_{1b6} VAI significantly positively affects ROE.

H_{1c} Country governance indicators significantly affect NIM.

H_{1c1} CCI significantly negatively affects NIM.

H_{1c2} GEI significantly negatively affects NIM.

H_{1c3} RQI significantly negatively affects NIM.

H_{1c4} RLI significantly negatively affects NIM.

H_{1c5} PSAVTI significantly positively affects NIM.

H_{1c6} VAI significantly positively affects NIM.

2.8.3.2 Hypothesis development for financial stability

Throughout Section 2.9.2, this study reports mixed effects of country governance indicators on the financial stability of commercial banks. Although some of the country governance indicators negatively affect bank profitability, improvement in country governance indicators creates a favorable environment for bank financial stability. For example, controlling corruption can reduce fraudulent manipulation in the lending process, better regulatory control can increase the quality of bank

governance, and implementing the rule of law can reduce intentional loan payback. Thus, this study hypothesizes that country governance indicators negatively affect NPL and positively affect the Z_Score of commercial banks. According to research objectives two and research question two, the following hypotheses are developed based on the discussion in Section 2.9.2.

H₂ Country governance indicators significantly affect the financial stability of commercial banks.

H_{2a} Country governance indicators significantly affect NPL.

H_{2a1} CCI negatively and significantly affects NPL.

H_{2a2} GEI negatively and significantly affects NPL.

H_{2a3} RQI negatively and significantly affects NPL.

H_{2a4} RLI negatively and significantly affects NPL.

H_{2a5} PSAVTI negatively and significantly affects NPL.

H_{2a6} VAI negatively and significantly affects NPL.

H_{2b} Country governance indicators significantly affect Z_Score.

H_{2b1} CCI positively and significantly affects Z_Score.

H_{2b2} GEI positively and significantly affects Z_Score.

H_{2b3} RQI positively and significantly affects Z_Score.

H_{2b4} RLI positively and significantly affects Z_Score.

H_{2b5} PSAVTI positively and significantly affects Z_Score.

H_{2b6} VAI positively and significantly affects Z_Score.

2.8.3.3 Hypothesis Development for moderating effect of country's income level

Dietrich and Wanzenried (2014) emphasized that the determinants of bank profitability widely differ in countries based on their income levels. Likewise, Kamarudin (2015) also highlighted that the effect of country governance indicators on revenue efficiency differs depending on the CIL. Moreover, Eldomiaty et al. (2023) posited that the quality of country governance and its impacts on financial performance differ in countries with different income levels. Notably, HI countries (e.g., G-8 countries) have higher-quality country governance than UMI and LMI countries. In addition, countries with HI can ensure higher-quality country governance, better

corporate governance, greater fund supply to the banking channel, and a favorable working environment than UMI and LMI countries. Therefore, the CILs create a distinct context for commercial banks. Given this perspective, based on the core concept of the RDT, this study hypothesizes that the CILs can moderate the relationship between country governance and profitability indicators differently. Accordingly, hypothesis H_3 and its sub-hypotheses are developed following research objective three and research question three. In developing hypothesis H_3 and its sub-hypotheses, this study follows the same pattern that is used by Leong (2022) and Mohd (2022) in their PhD thesis.

H_3 A CIL significantly moderates the relationship between country governance indicators and the profitability of commercial banks.

H_{3a} A country's HI significantly moderates the relationship between country governance indicators and ROA.

H_{3a1} A country's HI significantly moderates the relationship between CCI and ROA.

H_{3a2} A country's HI significantly moderates the relationship between GEI and ROA.

H_{3a3} A country's HI significantly moderates the relationship between RQI and ROA.

H_{3a4} A country's HI significantly moderates the relationship between RLI and ROA.

H_{3a5} A country's HI significantly moderates the relationship between PSAVTI and ROA.

H_{3a6} A country's HI significantly moderates the relationship between VAI and ROA.

H_{3b} A country's UMI significantly moderates the relationship between country governance indicators and ROA.

H_{3b1} A country's UMI significantly moderates the relationship between CCI and ROA.

H_{3b2} A country's UMI significantly moderates the relationship between GEI and ROA.

H_{3b3} A country's UMI significantly moderates the relationship between RQI and ROA.

H_{3b4} A country's UMI significantly moderates the relationship between RLI and ROA.

H_{3b5} A country's UMI significantly moderates the relationship between PSAVTI and ROA.

H_{3b6} A country's UMI significantly moderates the relationship between VAI and ROA.

- H_{3c}** A country's LMI significantly moderates the relationship between country governance indicators and ROA.
- H_{3c1}** A country's LMI significantly moderates the relationship between CCI and ROA.
- H_{3c2}** A country's LMI significantly moderates the relationship between GEI and ROA.
- H_{3c3}** A country's LMI significantly moderates the relationship between RQI and ROA.
- H_{3c4}** A country's LMI significantly moderates the relationship between RLI and ROA.
- H_{3c5}** A country's LMI significantly moderates the relationship between PSAVTI and ROA.
- H_{3c6}** A country's LMI significantly moderates the relationship between VAII and ROA.
- H_{3d}** A country's HI significantly moderates the relationship between country governance indicators and ROE.
- H_{3d1}** A country's HI significantly moderates the relationship between CCI and ROE.
- H_{3d2}** A country's HI significantly moderates the relationship between GEI and ROE.
- H_{3d3}** A country's HI significantly moderates the relationship between RQI and ROE.
- H_{3d4}** A country's HI significantly moderates the relationship between RLI and ROE.
- H_{3d5}** A country's HI significantly moderates the relationship between PSAVTI and ROE.
- H_{3d6}** A country's HI significantly moderates the relationship between VAI and ROE.
- H_{3e}** A country's UMI significantly moderates the relationship between country governance indicators and ROE.
- H_{3e1}** A country's UMI significantly moderates the relationship between CCI and ROE.
- H_{3e2}** A country's UMI significantly moderates the relationship between GEI and ROE.
- H_{3e3}** A country's UMI significantly moderates the relationship between RQI and ROE.
- H_{3e4}** A country's UMI significantly moderates the relationship between RLI and ROE.
- H_{3e5}** A country's UMI significantly moderates the relationship between PSAVTI and ROE.
- H_{3e6}** A country's UMI significantly moderates the relationship between VAI and ROE of banks
- H_{3f}** A country's LMI significantly moderates the relationship between country governance indicators and ROE.
- H_{3f1}** A country's LMI significantly moderates the relationship between CCI and ROE.
- H_{3f2}** A country's LMI significantly moderates the relationship between GEI and ROE.
- H_{3f3}** A country's LMI significantly moderates the relationship between RQI and ROE.

- H_{3f4}** A country's LMI significantly moderates the relationship between RLI and ROE.
- H_{3f5}** A country's LMI significantly moderates the relationship between PSAVTI and ROE.
- H_{3f6}** A country's LMI significantly moderates the relationship between VAI and ROE.
- H_{3g}** A country's HI significantly moderates the relationship between country governance indicators and NIM.
- H_{3g1}** A country's HI significantly moderates the relationship between CCI and NIM.
- H_{3g2}** A country's HI significantly moderates the relationship between GEI and NIM.
- H_{3g3}** A country's HI significantly moderates the relationship between RQI and NIM.
- H_{3g4}** A country's HI significantly moderates the relationship between RLI and NIM.
- H_{3g5}** A country's HI significantly moderates the relationship between PSAVTI and NIM.
- H_{3g6}** A country's HI significantly moderates the relationship between VAI and NIM.
- H_{3h}** A country's UMI significantly moderates the relationship between country governance indicators and NIM.
- H_{3h1}** A country's UMI significantly moderates the relationship between CCI and NIM.
- H_{3h2}** A country's UMI significantly moderates the relationship between GEI and NIM.
- H_{3h3}** A country's UMI significantly moderates the relationship between RQI and NIM.
- H_{3h4}** A country's UMI significantly moderates the relationship between RLI and NIM.
- H_{3h5}** A country's UMI significantly moderates the relationship between PSAVTI and NIM.
- H_{3h6}** A country's UMI significantly moderates the relationship between VAI and NIM.
- H_{3i}** A country's LMI significantly moderates the relationship between country governance indicators and NIM.
- H_{3i1}** A country's LMI significantly moderates the relationship between CCI and NIM.
- H_{3i2}** A country's LMI significantly moderates the relationship between GEI and NIM.
- H_{3i3}** A country's LMI significantly moderates the relationship between RQI and NIM.
- H_{3i4}** A country's LMI significantly moderates the relationship between RLI and NIM.
- H_{3i5}** A country's LMI significantly moderates the relationship between PSAVTI and NIM.
- H_{3i6}** A country's LMI significantly moderates the relationship between VAI and NIM.

Likewise, the country's HI income increases the loan-paying capability of individuals and firms, provides a higher fund supply to the banking channel, and causes better corporate governance at the bank level than UMI and LMI. Hence, the CILs could moderate the relationship between country governance and financial stability indicators differently. Based on the findings of some studies (Eldomiaty et al., 2023; Kamarudin, 2015; Tran et al., 2023), discussed in Section 2.9.2, and the concept of the RDT, the following hypotheses are developed to evaluate the moderating effect of the country HI, UMI, and LMI on the relationship between country governance and financial stability indicators for research objective four and research question four. In developing hypothesis H₄ and its sub-hypotheses, this study follows the same pattern used by Leong (2022) and Mohd (2022).

H₄ A CIL moderates the relationship between the country's governance indicators and the financial stability of commercial banks.

H_{4a} A country's HI significantly moderates the relationship between country governance indicators and NPL.

H_{4a1} A country's HI significantly moderates the relationship between CCI and NPL.

H_{4a2} A country's HI significantly moderates the relationship between GEI and NPL.

H_{4a3} A country's HI significantly moderates the relationship between RQI and NPL.

H_{4a4} A country's HI significantly moderates the relationship between RLI and NPL.

H_{4a5} A country's HI significantly moderates the relationship between PSAVTI and NPL.

H_{4a6} A country's HI significantly moderates the relationship between VAI and NPL.

H_{4b} A country's UMI significantly moderates the relationship between country governance indicators and NPL.

H_{4b1} A country's UMI significantly moderates the relationship between CCI and NPL.

H_{4b2} A country's UMI significantly moderates the relationship between GEI and NPL.

H_{4b3} A country's UMI significantly moderates the relationship between RQI and NPL.

H_{4b4} A country's UMI significantly moderates the relationship between RLI and NPL.

- H_{4b5}** A country's UMI significantly moderates the relationship between PSAVTI and NPL.
- H_{4b6}** A country's UMI significantly moderates the relationship between VAI and NPL.
- H_{4c}** A country's LMI significantly moderates the relationship between country governance indicators and NPL.
- H_{4c1}** A country's LMI significantly moderates the relationship between CCI and NPL.
- H_{4c2}** A country's LMI significantly moderates the relationship between GEI and NPL.
- H_{4c3}** A country's LMI significantly moderates the relationship between RQI and NPL.
- H_{4c4}** A country's LMI significantly moderates the relationship between RLI and NPL.
- H_{4c5}** A country's LMI significantly moderates the relationship between PSAVTI and NPL.
- H_{4c6}** A country's LMI significantly moderates the relationship between VAI and NPL.
- H_{4d}** A country's HI significantly moderates the relationship between country governance indicators and Z_Score.
- H_{4d1}** A country's HI significantly moderates the relationship between CCI and Z_Score.
- H_{4d2}** A country's HI significantly moderates the relationship between GEI and Z_Score.
- H_{4d3}** A country's HI significantly moderates the relationship between RQI and Z_Score.
- H_{4d4}** A country's HI significantly moderates the relationship between RLI and Z_Score.
- H_{4d5}** A country's HI significantly moderates the relationship between PSAVTI and Z_Score.
- H_{4d6}** A country's HI significantly moderates the relationship between VAI and Z_Score.
- H_{4e}** A country's UMI significantly moderates the relationship between country governance indicators and Z_Score.
- H_{4e1}** A country's UMI significantly moderates the relationship between CCI and Z_Score.
- H_{4e2}** A country's UMI significantly moderates the relationship between GEI and Z_Score.
- H_{4e3}** A country's UMI significantly moderates the relationship between RQI and Z_Score.
- H_{4e4}** A country's UMI significantly moderates the relationship between RLI and Z_Score.
- H_{4e5}** A country's UMI significantly moderates the relationship between PSAVTI and Z_Score.
- H_{4e6}** A country's UMI significantly moderates the relationship between VAI and Z_Score.
- H_{4f}** A country's LMI significantly moderates the relationship between country governance indicators and Z_Score.
- H_{4f1}** A country's LMI significantly moderates the relationship between CCI and Z_Score.

- H_{4f2} A country's LMI significantly moderates the relationship between GEI and Z_Score.
- H_{4f3} A country's LMI significantly moderates the relationship between RQI and Z_Score.
- H_{4f4} A country's LMI significantly moderates the relationship between RLI and Z_Score.
- H_{4f5} A country's LMI significantly moderates the relationship between PSAVTI and Z_Score.
- H_{4f6} A country's LMI significantly moderates the relationship between VAI and Z_Score.

2.9 Research GAP

Studies on the profitability and financial stability of commercial banks are not novel, and many studies have been conducted to explain the causes of changes in profitability and financial stability. The review of existing literature evidenced that macroeconomic variables and some bank-specific factors are the researchers' supreme concern in explaining commercial banks' profitability and financial stability. However, the findings from some research publications (Ali et al., 2019; Almaqtari et al., 2022; Cerulli et al., 2020; Chalid et al., 2019; Chen et al., 2021; Eichler & Sobański, 2016; El-Chaarani & El-Abiad, 2022; Jiang et al., 2018; Jou et al., 2017; Kamarudin, 2015; Kouzez, 2022; Osei-Tutu, 2021; Ozili, 2018; Özkan-Günay et al., 2014; Pasiouras et al., 2009; Roxas et al., 2012; Schiantarelli et al., 2020; Wegner, 2013) demonstrate that country governance indicators play an important role in the profitability and financial stability of commercial banks.

Furthermore, all those publications lack a collective investigation of the connection between country governance indicators and various performance indicators of commercial banks due to their limited scope and contextual issues. More specifically, those studies are conducted either in limited geographical areas or on specific

performance indicators of banks. This includes revenue efficiency, solvency for specific types of banks, or focus on specific elements of country governance indicators. The limited scope and contextual issues make it challenging to generalize the overall impact of country governance indicators on the various financial aspects of banks. This, ultimately, suggests a theoretical gap in the existing literature, and this study plans to fill this gap.

Moreover, the review of the existing literature (Dietrich & Wanzenried, 2014; Kamarudin, 2015) discovered that determinants of the bank performance indicators vary based on a CIL. Furthermore, Khan et al. (2023) and Tran et al. (2023) suggested that the quality of country governance significantly affects the financial stability and operating efficiency of financial sectors. However, they observed that the impacts of country governance indicators widely differ based on the CIL. Eldomiaty et al. (2023) also noted that the quality of country governance is higher in G-8 countries than in MENA countries having higher income levels. The primary investigation of this study also stated that the values of country governance, profitability, and financial stability indicators in HI, UMI, and LMI countries vary widely. Therefore, the nature of the relationship between country governance indicators and profitability and financial stability may vary based on the CIL. While measuring the relationship between the two, existing literature does not resolve this contextual issue. Consequently, this creates another theoretical and practical gap, and this study also plans to measure how the nature of the relationship changes based on the CIL.

More specifically, this study generalizes the impacts of country governance indicators on the profitability and financial stability of commercial banks based on country-level

data from all the available countries. Moreover, this study also examines how the CIL moderates the relationship between country governance indicators and the profitability and financial stability of commercial banks. This is to ensure effective financial and regulatory policy formulation and implementation in HI, UMI, and LMI countries.

2.10 Research framework

Commercial banks are highly regulated by the government and its regulatory agencies and depend on the external environment for resources. According to the RDT, the operating activities and financial performance of commercial banks could be influenced by the quality of the country's governance. Moreover, the CILs can affect the fund flow to commercial banks and make differences in the quality of country governance, which affects bank performance. Correspondingly, based on the core theme of RDT, research objectives, and questions, the following research framework is developed to fulfill the research gap. Profitability and bank financial stability are DV, while country governance indicators are IV. On the other hand, macroeconomic and bank-specific factors are included in the research framework as Control Variables (CV) for regression analysis to reduce omitted variables' bias and enhance the robustness of the regression outputs. In the framework, a CIL moderates country governance indicators and commercial banks' profitability and financial stability. Based on the income level categories, this study has three MV: HI, UMI, and LMI. The effect of country governance on the profitability and financial stability of commercial banks and the moderating effects of the CILs will be explained with the help of the RDT.

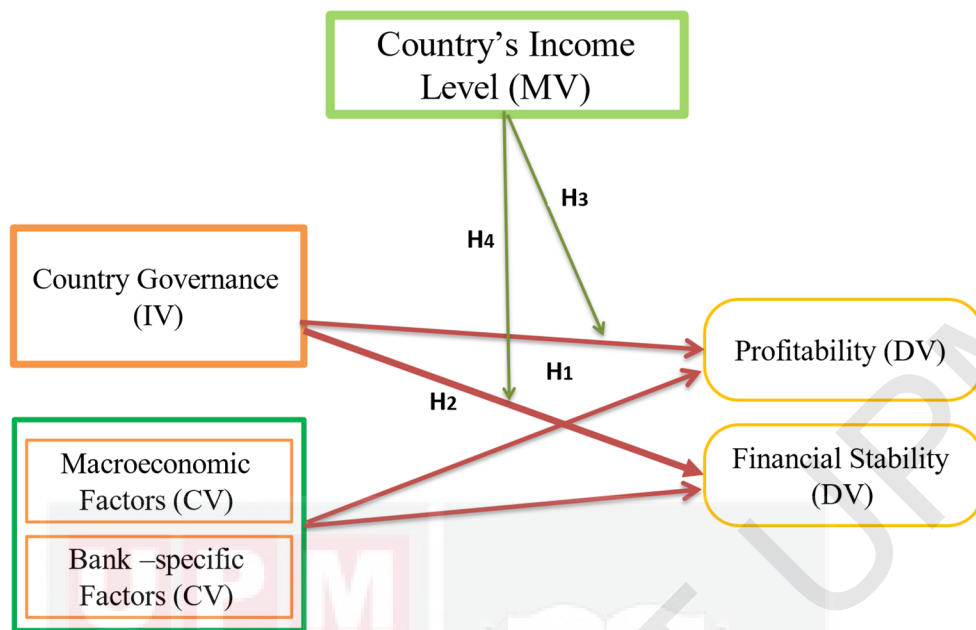


Figure 4: Research framework along with the hypotheses

In the research framework, six worldwide governance indicators, the CCI, GEI, RLI, RQI, VAI, and PSAVTI, are used as a proxy of country governance. Meanwhile, profitability indicators are ROE, ROA, and NIM, and the bank's financial stability will be measured by NPL and Z_Score. The macroeconomic variables include GDP growth rate, IR, and COVID-19. The bank-specific factors are the costs-to-income ratio (operating efficiency), bank overhead costs-to-total assets ratio (uses of bank assets), and banking system capital-to-total asset ratio. Subsequently, the hypotheses that are developed from research objectives and questions are also presented in the framework.

2.11 Chapter summary

This chapter represents the literature review and theoretical discussion based on the objectives and research questions. Earlier sections focus on the evolution of the banking sectors, the importance of the banking sector, the performance of banking

sectors, country governance, and the CIL. Section 2.7 represents the review of existing literature, under which Subsection 2.7.1 focuses on banks' profitability, Subsection 2.7.2 focuses on financial stability, and Subsection 2.7.3 explains the potential moderating effect of the CIL in the relationship between country governance and bank profitability and financial stability. Section 2.8 represents the theoretical framework and hypothesis development. In this section, this study links the underpinning theory with the variables and develops hypotheses. The research gap and research framework are provided in Sections 2.9 and 2.10, respectively, suggesting how the relationship will be analyzed.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter includes a discussion on the research philosophy, overall research design, variables selection, definitions of variables, data collection and data processing, and various statistical tools for data analysis. The research philosophy section presents the ontological and epistemological stance of this study and the selection of the research paradigm. The variables of this study are selected from the review of existing literature and relevant theories on country governance. This part also describes how required data are collected for statistical analysis and various statistical tools such as multiple correlations, Variance Inflation Factor (VIF) test, Ordinary Least Squares (OLS) regression estimation, heteroskedasticity, serial correlation, Cross-Sectional Dependence (CD) test, Panel Corrected Standard Error (PCSE) estimation, and Feasible Generalized Least Squares (FGLS) estimation are used to resolve all the research questions.

3.2 Research philosophy of this study

According to Saunders et al. (2019), “Ontology refers to assumptions about the nature of reality. ----- ontological assumptions shape the way in which you see and study your research objects.” Therefore, the ontological assumption of a person will decide what he or she will consider as reality and will drive him/her to select the objects for

investigation. There are two types of ontology: objectivism and subjectivism. This study is based on realist ontology (objectivism). Moreover, the ontological assumption of this study is that country governance could directly influence the Non-Performing Loan (NPL), profitability, and financial stability of banks, and a Country's Income Level (CIL) can play an important role in those relationships. Based on these assumptions, the country's governance indicators are selected as Independent Variables (IV) to measure their impacts on the profitability and financial stability of the banking sector in different nations.

Epistemology stands for the assumption about knowledge. What constitutes valid, legitimate, and acceptable knowledge, and how can we communicate this knowledge to others? (Burrell & Morgan, 2019). There are various epistemological stances, such as positivism, post-positivism, interpretivism, critical realism, and pragmatism, to name a few. Based on the ontological assumption, the epistemological stance of this study is positivism. In particular, positivists believe in objectivism, which assumes that facts are observable and measurable and can be expressed in numbers. Furthermore, positivists focus on strictly scientific methods, which are involved with yielding pure data and facts, developing hypotheses, and using the right statistical tools for testing those hypotheses based on deductive reasoning¹¹. Meanwhile, deductive reasoning can be defined as a logical approach to reaching specific conclusions from a general idea or assumption. In deductive reasoning, a hypothesis is developed from all the possible existing theories or available information, all the required data are collected, and based on proper statistical analysis, conclusions are drawn from general to specific cases

¹¹ There are four kinds of research approaches such as deductive reasoning, inductive reasoning, abductive reasoning and retroductive reasoning. Based on the nature of research objectives and questions, this study follows deductive reasoning.

(Shirota et al., 2013). Moreover, deductive reasoning focuses on applying quantitative methods for hypothesis testing.

Quantitative study involves collecting numeric data on the selected variables and hypothesis development. It uses some scientific methods to analyze collected data for hypothesis testing to achieve research objectives. According to Creswell and Creswell (2018), the quantitative study focuses on relationship analysis based on measurable variables to address an existing problem. They also stated that researchers, in a quantitative study, try to advance theory to test, and thereof, researchers conduct rigorous reviews of the literature to explore the research questions that are to be answered. Likewise, the title of this study critically denotes the relationship between the Dependent Variables (DV) and IV, and all the variables are selected from the review of existing literature. Selected variables are observable and measurable and can be expressed in numbers. Correspondingly, hypotheses are developed from the existing literature to assess and resolve research questions. The flow of the philosophical stance of this study (from ontological stance to method selection) is illustrated below.



Figure 5: Philosophical stance for method selection

3.3 Research design

All the objectives and research questions of this study are established based on the short review of existing literature on the connection of country governance to the profitability and financial stability of banks. This study starts its investigation with an intensive review of existing literature on the determinants of profitability and financial stability of the banking sector. Then, through the theoretical framework, this study investigates the possible connection between a country's governance indicators and the profitability and financial stability of the banking sector. This study also explores how the values of a country's governance indicators and profitability and financial stability indicators differ among High-Income (HI), Upper-Middle-Income (UMI), and Lower-Middle-Income (LMI) countries and whether a CIL plays any role in the relationship between a country's governance indicators and profitability and financial stability of commercial banks. Therefore, the required hypotheses are developed to measure direct and moderating effect analysis, and a research framework is developed.

From the literature review and theoretical framework, DV, IV, Control Variables (CV), and Moderating Variables (MV) are selected, and data are collected from the World Bank website. To analyze the data, this study will use STATA-15 software. The statistical analysis starts with descriptive statistics such as mean, Standard Deviation (SD), mode, Maximum (MAX), and Minimum (MIN) values and a graphical presentation of raw data. Then, to clean the data set, this study uses the "rstudent" command to remove the outliers from the data set and increase the robustness of the inferential statistical analysis. In addition, multiple correlation analysis and VIF tests are used to verify the presence of multicollinearity in the regressors.

To resolve the research questions, this study follows a systematic procedure, which is illustrated below.

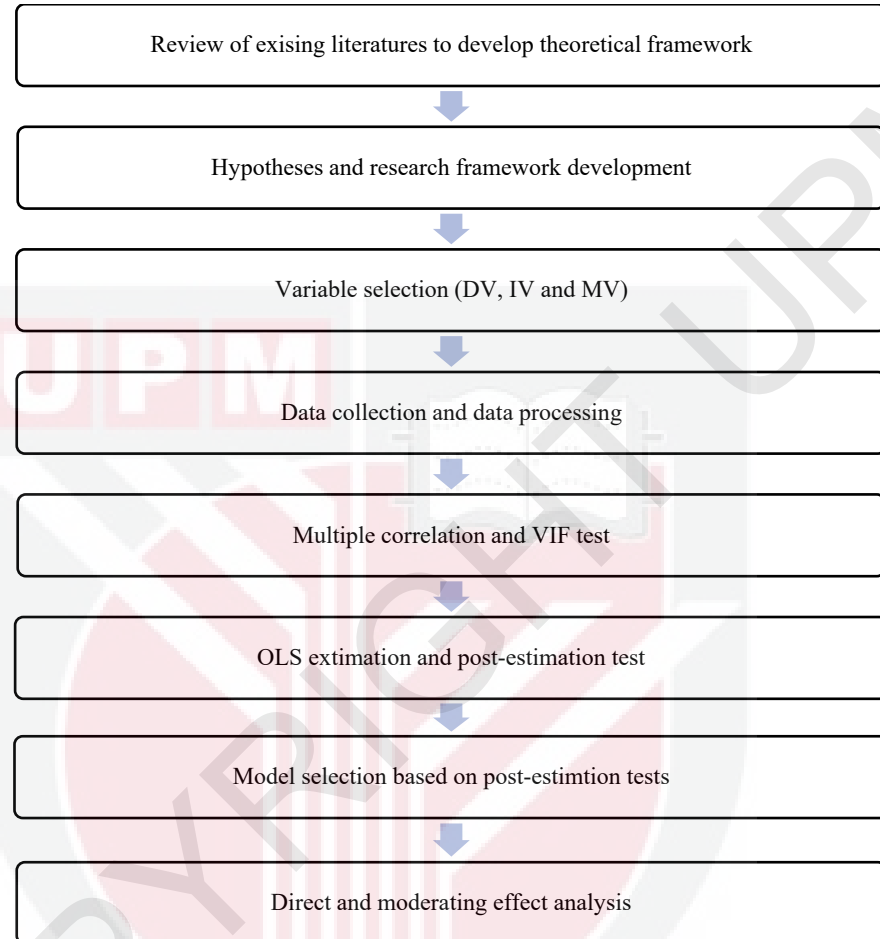


Figure 6: Research process of this study

Regression analysis starts with OLS estimation to measure the relationship between country governance indicators and commercial banks' profitability and financial stability based on objectives one and two. To examine the robustness of OLS estimation, some post-estimation tests (i.e., heteroskedasticity test, serial correlation test, and CD test are employed), and the selection of regression model is guided by the results of post-estimation tests. In the data set, there are three groups of countries: HI countries, UMI countries, and LMI countries. To achieve objectives three and four,

this study generates three dummy variables for each category and generates interaction variables for each category from the six-country governance indicators. Subsequently, based on post-estimation tests, appropriate regression models are used to measure the moderating effect of a CIL on the relationship between country governance indicators and the profitability and financial stability of commercial banks.

3.4 Variable selection

The variables are selected based on an intensive review of existing literature, relevant theories, and research objectives. This study has four variables: DV, IV, CV, and MV. Their selection process and brief description are provided sequentially in this section.

3.4.1 Selection of dependent variables

3.4.1.1 Measurement of profitability

To measure the profitability of commercial banks, some studies use Return on Assets (ROA) and Return on Equity (ROE), while others use ROA, ROE, and Net Interest Margin (NIM). In addition to ROA and ROE, NIM is essential for commercial banks as this is their main source of income, and NIM is directly affected by the central bank and government policies. Meanwhile, some studies (Rathnayake et al., 2022; Saif-Alyousfi, 2022) use NIM as the determinant of commercial bank profitability measured by ROA and ROE. However, in the literature, most of the studies (Adelopo et al., 2018; Al-Homaidi et al., 2018; Al-Matari, 2021; Ali & Puah, 2019; Almaqtari et al., 2022; Dietrich & Wanzenried, 2011; Garcia & Guerreiro, 2016; Le & Ngo,

2020) use ROA, ROE, and NIM as the indicators of commercial banks' profitability. Eventually, this study also uses ROA, ROE, and NIM as the indicators of commercial bank profitability. The World Bank uses the following formulas to determine ROA, ROE, and NIM.

$$ROA = \frac{\text{Commercial banks' after-tax net income}}{\text{yearly averaged total assets}} \times 100 \quad (I)$$

$$ROE = \frac{\text{Commercial banks' after-tax net income}}{\text{yearly averaged equity}} \times 100 \quad (II)$$

$$NIM = \frac{\text{Accounting value of bank's net interest revenue}}{\text{average interest-bearing (total earning) assets}} \times 100 \quad (III)$$

3.4.1.2 Measurement of financial stability

There is no unique way to measure the financial stability of commercial banks (Ozili, 2018). Some accounting ratios and financial distress prediction models are used (Subramanyam, 2014). Ozili (2018) used NPL and Z_Score to measure the financial stability of commercial banks in Africa. Moreover, this study observed that some commercial banks (discussed in the introduction chapter) became bankrupt in the last decade due to high NPL. Therefore, NPL can be an effective signal of future financial distress of commercial banks. Furthermore, some studies (Ali & Puah, 2019; Azmi et al., 2019; Chand et al., 2021; Chen, 2022; Ghosh et al., 2018) use Z_Score, the likelihood of bankruptcy, to measure banks' financial stability. Two Z_Scores were discovered in the literature: Altman's Z_Score and the World Bank's Z_Score. Most studies use the World Bank's Z_Score to measure the financial stability of commercial banks. Hence, this study uses NPL and the World Bank's Z_Score to measure the financial stability of commercial banks. The World Bank's NPL and Z_Score use the following formulas.

$$NPL = \frac{\text{Defaulting loans}}{\text{Total gross loans}} \times 100 - \quad (IV)$$

According to the World Bank, total default loans include interest payments and principal past due by 90 days or more. The loan amount recorded as NPL includes the gross value of the loan as recorded on the balance sheet, not just the overdue amount.

On the other hand, Z_Score is calculated using the following formula.

$$Z_Score = \frac{ROA + \left(\frac{\text{equity}}{\text{assets}}\right)}{SD(ROA)} - \quad (V)$$

SD(ROA) is the standard deviation of ROA calculated for country-years with at least five bank-level observations. ROA, equity, and assets are country-level aggregate figures.

3.4.2 Selection of independent variables

According to the research objectives and questions, a country's governance indicators are the main IV of this study. Six worldwide governance indicators, such as the Control of Corruption Index (CCI), Government Effectiveness Index (GEI), Rule of Laws Index (RLI), Regulatory Quality Index (RQI), Voice and Accountability Index (VAI), and Political Stability and Absence of Violence/Terrorism Index (PSAVTI), were first developed by Daniel Kaufmann and Aart Kraay of the World Bank, later on, upgraded by Kaufmann et al. (2009, 2010). Definitions of each indicator are included in the literature review (refer to Section 2). The values of each indicator range approximately between +2.5 and -2.5.

According to the World Bank Group¹², country governance indicators are calculated based on existing data sources produced by more than 30 think tanks, international firms, and private and non-governmental firms worldwide. Each data source produces primary data using its own methodologies and reports respondents' perceptions of each dimension of governance covering multiple countries. The collected data represent the diverse opinions of tens of thousands of survey respondents and experts worldwide. Kaufmann et al. (2010) used the following unobserved components model, presented in Equation VI, as a statistical tool developed by Goldberger (1972) and combined various data sources using Equation VII.

$$\text{Unobserved components model, } Y_{jk} = \alpha_{ik} + \beta_{jk}g_{jk} + \varepsilon_{jk} \quad (\text{VI})$$

$$\text{Governance indicator value, } WGI = \sum_k \left(\frac{Y_{jk} - \alpha_k}{\beta_k} \right) \times W_k \quad (\text{VII})$$

In the equations, Y represents the observed data on governance, α denotes the intercept parameter, β denotes the slope parameter, g is the true unobserved level of governance, j stands for countries, k stands for data sources, and ε is the error term. In Equation VII, W is the weight given for each data source.

This study employs these six country governance indicators as a proxy of country governance. The justification for this selection is that some studies (e.g., Almaqtari et al. (2022), Kamarudin et al. (2016b, 2022), Khan et al. (2023) and Ozili (2018)) used these country governance indicators as a proxy of country governance. Specifically, Kamarudin et al. (2016b) and Kamarudin et al. (2022) used the country governance

¹² Country governance indicators at <https://www.worldbank.org/en/publication/worldwide-governance-indicators>. Accessed on 13/05/ 2024.

indicator as a proxy of country governance to explain the changes in revenue efficiency and productivity of commercial banks, respectively. Ozili (2018) utilized country governance indicators to explain changes in the financial stability of African commercial banks. Almaqtari et al. (2022) also employed those six country governance indicators to explain the changes in the profitability of the Indian banking sector. Moreover, the selection of these variables is also guided by research publications (Cerulli et al., 2020; Dimitrios et al., 2016; Eichler & Sobański, 2016; Schiantarelli et al., 2020) to benchmark the effect of country governance indicators on the profitability and financial stability of commercial banks in different nations.

3.4.3 Selection of control variables

3.4.3.1 Macroeconomic control variables

This study observes some macroeconomic factors in the literature, such as Gross Domestic Product (GDP) growth rate, Inflation Rate (IR), exchange rate, unemployment rate, real interest rate, and import-export ratio (Adelopo et al., 2018; Ali & Puah, 2019; Almaqtari et al., 2019; Chand et al., 2021; Dimitrios et al., 2016; Le & Ngo, 2020; Louzis et al., 2012; Mishra et al., 2021; Yahaya et al., 2022), as the determinant of bank profitability and financial stability. However, GDP growth and inflation are common in most studies, and they are statistically significant in explaining the changes in profitability and financial stability of commercial banks. Considering this perspective, this study included GDP growth rate and inflation as macroeconomic Control Variables (CV) and excluded exchange rate, unemployment rate, and other macroeconomic variables due to maximum data unavailability at the source.

This study uses the World Bank-reported GDP growth and IR. The World Bank calculates GDP growth rate as “the annual percentage growth rate of GDP at market prices based on constant local currency----- expressed in USD. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.” At the same time, using the consumer price index, the World Bank calculated the IR as “the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly.”

Moreover, this study also chose COVID-19 shock as another macroeconomic variable. Some studies (DaSouza et al., 2023; Demirgüç-Kunt et al., 2021; Kozak, 2021; Li et al., 2021; Mateev et al., 2022) noted that COVID-19 significantly affects various financial aspects of the banking sector. As the COVID-19 period is included in the whole study period, this study also controls the COVID-19 shock as a macroeconomic variable to ensure robustness in the direct effect and moderating effect analysis. This, in turn, reduces bias in the estimation that could come from COVID-19. The COVID-19 shock is used as a binary dummy variable, where C_19D2 is used as a dummy variable for the COVID-19 period (years 2020 and 2021), and C_19D1 is used as a dummy variable for the non-COVID-19 period starting from 2010 to 2018.

3.4.3.2 Bank-specific control variables

In the literature, this study states that some studies (Adelopo et al., 2018; Al-Homaidi et al., 2018; Al-Matari, 2021; Almaqtari et al., 2019; Azmi et al., 2019; Chand et al.,

2021; Saif-Alyousfi, 2022) use some bank-specific factors. This includes cost-to-income ratio, bank size, loan-to-deposit ratio, liquidity, overhead cost, capital status, loan growth, and loan-to-assets ratio to explain the changes in banks' profitability and financial stability. However, based on the context of the studies, what is statistically significant (positive or negative) in one context is noted as insignificant in another context and vice versa. Few studies, e.g., Hunjra et al. (2022) and Yahaya et al. (2022), used financial stability indicators NPL and Z_Score as the determinants of profitability. On the other hand, few studies (Azmi et al., 2019; Ghosh et al., 2018; Ozili, 2018) used profitability indicators (ROE, ROA, and NIM) as the determinants of financial stability.

This study uses country-level bank data for bank-specific factors. Considering the data availability at source and relative importance (found in the literature), this study selects bank cost-to-income ratio, capital-to-total asset ratio, and bank overhead costs to total assets as the bank-specific CV. The bank cost-to-income ratio controls the effect of bank-level operating efficiency on profitability and financial stability. Notably, the capital-to-total assets ratio controls the strength of bank capital for profitability and financial stability. Meanwhile, the bank overhead cost-to-total assets ratio is used to control the effect of using diversified operating assets on commercial banks' profitability and financial stability.

According to the World Bank, bank capital to total assets ratio is calculated as “bank capital and reserves to total assets. Capital and reserves include funds contributed by owners, retained earnings, general and special reserves, provisions, and valuation adjustments. -----. Total assets include all nonfinancial and financial assets.” The

bank cost-to-income ratio is calculated as “operating expenses of a bank as a share of the sum of net-interest revenue and other operating income.” The bank overhead cost-to-total assets ratio is calculated as “operating expenses of a bank as a share of the value of all assets held. Total assets include total earning assets, cash and due from banks, foreclosed real estate, fixed assets, goodwill, other intangibles, current tax assets, deferred tax assets, discontinued operations, and other assets.”

3.4.4 Selection of moderating variables

According to the Resource Dependence Theory (RDT), organizations depend on external resources and the environment. Commercial banks function as financial intermediaries, collecting investable funds from households and other organizations through various deposits, which are very much related to the CIL. Moreover, as commercial banks are highly regulated, their operating activities, policies, and strategies are deeply influenced by the external environment, e.g., the favorable working environment and regulatory and financial policies of the country. In particular, as resources are scarce in LMI countries, commercial banks can offer loans at a higher interest rate than in HI and UMI countries. Moreover, on average, HI countries demonstrate better country governance than UMI and LMI countries.

Khan et al. (2023) and Tran et al. (2023) stated that the effect of improvement in country governance on the banking sector in comparatively Low-Income (LI)/developing countries is much higher than in high or developed countries. Dietrich and Wanzenried (2014) and Kamarudin (2015) mentioned that the impact of the determinants of the performance indicators of commercial banks varies in HI, UMI,

and LMI countries. This study also observed differences in the values of a country's governance indicators and bank financial performance indicators based on those categories. Eventually, this study assumes that a CIL moderates the relationship between country governance indicators and the profitability and financial stability of commercial banks.

Based on a country's Gross National Income (GNI), the World Bank classifies all countries into four categories: HI, UMI, LMI, and LI countries. This study excluded LI countries from the sample due to data unavailability. Accordingly, this study generates three dummy variables: HI for the country's high-income (for HI value is assigned one, otherwise zero), UMI for the country's upper-middle-income countries (for UMI value is assigned one, otherwise zero), and LMI for the country's lower-middle-income (for LMI value is assigned one, otherwise zero). These dummy variables are generated to examine the moderating effect of a CIL on the relationship between country governance indicators and the profitability and financial stability of commercial banks according to research objectives three and four. The following table provides short definitions of all the selected variables.

Table 2: Definitions of the selected variables

Name of variables	Name of indicators	Definition and measurement of indicators
Profitability	Dependent variables	
	Return on equity (ROE)	ROE refers to the commercial bank's after-tax income to yearly averaged equity. (presented in %)
	Return on assets (ROA)	ROA denotes commercial bank after-tax income to yearly averaged total assets. (presented in %)
	Net interest margin (NIM)	This ratio denotes banks' net interest revenue to yearly average interest-bearing assets. (presented in %)
Financial stability	Non-performing loans (NPLs)	NPL represents the percentage of non-performing to total loans given by banks. (presented in %)
	Z_Score	This index measures the financial stability of commercial banks. In other words, it conveys the chance of bankruptcy.
	Independent variables	
Country governance indicators	Control of Corruption Index (CCI)	This index denotes the extent to which public power is used for private gain through any form of corruption as well as the capture of the state by elites and private interests
	Government Effectiveness Index (GEI)	This index measures the quality of public and civil services, how these services are independent of political pressure, and the government's credibility in formulating and implementing proper policies.
	Regulatory Quality Index (RQI)	This index measures the capability of the government to formulate and implement sound policies and regulations to promote private-sector development in a country.
	Rule of Law Index (ROLI)	This index represents how people have confidence in and obey the rule of law in practice, the quality of contract enforcement, property rights, police and courts, and the probability of crime and violence.
	Political Stability and Absence of Violence/Terrorism Index (PSAVTI)	This index measures the probability of destabilization of the government because of unconstitutional/violent means, including politically motivated violence and terrorism.
	Voice and Accountability Index (VAI)	This index stands for the freedom of selecting government, expressing opinions, creating associations, and the freedom of the media.
	Control variables	
Bank-specific factors	Bank capital to total assets ratio (BCTA)	This ratio represents banking system capital as a percent of total assets. Total assets denote all the financial and non-financial assets, and capital includes contributed capital, retained earnings, various reserves, and provisions. (presented in %)
	Bank cost-to-income ratio (BCIR)	BCIR stands for operating inefficiency, which is computed as bank costs to income. (presented in %)
	Bank overhead costs to total assets (BOCTA)	This ratio represents the overhead cost of the bank as a percentage of total assets (presented in %). This study uses this ratio to show the use of bank assets.
Macroeconomic variables	GDP growth (GDPG)	GDP refers to the rate of change in GDP in a country. (presented in %)
	Inflation rate (IR)	Inflation means the changes in the consumer price index that represent the changes in the cost of various goods and services. (presented in %)
	C_19D2	C_19D2 is a dummy variable for the Covid-19 period 2020 to 2021; C_19D1 is a dummy variable for the non-Covid19 period 2010 to 2018.
Country's income level	Moderating variables	
	High-income (HI)	HI is a dummy variable for high-income countries.
	Upper-middle-income (UMI)	UMI is a dummy variable for upper-middle-income countries.
	Lower-middle-income (LMI)	LMI is a dummy variable for lower-middle-income countries.

3.5 Sample size and data collection

The study collects country-level data on the selected DV, IV, and CV for all the countries in HI, UMI, and LMI from the World Bank. There were 80 HI countries, 54 UMI countries, and 54 LMI countries, according to the World Bank classification of 2022. Primarily, data on six country governance indicators are collected for 12 years (Y) from 2010 to 2021 from the World Bank website, Worldwide Governance Indicators¹³. The data on DV and bank-specific CV are collected for the same period from the World Bank website, Global Financial Development.¹⁴ In the same way, data on the macroeconomic CV are collected from the World Development Indicators webpage¹⁵ of the World Bank.

After collecting all the data, the availability of the data is verified, and the data on the country's governance indicators are balanced. Still, the dependent, macroeconomic, and bank-specific variables are unbalanced. While determining the sample size for this study, the availability of data on DV was the prime consideration. By deleting one by one country having no data on DV, the sample size is reduced to 116 (N) countries' banks (47 from HI countries, 39 from UMI countries, and 30 from LMI countries; refer to appendix-A), and each variable may consist of $(116 (N)) \times 12(Y) = 1392$ observations. However, all the variables present some missing observations in the final data set. As this study uses the CILs as dummy variables, the changes in the income level of a country during the study period became an issue for assigning their

¹³ Visit <https://databank.worldbank.org/source/worldwide-governance-indicators>. Accessed on 10-02-2024

¹⁴ Visit <https://databank.worldbank.org/source/global-financial-development>. Accessed on 10-02-2024

¹⁵ Visit <https://databank.worldbank.org/source/world-development-indicators>. Accessed on 10-02-2024

categories. However, most countries were deleted due to missing data, and the remaining few were also excluded to ensure robustness in the moderating effect analysis.

3.6 Data analysis

3.6.1 Descriptive statistics and graphical presentation

As the data are collected from the World Bank, some descriptive statistics are used to analyze the data's nature. The most utilized descriptive statistics are mean, SD, MAX value, MIN values, skewness, and kurtosis. From the collected data, the mean, SD, MAX values, and MIN values of each variable are calculated and presented in tabular form. The descriptive statistics are presented on four panels. The first panel represents descriptive statistics for the whole data set, and the second, third, and fourth panels represent the same for HI, UMI, and LMI countries. The reason behind presenting descriptive statistics in four groups is to explain differences in the descriptive statistics of the collected data based on the countries' income levels. Apart from that, the mean values of each kind of variable are presented through bar diagrams to visualize the differences in the mean value of each variable based on each income group.

3.6.2 Data transformation and cleaning

This study employs five indicators for profitability and financial stability. To measure the direct and moderating effect, this study cleans data sets for each indicator of DV separately, and eventually, one data set becomes five clean data sets after removing

outliers from the data. All the variables, except country governance indicators and dummy variables, are in percentage form. Therefore, the values of country governance indicators are transformed into the natural log (e.g., $\ln CCI$, $\ln GEI$, $\ln RQI$, $\ln RLI$, $\ln PSAVTI$, and $\ln VAI$) to make it more meaningful in regression analysis. Notably, there are many negative observations in country governance indicators in the data set, and to convert original data into a natural log form, all the negative observations are converted into positive (non-zero) observations, adding equal value with each observation of the same. Similarly, some missing values of the data set are filled up using average values if possible. To remove outliers from the data, this study runs OLS estimation and then predicts residual using the "rstudent" command in STATA-15 and drops all the rows from the data set having residual values of more than two. The same processing is followed for all the indicators of DV.

3.6.3 Multiple correlation and VIF test for multicollinearity

To detect the presence of multicollinearity among the regressors, this study uses two statistical techniques: multiple correlation matrix using Pearson product-moment correlation coefficient and VIF test. The review of existing literature finds that when the regressors have correlation coefficients of 0.80 and above, they suffer from severe multicollinearity (Gujarati & Porter, 2009; Kennedy, 2008). Lind et al. (2012) observed that two IVs having a correlation coefficient between -0.70 and 0.70 will not face any problem in the same model, and the same beyond this range signals the presence of multicollinearity. They also suggested performing a VIF test to determine the presence of multicollinearity among the regressors critically.

Accordingly, to examine the presence of multicollinearity among the regressors, this study also uses the VIF test. Accordingly, OLS estimation (refer to Table B1 in Appendix B) is run for each indicator of DV separately from the clean data sets, and then the VIF test is conducted for the same. The outputs of multiple correlation analysis and VIF tests are presented in the same table as those of Panel A and Panel B, respectively. To critically identify multicollinearity, some authors (Kennedy, 2008; Lind et al., 2012; Wooldridge, 2015) recommend using the rule of thumb of 10 in this regard. That is, a regressor with a VIF value of 10 and above suffers from severe multicollinearity with other regressors and vice versa.

However, Gujarati and Porter (2009) stated that the calculation of VIF is not free of criticism as it suffers from standard error. Meanwhile, Ekpu and Paloni (2016) suggested using the rule of thumb with greater caution while finding the presence of multicollinearity in the variable of interest rather than CV. At the same time, O'Brien (2007) noted that the rule of thumb for VIF value ranges between 4 and 10. For example, Tan et al. (2019) utilized the rule of thumb of 5 of VIF for multicollinearity diagnosis. Thus, to ensure greater robustness in the regression estimation, this study uses the rule of thumb of 4 for the VIF test as guided by Ekpu and Paloni (2016) and O'Brien (2007) and the rule of thumb of 0.80 for correlation coefficients in the correlation matrix. That is, the variables that have correlation coefficients of more than 0.80 with other variables and VIF values of more than 4 are considered to suffer from multicollinearity and are excluded from the same model.

3.6.4 Detection of nonlinearity

Before using a linear regression model, it is vital to ensure that the relationships between DV and the regressors are linear. Accordingly, to check whether nonlinearity exists between DV and the main IV, country governance indicators, this study uses the augmented component-plus-residual plot proposed by Mallows (1986). The rule of thumb is that nonlinearity exists if residuals are not scattered and the median spline illustrates a pattern like U, inverse U, and other shapes that claim the presence of nonlinearity in the relationship between DV and IV and vice versa. The outputs of augmented component-plus-residual plot estimation are presented in Appendix C; augmented component-plus-residual plots for each indicator of DV are presented separately. Hence, to identify the nonlinearity in the residual, this study critically evaluates the movement and shape of the median spline of each graph for each independent and DV. Figure 10 represents the component-plus-residual plots for ROA, Figure 11 represents the component-plus-residual plots for ROE, Figure 12 represents the component-plus-residual plots for NIM, Figure 13 represents the component-plus-residual plots for NPL, and Figure 14 represents the component-plus-residual plots for Z_Score. From the critical analysis of plotted residuals and median spline of each graph, this study does not observe any nonlinearities in the relationships between DV and IV and uses a linear regression model for hypothesis testing. Thus, the selection of the best linear regression model for this study is described in the following section.

3.6.5 Direct effect analysis

The existing literature (e.g., Almaqtari et al. (2022), Kamarudin et al. (2016b), Khan et al. (2023) and Ozili (2018)) fails to benchmark the effect of country governance on

the profitability and financial stability of commercial banks due to limited scope and contexts. Therefore, based on the research problem, research objectives one and two, and collecting data from 116 countries, the study aims to benchmark the effect of country governance indicators on commercial banks' profitability and financial stability. Accordingly, the following econometric equations are developed to measure the impact of country governance indicators on the profitability and financial stability of commercial banks. Equations 1.a, 1.b, and 1.c are developed to assess the hypothesis H_1 and its sub-hypotheses.

More specifically, Equation 1.a is related to the hypothesis H_{1a} and its sub-hypotheses for ROA, Equation 1.b is related to the hypothesis H_{1b} and its sub-hypotheses for ROE, and Equation 1.c is related to the hypothesis H_{1c} and its sub-hypotheses for NIM. Meanwhile, Equations 2.a and 2.b are related to the hypothesis H_2 and its sub-hypotheses. Specifically, Equation 2.a relates to the hypothesis H_{2a} and its sub-hypotheses, and Equation 2.b relates to the hypothesis H_{2b} and its sub-hypotheses.

$$\begin{aligned} ROA_{it} &= \alpha + \beta_1 \ln CCI_{it} + \beta_2 \ln GEI_{it} + \beta_3 \ln RQI_{it} + \beta_4 \ln RLI_{it} + \\ &\quad \beta_5 \ln PSAVTI_{it} + \beta_6 \ln VAL_{it} + \beta_7 BCTA_{it} + \beta_8 BCIR_{it} + \\ &\quad \beta_9 BOCTA_{it} + \beta_{10} GDPG_{it} + \beta_{11} IR_{it} + \beta_{12} C_{19D2it} + \varepsilon_{it} \quad (1.a) \end{aligned}$$

$$\begin{aligned} ROE_{it} &= \alpha + \beta_1 \ln CCI_{it} + \beta_2 \ln GEI_{it} + \beta_3 \ln RQI_{it} + \beta_4 \ln RLI_{it} + \\ &\quad \beta_5 \ln PSAVTI_{it} + \beta_6 \ln VAL_{it} + \beta_7 BCTA_{it} + \beta_8 BCIR_{it} + \\ &\quad \beta_9 BOCTA_{it} + \beta_{10} GDPG_{it} + \beta_{11} IR_{it} + \beta_{12} C_{19D2it} + \varepsilon_{it} \quad (1.b) \end{aligned}$$

$$\begin{aligned} NIM_{it} &= \alpha + \beta_1 \ln CCI_{it} + \beta_2 \ln GEI_{it} + \beta_3 \ln RQI_{it} + \beta_4 \ln RLI_{it} + \\ &\quad \beta_5 \ln PSAVTI_{it} + \beta_6 \ln VAL_{it} + \beta_7 BCTA_{it} + \beta_8 BCIR_{it} + \\ &\quad \beta_9 BOCTA_{it} + \beta_{10} GDPG_{it} + \beta_{11} IR_{it} + \beta_{12} C_{19D2it} + \varepsilon_{it} \quad (1.c) \end{aligned}$$

$$\begin{aligned} NPL_{it} &= \alpha + \beta_1 \ln CCI_{it} + \beta_2 \ln GEI_{it} + \beta_3 \ln RQI_{it} + \beta_4 \ln RLI_{it} + \\ &\quad \beta_5 \ln PSAVTI_{it} + \beta_6 \ln VAL_{it} + \beta_7 BCTA_{it} + \beta_8 BCIR_{it} + \\ &\quad \beta_9 BOCTA_{it} + \beta_{10} GDPG_{it} + \beta_{11} IR_{it} + \beta_{12} C_{19D2it} + \varepsilon_{it} \quad (2.a) \end{aligned}$$

$$\begin{aligned} Z_{score\,it} &= \alpha + \beta_1 \ln CCI_{it} + \beta_2 \ln GEI_{it} + \beta_3 \ln RQI_{it} + \beta_4 \ln RLI_{it} + \\ &\quad \beta_5 \ln PSAVTI_{it} + \beta_6 \ln VAL_{it} + \beta_7 BCTA_{it} + \beta_8 BCIR_{it} + \\ &\quad \beta_9 BOCTA_{it} + \beta_{10} GDPG_{it} + \beta_{11} IR_{it} + \beta_{12} C_{19D2it} + \varepsilon_{it} \quad (2.b) \end{aligned}$$

where

ROA denotes return on assets

ROE stands for return on equity

NIM denotes net interest margin

NPL stands for non-performing loans

Z_Score stands for financial stability

α stands for constant

lnCCI means natural log of control of corruption index

lnGEI means natural log of government effectiveness index

lnRQI means natural log of regulatory quality index

lnRLI means natural log of rule of law index

lnPSAVTI means natural log of political stability and absence of violence/terrorism index

lnVAI means natural log of voice and accountability index

BCTA means bank capital to total assets ratio

BCIR means bank costs to income ratio

BOCTA means bank overhead costs to total assets ratio

GDPG stands for real GDP growth rate

IR stands for inflation rate

C_19D2 stands for Covid-19 period

ε stands for the error term

i stands for individual country

t stands for the year

3.6.5.1 OLS estimation, heteroskedasticity, serial correlation, and cross-sectional dependence

This study starts regression analysis with OLS estimation to determine the direct effect of country governance indicators on the profitability and financial stability of commercial banks. Several models are developed for each indicator of DV to overcome multicollinearity in the regressors based on VIF values. To examine the robustness of OLS estimation, this study uses three post-estimation tests: heteroskedasticity, serial correlation, and CD. The Breusch-Pagan test is also used by scholars (Amadi et al., 2021; Eldomiaty et al., 2023; Menicucci & Paolucci, 2016) to determine where residuals suffer from unequal variance.

To verify whether OLS estimation suffers from serial correlation, this study uses Jeff Wooldridge's first-order serial correlation test (Wooldridge, 2015), which is also used by other scholars. This includes Ali and Puah (2019), Barra and Ruggiero (2023), and Qasem et al. (2020). In addition to these two tests, this study also utilizes Pesaran's (2015) panel CD test like other studies (Canh et al., 2021; Hà, 2024) to observe whether OLS estimation suffers from CD in the data set; CD occurs when one country is affected by other countries. Notably, as OLS estimation suffers from statistically significant results of at least two of these three post-estimation tests, the study selects the right regression models following the results of post-estimation tests. The selection process of robust regression models, based on the results of post-estimation tests, is described in the following sections.

3.6.5.2 Model selection

Based on the nature of the data, some authors used the Generalized Method of Moments (GMM) estimation (Cincinelli & Piatti, 2021; Ghosh, 2015; Kjosevski & Petkovski, 2021; Le & Ngo, 2020). Meanwhile, some authors used Fixed Effects (FE) estimation (Adelopo et al., 2018; Almaqtari et al., 2019; Garcia & Guerreiro, 2016), and some used both, which is a FE with GMM estimation (Cincinelli & Piatti, 2021). Even two-step GMM system estimation is used in some studies. Based on the nature of the data, the OLS method was also used by some authors (Al-Matari, 2021; Menicucci & Paolucci, 2016).

GMM is a dynamic panel data estimator that can control the endogeneity of the lagged DV when the IV and the error term are correlated (Athanasoglou et al., 2008). It can also control omitted variables bias, unobserved panel heterogeneity, and measurement errors in the data set. There are two types of GMM estimations: difference GMM, suggested by Arellano and Bond (1991), and system GMM, recommended by Arellano and Bover (1995) and Blundell and Bond (1998). In particular, difference GMM suffers from unbalanced panel data when the first difference is used to remove FE and from poor instruments used in regression analysis, which could yield bias and inefficient estimation.

However, the two-step system GMM also corrects endogeneity by tanking more instruments to increase the model's efficiency, transforming instruments to remove FE, and using an orthogonal average to reduce data loss. System GMM normally generates two equations: the original equation and the transformed equation (Blundell

& Bond, 1998). In the original equation, the first difference is used as an instrument, and in the transformed equation, variables at the level are used as instruments. If the data suffer from heteroskedasticity and serial correlation, a two-step system GMM estimation is recommended (Roodman, 2006, 2009). Conversely, if the collected data comply with the stationary assumption, a FE or random effect model can be used. However, if the data suffer from serial correlation and heteroskedasticity, GMM estimation is more efficient than an FE or random effect model (Cincinelli & Piatti, 2021). Building on this, GMM estimation is used for short panel data when $N > T$ (that is when the number of countries is more than the number of years).

This study will use data from 116 countries over 12 years from the World Bank. It has features that include both cross-sectional and time series data. This study planned to use OLS estimation to determine if collected data were free from heteroskedasticity, serial correlation, and CD. If data would suffer from heteroskedasticity but free from serial correlation and CD, this study would use the panel FE model used by some authors (Adelopo et al., 2018; Almaqtari et al., 2019, 2022; Garcia & Guerreiro, 2016). This is due to the fact that this model can control heterogeneity and multicollinearity (Kyereboah-Coleman, 2007). If data would suffer from heteroskedasticity and serial correlation, this study would use static and dynamic regression models, a static panel FE model controlling heteroskedasticity and serial correlation, and a dynamic two-step system GMM recommended by Roodman (2006, 2009).

Although FE estimation is used using the command `xtreg, fe vec(robust)` in STATA and two-step systems, GMM can control heteroskedasticity and serial correlation but cannot control CD. When data suffer from CD in the residuals, the standard moment

of conditions used by GMM estimation as a linear dynamic panel model becomes invalid and produces biased results (Sarafidis & Robertson, 2009). Furthermore, this study has dummy variables (CIL), and the FE model cannot include dummy variables (excluding time dummies). Almqatari et al. (2022) also stated that GMM estimation is not possible with the presence of dummy variables. Eventually, this study forgoes FE and two-step system GMM estimations.

This study uses data from 116 countries over twelve years. Eventually, controlling heteroskedasticity, serial correlation, and CD is very challenging to generate robust standard errors. Hoechle (2007) emphasized that when panel data suffer from heteroskedasticity, serial correlation (AR1), and CD, PCSE estimation (Beck & Katz, 1995) can produce robust standard errors whenever $N > T$. However, Moundigbaye et al. (2018) concluded that PCSE can generate robust standard errors for hypothesis testing for any ratio of T/N . Moreover, Breitung et al. (2022) acknowledged PCSE estimation's efficiency in generating robust estimation when panel data suffer from CD and recommended PCSE estimation rather than GMM estimation.

In STATA, the PCSE method has advantages over traditional FE and dynamic GMM methods. The CD is a notable issue in panel data analysis. However, FE and GMM methods fail to control CD to generate robust standard errors. On the other hand, PCSE estimation can generate robust standard errors controlling heteroskedasticity, serial correlation, and CD. Moreover, using the correlation (psar1) option, the PCSE method generates more robust standard errors controlling panel-specific first-order serial correlation (each panel has a different pattern of serial correlation) rather than common serial correlation to all panels. Furthermore, using the pairwise option in the method

ensures the participation of all available observations (periods) that are common to the two panels to estimate the covariance matrix of disturbances. To ensure robustness in the estimation controlling heteroskedasticity, first-order serial correlation, and CD, some scholars (Almaqtari et al., 2019, 2022; Ikpesu et al., 2019; Kumawat & Patel, 2022; Marques et al., 2016; Nsanyan-Sadow et al., 2021) use PCSE estimation. Accordingly, as OLS estimations for ROA, NIM, NPL, and Z_Score suffer from CD and both or one of heteroskedasticity and first-order serial correlation test, this study uses PCSE estimation model controlling the same to ensure robustness robust standard errors in direct effect analysis.

On the other hand, OLS estimations for ROE suffer from heteroskedasticity and first-order serial correlation. Bolt et al. (2012), Khan and Qasem (2024), and Qasem et al. (2020) asserted that FGLS can generate robust standard errors controlling heteroskedasticity and first-order serial correlation in the panel data, although the data are unbalanced. Claeys and Vennet (2008) concluded that FGLS can produce more efficient outputs than fixed and random effects methods. Although it is recommended to use FGLS to generate robust standard errors by someone when $T > N$, this study discovers that some scholars (AL-Duais et al., 2022; Asif & Nisar, 2023; Ghaleb et al., 2022; Hà, 2024; Kalsie & Shrivastav, 2016; S. Khan & Qasem, 2024) use FGLS when $N > T$ to deal with heteroskedasticity and first-order serial correlation in the panel data. Hence, this study employs FGLS estimation to generate robust standard errors for hypothesis testing for ROE.

3.6.6 Moderating effect analysis

As OLS estimations in the direct effect analysis suffer from at least two of three post-estimation tests, the same is not robust for moderating effect analysis. Thus, OLS estimation is excluded in moderating effect analysis. The selection of regression models for moderating effect analysis follows the post-estimation tests in direct effect analysis. Based on the results of heteroskedasticity, serial correlation, and CD tests, PCSE estimation is used for ROA, NIM, NPL, and Z_Score, while FGLS is used for ROE. As this study has three MV for the CILs, the following econometric equations are developed to demonstrate how a country's HI, UMI, and LMI moderate the relationship between country governance indicators and the profitability and financial stability of commercial banks.

Equations 3.a, 3.b, and 3.c and their sub-equations are related to the hypothesis H_3 and its sub-hypotheses to evaluate the moderating effect of the CILs on the relationship between country governance indicators and the profitability of commercial banks. Specifically, Equation 3.a1 is related to H_{3a} and its sub-hypotheses, Equation 3.a2 with H_{3b} and its sub-hypotheses, Equation 3.a3 with H_{3c} and its sub-hypotheses for ROA. Equation 3.b1 relates to H_{3d} and its sub-hypotheses, Equation 3.b2 with H_{3e} and its sub-hypotheses, and Equation 3.b3 with H_{3f} and its sub-hypotheses for ROE. Accordingly, Equation 3.c1 relates to H_{3g} and its sub-hypotheses, Equation 3.c2 with H_{3h} and its sub-hypotheses, and Equation 3.c3 with H_{3i} and its sub-hypotheses for NIM.

$$ROE_{it} = \alpha + \beta_1 \ln CCI_{it} + \beta_2 \ln GEI_{it} + \beta_3 \ln RQI_{it} + \beta_4 \ln RLI_{it} + \beta_5 \ln PSAVTI_{it} + \beta_6 \ln VAI_{it} + \beta_7 BCTA_{it} + \beta_8 BCIR_{it} + \beta_9 BOCTA_{it} + \beta_{10} GDPG_{it} + \beta_{11} IR_{it} + \beta_{12} C_{19D2it} + \beta_{13} LMI_{it} + \beta_{14} \ln CCI * LMI_{it} + \beta_{15} \ln GEI * LMI_{it} + \beta_{16} \ln RQI * LMI_{it} + \beta_{17} \ln RLI * LMI_{it} + \beta_{18} \ln PSAVTI * LMI_{it} + \beta_{19} \ln VAI * LMI_{it} + \varepsilon_{it} \quad (3.b3)$$

$$NIM_{it} = \alpha + \beta_1 \ln CCI_{it} + \beta_2 \ln GEI_{it} + \beta_3 \ln RQI_{it} + \beta_4 \ln RLI_{it} + \beta_5 \ln PSAVTI_{it} + \beta_6 \ln VAI_{it} + \beta_7 BCTA_{it} + \beta_8 BCIR_{it} + \beta_9 BOCTA_{it} + \beta_{10} GDPG_{it} + \beta_{11} IR_{it} + \beta_{12} C_{19D2it} + \beta_{13} CIL_{DUMit} + \beta_{14} \ln CCI * CIL_{DUMit} + \beta_{15} \ln GEI * CIL_{DUMit} + \beta_{16} \ln RQI * CIL_{DUMit} + \beta_{17} \ln RLI * CIL_{DUMit} + \beta_{18} \ln PSAVTI * CIL_{DUMit} + \beta_{19} \ln VAI * CIL_{DUMit} + \varepsilon_{it} \quad (3.c)$$

$$NIM_{it} = \alpha + \beta_1 \ln CCI_{it} + \beta_2 \ln GEI_{it} + \beta_3 \ln RQI_{it} + \beta_4 \ln RLI_{it} + \beta_5 \ln PSAVTI_{it} + \beta_6 \ln VAI_{it} + \beta_7 BCTA_{it} + \beta_8 BCIR_{it} + \beta_9 BOCTA_{it} + \beta_{10} GDPG_{it} + \beta_{11} IR_{it} + \beta_{12} C_{19D2it} + \beta_{13} HI_{it} + \beta_{14} \ln CCI * HI_{it} + \beta_{15} \ln GEI * HI_{it} + \beta_{16} \ln RQI * HI_{it} + \beta_{17} \ln RLI * HI_{it} + \beta_{18} \ln PSAVTI * HI_{it} + \beta_{19} \ln VAI * HI_{it} + \varepsilon_{it} \quad (3.c1)$$

$$NIM_{it} = \alpha + \beta_1 \ln CCI_{it} + \beta_2 \ln GEI_{it} + \beta_3 \ln RQI_{it} + \beta_4 \ln RLI_{it} + \beta_5 \ln PSAVTI_{it} + \beta_6 \ln VAI_{it} + \beta_7 BCTA_{it} + \beta_8 BCIR_{it} + \beta_9 BOCTA_{it} + \beta_{10} GDPG_{it} + \beta_{11} IR_{it} + \beta_{12} C_{19D2it} + \beta_{13} UMI_{it} + \beta_{14} \ln CCI * UMI_{it} + \beta_{15} \ln GEI * UMI_{it} + \beta_{16} \ln RQI * UMI_{it} + \beta_{17} \ln RLI * UMI_{it} + \beta_{18} \ln PSAVTI * UMI_{it} + \beta_{19} \ln VAI * UMI_{it} + \varepsilon_{it} \quad (3.c2)$$

$$NIM_{it} = \alpha + \beta_1 \ln CCI_{it} + \beta_2 \ln GEI_{it} + \beta_3 \ln RQI_{it} + \beta_4 \ln RLI_{it} + \beta_5 \ln PSAVTI_{it} + \beta_6 \ln VAI_{it} + \beta_7 BCTA_{it} + \beta_8 BCIR_{it} + \beta_9 BOCTA_{it} + \beta_{10} GDPG_{it} + \beta_{11} IR_{it} + \beta_{12} C_{19D2it} + \beta_{13} LMI_{it} + \beta_{14} \ln CCI * LMI_{it} + \beta_{15} \ln GEI * LMI_{it} + \beta_{16} \ln RQI * LMI_{it} + \beta_{17} \ln RLI * LMI_{it} + \beta_{18} \ln PSAVTI * LMI_{it} + \beta_{19} \ln VAI * LMI_{it} + \varepsilon_{it} \quad (3.c3)$$

Likewise, Equations 4.a and 4.b are related to the hypothesis H_4 and its sub-hypotheses to assess the moderating effect of the CILs on the relationship between country governance factors and the financial stability of commercial banks. Specifically, Equation 4.a1 is related to H_{4a} and its sub-hypotheses, Equation 4.a2 with H_{4b} and its sub-hypotheses, Equation 4.a3 with H_{4c} and its sub-hypotheses for NPL. Equation 4.b1 relates to H_{4d} and its sub-hypotheses, Equation 4.b2 with H_{4e} and its sub-hypotheses, and Equation 4.b3 with H_{4f} and its sub-hypotheses for Z_Score.

$$\begin{aligned}
Z_{Score_{it}} = & \alpha + \beta_1 \ln CCI_{it} + \beta_2 \ln GEI_{it} + \beta_3 \ln RQI_{it} + \beta_4 \ln RLI_{it} + \\
& \beta_5 \ln PSAVTI_{it} + \beta_6 \ln VAI_{it} + \beta_7 BCTA_{it} + \beta_8 BCIR_{it} + \\
& \beta_9 BOCTA_{it} + \beta_{10} GDPG_{it} + \beta_{11} IR_{it} + \beta_{12} C_{19D2_{it}} + \beta_{13} LMI_{it} + \\
& \beta_{14} \ln CCI * LMI_{it} + \beta_{15} \ln GEI * LMI_{it} + \beta_{16} \ln RQI * LMI_{it} + \\
& \beta_{17} \ln RLI * LMI_{it} + \beta_{18} \ln PSAVTI * LMI_{it} + \beta_{19} \ln VAI * LMI_{it} + \\
& \varepsilon_{it}
\end{aligned}
\tag{4.b3}$$

where

α stands for constant

β_1 to β_{19} stand for the respective coefficient of each variable or interaction terms.

CIL_DUM indicates three dummy variables of the CIL for all three categories.

LMI denotes a dummy variable for countries' lower-middle income.

UMI stands for dummy variable for countries' upper-middle income.

HI stands for dummy variable for countries' high-income.

Interaction terms stand for the moderating effects of each CIL.

ε stands for the error term.

3.7 Chapter summary

The methodology section of this study describes the detailed procedures it follows to resolve the research questions. Section 3.2 includes philosophical discussion; the ontological stance is objectivism; the epistemological stance is positivism, and this study follows deductive reasoning and selects quantitative methods to achieve research objectives. Section 3.3 presents the overall research design, and the entire process of this study is explained to achieve research objectives. Section 3.4 describes how the DV, IV, CV, and MV are selected, and short definitions of each variable are indicated in Table 3.1. Section 3.5 represents how the sample size is set, and data are collected from the World Bank. This study uses data from 116 counties over 12 years, from 2010

to 2021. Section 3.6 describes the statistical tools that are used to analyze the collected data, how descriptive statistical tools are used, how data are transformed and cleaned from outliers using the “rstudent” tool, how multiple correlation matrix and VIF tests are employed to determine the multicollinearity among the regressors. This section also demonstrates how PCSE estimation and FGLS estimation models are selected to measure direct and moderating effects based on the results of heteroskedasticity, serial correlation, and CD tests.



CHAPTER 4

RESULTS AND DISCUSSION

4.1 Introduction

This chapter includes results and a discussion of various statistical analyses. First, descriptive statistics are analyzed, and comparative pictures are presented through bar diagrams. Then, outputs of multiple correlation and Variance Inflation Factor (VIF) tests are presented and analyzed. In addition, outputs of regression analysis, including post-estimation tests, are presented and discussed separately for direct and moderating effect analysis. At the same time, hypotheses are assessed based on the outputs of regression analysis. At the end, this chapter also includes a summary of regression outputs and hypothesis testing.

4.2 Results of descriptive statistics and discussion

Table 3 summarizes the descriptive statistics results of this study. Panel A represents the mean values, Standard Deviation (SD), Minimum value (MIN), and Maximum (MAX) values of the selected Dependent Variables (DV), Independent Variables (IV), and Control Variables (CV) for the whole panel. Similarly, panels B, C, and D represent the same for High-Income (HI), Upper-Middle-Income (UMI), and Lower-Middle-Income (LMI) countries. Panel A presents that the SD values of ROA and ROE are bigger than the mean values, and the spreads between MAX and MIN values of ROA and ROE are very high. More specifically, the spread between the MAX and

MIN values of ROE is much higher than that of ROA. The mean values of the other two DV, NIM and Z_Score, are lower than their respective SD values, unlike NPL, ROA, and ROE. The average value of NPL for the whole panel data is 6.2935 %; however, the SD is 7.5793%, with a MIN value of 0.0923% and a MAX value of 55.0803%. The resulting descriptive statistics suggest that the level of NPL widely varies in different countries as the SD is bigger than the mean value, and there is a high spread between the MIN and MAX values. Although the spread between MAX and MIN of Z_Score is high, the same is true for the NIM, which is the lowest of all the DV.

The values of a county's governance indicators range from approximately -2.50 (weak) to 2.50 (strong), as reported by the World Bank. Notably, the higher positive value represents better governance and vice versa. In contrast, the greater negative value represents a weaker form of governance. The mean values of all the country's governance indicators (Control of Corruption Index (CCI), Government Effectiveness Index (GEI), Regulator Quality Index (RQI), Rule of Law Index (RLI), Political Stability and Absence of Violence/Terrorism Index (PSAVTI), and Voice and Accountability Index (VAI)) in Panel A are positive. However, the SD values of those indicators are much higher than the respective mean values, indicating greater variability in the county's governance indicators. Meanwhile, the mean values of the Bank Capital-to-Total Assets Ratio (BCTA) and Bank Cost-to-Income Ratio (BCIR) are higher than their respective SD. Despite that, the mean value of Bank Overhead Costs to Total Assets (BOCTA) is lower than its SD. The spread between the MAX and MIN values of BCIR and BOCTA is remarkably high. Thus, the mean values of GDPG and IR are lower than the SD values of the same, presenting greater variability in the GDP growth rate and Inflation Rate (IR) in the data set.

The mean values and other descriptive statistics of various DV in HI, UMI, and LMI countries are presented in Panel B, Panel C, and Panel D, respectively, in Table 3. The profitability indicators, Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM), in LMI countries exhibit the highest mean values and the highest average profitability in the banking sector in this group of countries. Meanwhile, HI countries present the lowest mean values, demonstrating the lowest average profitability in the banking sector. The mean values of ROA, ROE, and NIM in UMI countries are in the middle of the other two groups. The resulting SD values of ROA and ROE are greater than the respective mean values in HI and UMI countries, other than the SD of ROE in LMI countries. However, the SD of NIM is lower than the mean value in those three groups of counties. In essence, the spread of MAX and MIN of ROE is very high in HI and UMI countries compared to LMI countries.

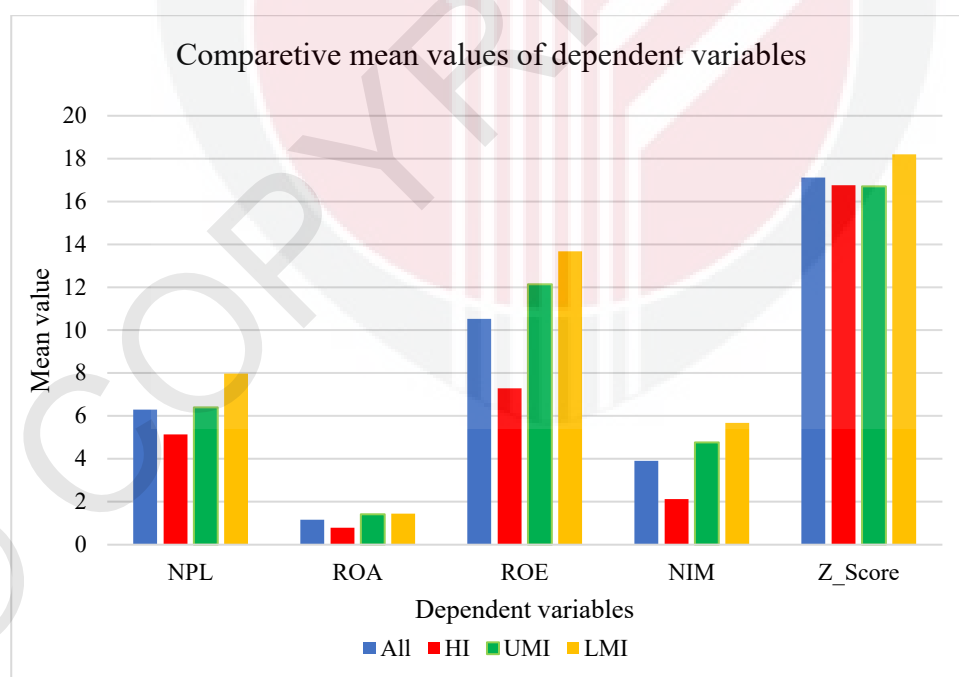


Figure 7: Comparative mean values of dependent variables for ALL, HI, UMI, and LMI countries

From Table 3, HI countries hold the lowest average NPL (5.1380%), while LMI countries hold the highest average NPL (7.9758%). The mean value of NPL (6.3984) in UMI countries stays in the middle. All the SDs of NPL in these three groups are greater than the mean values but very close in UMI countries. The mean values of Z_Score in HI and UMI countries are very close but lower than those of LMI countries. The resulting mean and SD values of Z_Score represent greater financial stability and lower variability in the Z_Score, respectively, in the banking sector in LMI countries. To sum up, the banking sector in LMI countries demonstrates the highest profitability and financial stability compared to HI and UMI countries. Figure 7 visualizes the difference in the comparative mean values of all the DV, suggesting overall differences in the profitability and financial stability of banks in those groups of countries.

Table 3: Descriptive statistics of the variables

Variable	Panel A					Panel B				
	OBS	MEAN	SD	MIN	MAX	OBS	MEAN	SD	MIN	MAX
ROA	1,336	1.1595	1.8410	-23.8873	38.3006	553	0.7831	1.9540	-9.5307	38.3006
ROE	1,334	10.5250	12.0696	-117.6733	259.0125	553	7.2890	11.6528	-117.6733	34.0596
NIM	1,333	3.9053	2.4066	0.1686	15.4414	552	2.1202	1.2403	0.3684	8.9296
NPL	1,372	6.2935	7.5693	0.0923	55.0803	556	5.1380	7.9211	0.0923	47.7479
Z_Score	1,346	17.1132	9.7372	-0.3260	62.4372	558	16.7594	10.0684	-0.3260	57.4407
CCI	1,392	0.1827	1.0308	-1.6277	2.3993	564	1.1671	0.7460	-0.4644	2.3993
GEI	1,392	0.3142	0.9047	-1.3557	2.3249	564	1.2046	0.5552	-0.3086	2.3249
RQI	1,392	0.3316	0.9057	-1.7298	2.2553	564	1.1925	0.5631	-0.2685	2.2553
RLI	1,392	0.2091	0.9662	-1.7917	2.1248	564	1.1739	0.5927	-0.2044	2.1248
PSAVTI	1,392	0.0382	0.8555	-2.8100	1.6393	564	0.7037	0.5502	-1.3412	1.6393
VAI	1,392	0.1306	0.9515	-2.1244	1.7518	564	0.8727	0.7691	-1.9072	1.7518
BCTA	1,365	10.0670	3.2825	1.4904	25.0714	557	8.6431	2.9425	3.6450	21.0568
BCIR	1,343	54.5468	13.2461	9.8619	202.0408	553	55.6172	14.1915	19.3724	118.1902
BOCTA	1,338	2.8796	3.0089	0.2133	84.3361	553	1.7364	1.5329	0.2133	29.7601
GDPG	1,388	2.8433	4.6718	-54.2359	41.7451	564	2.0696	4.6443	-54.2359	25.1228
IR	1,383	3.9690	6.3288	-3.7491	154.7561	562	1.9349	1.9118	-2.4046	10.5492
Variable	Panel C					Panel D				
	OBS	MEAN	SD	MIN	MAX	OBS	MEAN	SD	MIN	MAX
ROA	437	1.4096	1.4611	-8.65172	22.0458	346	1.4453	1.9800	-23.8873	6.0908
ROE	437	12.1405	14.1658	-41.22042	259.0125	344	13.6747	7.8977	-29.7094	42.2313
NIM	435	4.7634	1.8865	0.16864	11.4859	346	5.6744	2.5025	1.6888	15.4414
NPL	463	6.3984	6.4265	0.95367	55.0803	353	7.9758	8.0659	0.7092	54.8233
Z_Score	440	16.7061	10.5031	1.47168	62.4372	348	18.1953	7.9769	3.8604	38.6815
CCI	468	-0.3685	0.5347	-1.62769	1.0034	360	-0.6428	0.5204	-1.4679	1.6627
GEI	468	-0.1327	0.5188	-1.35571	1.1609	360	-0.4999	0.4088	-1.2466	0.7963
RQI	468	-0.0223	0.5650	-1.71281	1.1969	360	-0.5571	0.3819	-1.7298	0.4039
RLI	468	-0.3061	0.5225	-1.79169	1.0240	360	-0.6326	0.4381	-1.4524	0.6572
PSAVTI	468	-0.2315	0.6836	-2.60378	1.1111	360	-0.6537	0.6946	-2.8100	0.6572
VAI	468	-0.2279	0.7158	-1.99927	1.1516	360	-0.5659	0.6281	-2.1244	0.5968
BCTA	459	11.2677	2.9146	5.76868	25.0714	349	10.7604	3.4045	1.4904	20.4935
BCIR	440	54.0010	11.7115	9.86191	98.9287	350	53.5419	13.4316	26.6499	202.0408
BOCTA	437	3.6210	4.3918	0.46508	84.3361	348	3.7650	1.8305	1.0444	12.2582
GDPG	468	2.8605	5.1929	-33.49280	41.7451	356	4.0465	3.6318	-10.0789	14.0471
IR	465	4.4261	9.1757	-3.74915	154.7561	356	6.5830	5.1412	-0.8474	48.6999

Note(s): Panel-A represents the results of descriptive statistics of the whole panel. Panel-B, Panel-C, and Panel-D represent the same for high-income countries, upper-middle-income countries, and lower-middle-income countries, respectively

The mean values of all the country's governance indicators in HI countries reveal positive numbers, while the same in UMI and LMI countries represent negative numbers. However, country governance indicators in LMI countries have the lowest negative mean values compared to those in UMI countries. The resulting mean values of country governance indicators in those groups of countries indicate that HI countries, on average, have better country governance than UMI and LMI countries. In contrast, LMI countries present the lowest performance in this regard. Although the mean values of country governance indicators are negative in UMI countries, they are better than in LMI countries. Accordingly, the MIN and MAX values in HI countries are greater than those of UMI and LMI countries. Furthermore, the MAX values of GEI, RQI, RLI, and VAI in UMI are greater than those of LMI countries. On the contrary, the MAX values of CCI and PSAVTI in LMI countries are greater than those of UMI countries. Figure 8 visualizes the differences in the overall quality of county governance in those groups of countries.

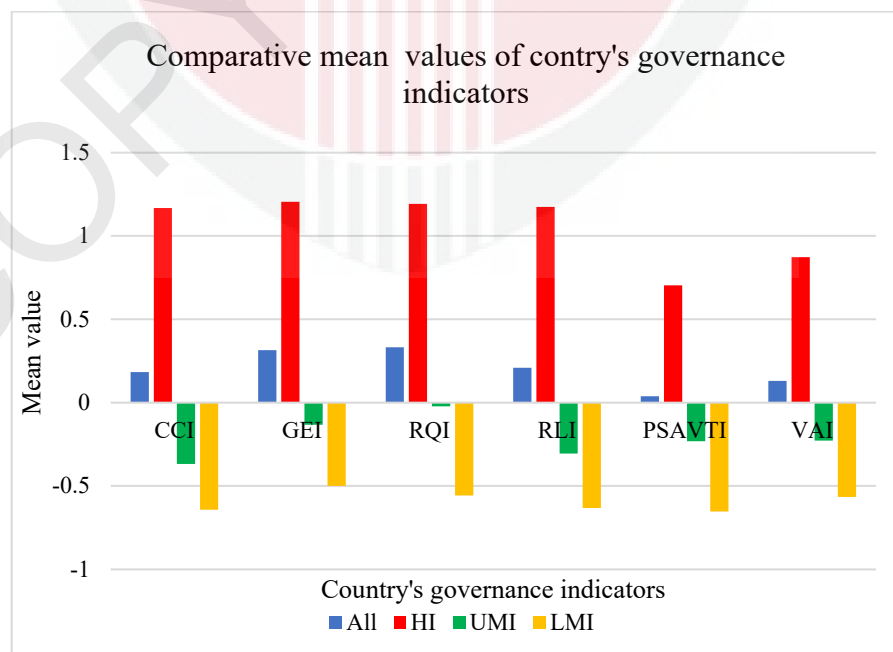


Figure 8: Comparative mean values of the country's governance indicators for all HI, UMI, and LMI countries

The mean values of BCTA suggest that UMI countries' banking sector holds the highest average amount of bank capital to total assets (11.2677%). Meanwhile, the banking sector in LMI countries has the second highest average bank capital to total assets (10.7604%), and the same in HI countries holds the lowest bank capital to total assets (8.6431%). The banking sector in HI, UMI, and LMI countries have 55.6172%, 54.0010%, and 53.5419% costs-to-income ratio, respectively. At the same time, the inverse scenario is reported for the bank overhead cost to total assets ratio. The banking sector in LMI, UMI, and HI countries holds average BOCTA ratios of 3.7650%, 3.6210, and 1.7364%, respectively. However, the SD of BOCTA in UMI countries is bigger than the mean value, unlike the other two, and the MAX value of BOCTA in UMI is comparatively higher than that of HI and LMI countries.

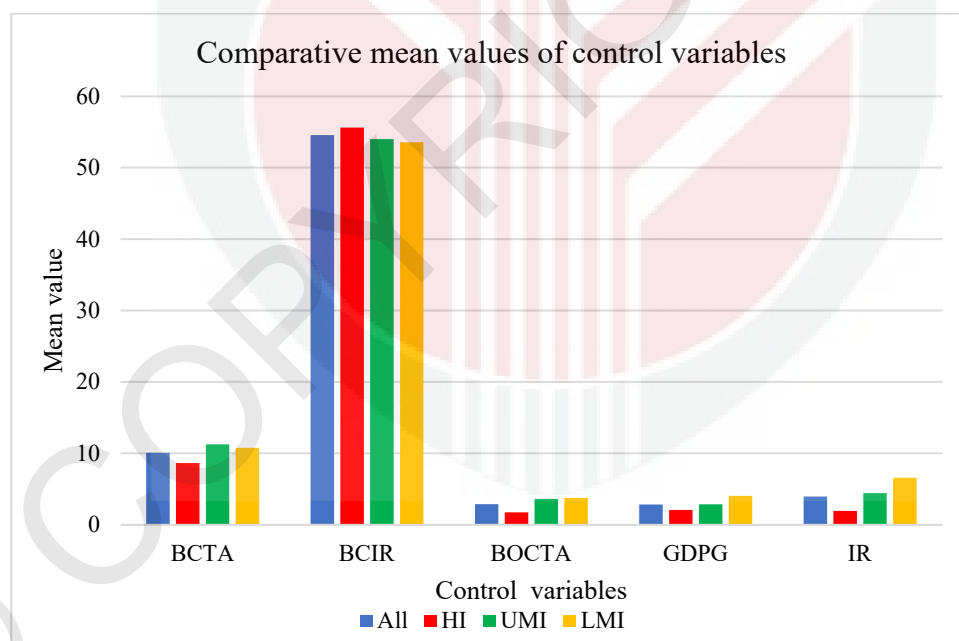


Figure 9: Comparative mean values of control variables for all HI, UMI, and LMI countries

In Table 3, LMI countries have the highest average Gross Domestic Product Growth Rate (GDPG) rate (4.0465%), while HI counties have the lowest GDPG rate

(2.0696%). The same (2.8605%) in UMI countries stays in the middle of the former two. In addition, the same ranks of the mean values of IR are discovered in those groups. Moreover, the SDs of GDPG in HI and UMI countries are around twofold of the respective mean values, and this confirms the greater variability in the same in HI and UMI countries than in LMI countries. Unlike HI and LMI countries, the SD of IR is about twofold greater than the mean value in UMI countries. Although the average value of IR in UMI countries is in the middle of HI and LMI countries, about twofold greater SD and high spread between the MAX and MIN values implies greater variability in the IR in UMI countries. Figure 9 displays the differences in the mean values of the selected bank-specific and macroeconomic variables. To sum up, this study observes differences in the various descriptive statistics of the selected variables in HI, UMI, and LMI countries.

4.3 Results of multiple correlation test, VIF test, and discussion on multicollinearity

After descriptive analysis, this study transforms country governance indicators into a natural log (discussed in the methodology) and cleans the data set from the outliers by the “rstudent” command using the STATA-15 software. This study comprises five DVs: ROA, ROE, NIM, NPL, and Z_Score. From the main data file, the study predicts the residuals separately for each DV, and the rows with more than two residual values are dropped for the data set to clean the data for regression analysis. This study makes five clean data sets, one for each DV for hypothesis testing. Note that to ensure robustness in the regression outputs, the regressors should be free from multicollinearity, as the presence of multicollinearity in the regressors changes the coefficients’ sign and level of significance.

Panel A in Table 4 represents the Pearson multiple correlation analysis output to detect multicollinearity among the regressors in the data set cleaned to regress with ROA. The resulting correlation coefficients demonstrate that the Natural Log of Control of Corruption Index (InCCI), Natural Log of Government Effectiveness Index (InGEI), Natural Log of Regulatory Quality Index (InRQI), and Natural Log of Rule of Law Index (InRLI) have a significant positive correlation at a 1% level of significance. This is attributed to the fact that each of them has correlation coefficients of more than 0.80, signaling the presence of multicollinearity among them (Gujarati & Porter, 2009; Kennedy, 2008). Moreover, Panel B in Table 4 suggests that the resulting VIF values of InCCI, InGEI, InRQI, and InRLI are more than four, which also exhibits the presence of multicollinearity among them. Consequently, this study develops separate models for each to regress with ROA for the direct and moderating effect analysis.

Table 4: Correlation matrix and resulting VIF of independent and control variables for ROA

Panel-A												
Variables	lnCCI	lnGEI	lnRQI	lnRLI	lnPSAVTI	lnVAI	BCTA	BCIR	BOCTA	GDPG	IR	C_19D2
lnCCI	1.00											
lnGEI	0.89*** (0.000)	1.00										
lnRQI	0.81*** (0.000)	0.82*** (0.000)	1.00									
lnRLI	0.90*** (0.000)	0.89*** (0.000)	0.82*** (0.000)	1.00								
lnPSAVTI	0.69*** (0.000)	0.68*** (0.000)	0.59*** (0.000)	0.73*** (0.000)	1.00							
lnVAI	0.65*** (0.000)	0.58*** (0.000)	0.70*** (0.000)	0.61*** (0.000)	0.47*** (0.000)	1.00						
BCTA	-0.36*** (0.000)	-0.32*** (0.000)	-0.30*** (0.000)	-0.33*** (0.000)	-0.17*** (0.000)	-0.34*** (0.000)	1.00					
BCIR	0.08*** (0.003)	0.05* (0.000)	0.11*** (0.000)	0.10*** (0.000)	0.15*** (0.000)	0.30*** (0.000)	-0.14*** (0.000)	1.00				
BOCTA	-0.42*** (0.000)	-0.47*** (0.000)	-0.39*** (0.000)	-0.40*** (0.000)	-0.18*** (0.000)	-0.17*** (0.000)	0.35*** (0.000)	0.38*** (0.000)	1.00			
GDPG	-0.13*** (0.000)	-0.10*** (0.001)	-0.10*** (0.000)	-0.11*** (0.000)	-0.08*** (0.002)	-0.15*** (0.000)	0.06** (0.023)	-0.08** (0.006)	0.07** (0.007)	1.00		
IR	-0.31*** (0.000)	-0.38*** (0.000)	-0.33*** (0.000)	-0.26*** (0.000)	-0.26*** (0.000)	-0.23*** (0.000)	0.09*** (0.001)	-0.07** (0.007)	0.19*** (0.000)	-0.03 (0.216)	1.00	
C_19D2	0.01 (0.766)	-0.00 (0.992)	0.00 (0.908)	0.00 (0.879)	0.01 (0.745)	0.01 (0.856)	0.01 (0.663)	0.01 (0.667)	-0.10*** (0.000)	-0.29*** (0.000)	0.04 (0.118)	1.00
Panel-B												
VIF	7.26	7.7	4.47	7.75	2.31	2.44	1.37	1.52	1.94	1.13	1.25	1.12

Note (s): P-values in parentheses. ***, ** and * represent correlation coefficients are significant at 1%, 5% and 10% level of significance. Panel-A represents the correlation matrix, and panel-B represents the VIF of each regressor.

Table 5: Correlation matrix and resulting VIF of independent and control variables for ROE

Variables	Panel-A										
	lnCCI	lnGEI	lnRQI	lnRLI	lnPSAVTI	lnVAI	BCTA	BCIR	BOCTA	GDPG	IR
lnCCI	1.00										
lnGEI	0.89*** (0.000)	1.00									
lnRQI	0.81*** (0.000)	0.83*** (0.000)	1.00								
lnRLI	0.90*** (0.000)	0.89*** (0.000)	0.82*** (0.000)	1.00							
lnPSAVTI	0.69*** (0.000)	0.68*** (0.000)	0.59*** (0.000)	0.73*** (0.000)	1.00						
lnVAI	0.65*** (0.000)	0.58*** (0.000)	0.71*** (0.000)	0.61*** (0.000)	0.47*** (0.000)	1.00					
BCTA	-0.35*** (0.000)	-0.31*** (0.000)	-0.28*** (0.000)	-0.32*** (0.000)	-0.15*** (0.000)	-0.33*** (0.000)	1.00				
BCIR	0.08** (0.006)	0.05* (0.073)	0.11*** (0.000)	0.10*** (0.000)	0.15*** (0.000)	0.30*** (0.000)	-0.14*** (0.000)	1.00			
BOCTA	-0.42*** (0.000)	-0.47*** (0.000)	-0.39*** (0.000)	-0.39*** (0.000)	-0.17*** (0.000)	-0.18*** (0.000)	0.35*** (0.000)	0.38*** (0.000)	1.00		
GDPG	-0.13*** (0.000)	-0.10*** (0.000)	-0.10*** (0.000)	-0.11*** (0.000)	-0.08** (0.005)	-0.15*** (0.000)	0.05* (0.053)	-0.07*** (0.008)	0.07*** (0.014)	1.00	
IR	-0.36*** (0.000)	-0.41*** (0.000)	-0.40*** (0.000)	-0.31*** (0.000)	-0.30*** (0.000)	-0.29*** (0.000)	0.12*** (0.000)	-0.08*** (0.006)	0.27*** (0.000)	0.00 (0.961)	1.00
C_19D2	0.01 (0.667)	0.01 (0.798)	0.01 (0.790)	0.01 (0.787)	0.01 (0.630)	0.01 (0.814)	0.01 (0.855)	0.01 (0.595)	-0.10*** (0.000)	-0.29*** (0.000)	0.00 (0.952)
Panel-B											
VIF	7.27	7.58	4.55	7.8	2.32	2.44	1.35	1.52	1.99	1.13	1.31

Note (s): P-values in parentheses. ***, ** and * represent correlation coefficients are significant at 1%, 5% and 10% level of significance. Panel-A represents the correlation matrix, and panel-B represents the VIF of each regressor.

Table 6: Correlation matrix and resulting VIF of independent and control variables for NIM

Panel-A												
Variables	lnCCI	lnGEI	lnRQI	lnRLI	lnPSAVTI	lnVAI	BCTA	BCIR	BOCTA	GDPG	IR	C_19D2
lnCCI	1.00											
lnGEI	0.88*** (0.000)	1.00										
lnRQI	0.81*** (0.000)	0.85*** (0.000)	1.00									
lnRLI	0.93*** (0.000)	0.90*** (0.000)	0.87*** (0.000)	1.00								
lnPSAVTI	0.68*** (0.000)	0.66*** (0.000)	0.62*** (0.000)	0.69*** (0.000)	1.00							
lnVAI	0.63*** (0.000)	0.57*** (0.000)	0.68*** (0.000)	0.64*** (0.000)	0.48*** (0.000)	1.00						
BCTA	-0.34*** (0.000)	-0.30*** (0.000)	-0.28*** (0.000)	-0.34*** (0.000)	-0.14*** (0.000)	-0.33*** (0.000)	1.00					
BCIR	0.05* (0.063)	-0.00 (0.969)	0.09*** (0.001)	0.04 (0.131)	0.08** (0.005)	0.30*** (0.000)	-0.18*** (0.000)	1.00				
BOCTA	-0.44*** (0.000)	-0.53*** (0.000)	-0.44*** (0.000)	-0.50*** (0.000)	-0.23*** (0.000)	-0.18*** (0.000)	0.31*** (0.000)	0.37*** (0.000)	1.00			
GDPG	-0.11*** (0.000)	-0.10*** (0.001)	-0.10*** (0.001)	-0.12*** (0.000)	-0.09*** (0.001)	-0.13*** (0.000)	0.04 (0.117)	-0.05 (0.065)	0.05* (0.091)	1.00		
IR	-0.38*** (0.000)	-0.44*** (0.000)	-0.42*** (0.000)	-0.38*** (0.000)	-0.36*** (0.000)	-0.30*** (0.000)	0.09*** (0.001)	-0.08*** (0.004)	0.26*** (0.000)	-0.01 (0.767)	1.00	
C_19D2	0.01 (0.707)	0.00 (0.893)	0.01 (0.757)	0.02 (0.557)	0.02 (0.417)	0.00 (0.932)	0.01 (0.763)	0.01 (0.666)	-0.09*** (0.002)	-0.29*** (0.000)	0.01 (0.690)	1.00
Panel-B												
VIF	8.49	7.31	5.35	12.09	2.10	2.28	1.35	1.51	2.07	1.12	1.33	1.11
Note (s): P-values in parentheses. ***, ** and * represent correlation coefficients are significant at 1%, 5% and 10% level of significance. Panel-A represents the correlation matrix, and panel-B												

Note (s): P-values in parentheses. ***, ** and * represent correlation coefficients are significant at 1%, 5% and 10% level of significance. Panel-A represents the correlation matrix, and panel-B represents the VIF of each regressor.

Table 7: Correlation matrix and resulting VIF of independent and control variables for NPL

Panel-A												
Variables	lnCCI	lnGEI	lnRQI	lnRLI	lnPSAVTI	lnVAI	BCTA	BCIR	BOCTA	GDPG	IR	C_19D2
lnCCI	1.00											
lnGEI	0.88*** (0.000)	1.00										
lnRQI	0.80*** (0.000)	0.82*** (0.000)	1.00									
lnRLI	0.90*** (0.000)	0.89*** (0.000)	0.81*** (0.000)	1.00								
lnPSAVTI	0.69*** (0.000)	0.68*** (0.000)	0.60*** (0.000)	0.73*** (0.000)	1.00							
lnVAI	0.64*** (0.000)	0.57*** (0.000)	0.70*** (0.000)	0.61*** (0.000)	0.48*** (0.000)	1.00						
BCTA	-0.34*** (0.000)	-0.29*** (0.000)	-0.28*** (0.000)	-0.31*** (0.000)	-0.14*** (0.000)	-0.32*** (0.000)	1.00					
BCIR	0.04 (0.165)	-0.01 (0.850)	0.07** (0.021)	0.06** (0.030)	0.10*** (0.000)	0.26*** (0.000)	-0.13*** (0.000)	1.00				
BOCTA	-0.31*** (0.000)	-0.34*** (0.000)	-0.27*** (0.000)	-0.28*** (0.000)	-0.13*** (0.000)	-0.14*** (0.000)	0.24*** (0.000)	0.33*** (0.000)	1.00			
GDPG	-0.13*** (0.000)	-0.10*** (0.001)	-0.11*** (0.000)	-0.11*** (0.000)	-0.09*** (0.002)	-0.13*** (0.000)	0.05* (0.055)	-0.03 (0.289)	0.05* (0.054)	1.00		
IR	-0.30*** (0.000)	-0.39*** (0.000)	-0.34*** (0.000)	-0.26*** (0.000)	-0.24*** (0.000)	-0.24*** (0.000)	0.10*** (0.001)	-0.04 (0.183)	0.17*** (0.000)	-0.02 (0.419)	1.00	
C_19D2	0.02 (0.556)	0.00 (0.908)	0.01 (0.711)	0.01 (0.684)	0.02 (0.559)	0.01 (0.660)	0.00 (0.950)	0.00 (0.879)	-0.07*** (0.009)	-0.30*** (0.000)	0.04 (0.115)	1.00
Panel-B												
VIF	6.92	7.28	4.4	7.63	2.29	2.34	1.25	1.32	1.39	1.12	1.27	1.11

Note (s): P-values in parentheses. ***, ** and * represent correlation coefficients are significant at 1%, 5% and 10% level of significance. Panel-A represents the correlation matrix, and panel-B represents the VIF of each regressor.

Table 8: Correlation matrix and resulting VIF of independent and control variables for Z_Score

Variables	Panel-A									
	lnCCI	lnGEI	lnRQI	lnRLI	lnPSAVTI	lnVAI	BCTA	BCIR	BOCTA	C_19D2
lnCCI	1.00									
lnGEI	0.89*** (0.000)	1.00								
lnRQI	0.80*** (0.000)	0.82*** (0.000)	1.00							
lnRLI	0.90*** (0.000)	0.89*** (0.000)	0.81*** (0.000)	1.00						
lnPSAVTI	0.68*** (0.000)	0.67*** (0.000)	0.58*** (0.000)	0.72*** (0.000)	1.00					
lnVAI	0.65*** (0.000)	0.58*** (0.000)	0.70*** (0.000)	0.61*** (0.000)	0.46*** (0.000)	1.00				
BCTA	-0.34*** (0.000)	-0.30*** (0.000)	-0.28*** (0.000)	-0.31*** (0.000)	-0.14*** (0.000)	-0.32*** (0.000)	1.00			
BCIR	0.08** (0.004)	0.05 (0.094)	0.10*** (0.000)	0.10*** (0.000)	0.15*** (0.000)	0.29*** (0.000)	-0.14*** (0.000)	1.00		
BOCTA	-0.30*** (0.000)	-0.33*** (0.000)	-0.27*** (0.000)	-0.28*** (0.000)	-0.13*** (0.000)	-0.14*** (0.000)	0.25*** (0.000)	0.32*** (0.000)	1.00	
GDPG	-0.13*** (0.000)	-0.10*** (0.000)	-0.11*** (0.000)	-0.12*** (0.000)	-0.09*** (0.002)	-0.15*** (0.000)	0.09*** (0.003)	-0.05 (0.065)	0.06* (0.048)	1.00
IR	-0.31*** (0.000)	-0.39*** (0.000)	-0.34*** (0.000)	-0.26*** (0.000)	-0.25*** (0.000)	-0.24*** (0.000)	0.10*** (0.000)	-0.06* (0.045)	0.17*** (0.000)	1.00
C_19D2	0.01 (0.772)	-0.00 (0.877)	0.00 (0.887)	0.00 (0.893)	0.01 (0.683)	0.00 (0.892)	0.00 (0.901)	0.01 (0.835)	-0.07* (0.013)	0.05 (0.107)
Panel-B										
VIF	7.08	7.27	4.36	7.68	2.24	2.38	1.25	1.34	1.38	1.11

Note (s): P-values in parentheses. ***, ** and * represent correlation coefficients are significant at 1%, 5% and 10% level of significance. Panel A represents the correlation matrix, and Panel B represents the VIF of each regressor.

Similarly, this study performs multiple correlation analysis and VIF tests for the other four data sets cleaned for the other four DV: Table 5 for ROE, Table 6 for NIM, Table 7 for NPL, and Table 8 for Z_Score. The resulting correlation coefficients in Table 5 to Table 8 summarize a high degree of significant positive correlation among InCCI, InGEI, InRQI, and InRLI as the resulting correlation coefficients among them are more than 0.80 as well as significant at a 1% level of significance. Moreover, the VIF values of InCCI, InGEI, InRQI, and InRLI are also above four (this study uses the rule of thumb of 4) in the respective tables. Accordingly, based on the correlation coefficients and VIF values, this study observes multicollinearity among InCCI, InGEI, InRQI, and InRLI. To address the multicollinearity, this study also develops separate models for InCCI, InGEI, InRQI, and InRLI to run a regression with ROE, NIM, NPL, and Z_Score for the direct effect and moderating effect analysis. As other IV and CV have correlation coefficients less than 0.80 and VIF values less than 4, the researcher opted for the models developed for InCCI, InGEI, InRQI, and InRLI to regress with the DV.

4.4 Results and analysis of direct effect

This section represents the impact of country governance indicators on the profitability and financial stability of commercial banks.

4.4.1 Impact of country governance on profitability

This section is related to research objective one, research question one, and hypothesis H₁ and its sub-hypotheses, and tries to measure the impacts of country governance indicators on the profitability of commercial banks.

4.4.1.1 Impact of Country Governance on ROA

According to research objective one and research question one, Table 9 summarizes the regression outputs under Ordinary Least Squares (OLS) and Panel Corrected Standard Error (PCSE) estimation to test hypotheses H_{1a1} to H_{1a6} from the clean data for ROA. Models 1 to 4 are developed under OLS estimation to deal with multicollinearity among country governance indicators. However, the Breusch-Pagan test (for heteroskedasticity), Wooldridge test (for first-order serial correlation), and Pesaran's (2015) Cross-Sectional Dependence (CD) test are significant at a 1% level of significance. This suggests that all those models suffer from heteroskedasticity, first-order serial correlation, and CD. Therefore, to deal with heteroskedasticity, serial correlation, and CD and ensure robustness in the estimation, models 5 to 8 are developed under PCSE estimation as suggested by Breitung et al. (2022) and Hoechle (2007).

The coefficient of $\ln CCI$ (-0.0355) and the associated p-value in model 5 demonstrate that the negative association between $\ln CCI$ and ROA is statistically insignificant to accept hypothesis H_{1a1} . This indicates that a country's control of corruption does not significantly affect the ROA of banks. Moreover, this negative association between $\ln CCI$ and ROA contradicts the negative impact of corruption on ROA, as reported by Asteriou et al. (2016) and Bolarinwa and Soetan (2019). However, it supports the finding of Toader et al. (2018), where they reported that a lower level of corruption enhances the profitability of banks. In model 6, the resulting negative coefficient of $\ln GEI$ and associated p-value suggest that the negative association between $\ln GEI$ and ROA is statistically significant at a 1% significance level, providing sufficient

statistical evidence to accept hypothesis H_{1a2}. This implies that an improvement in GEI significantly reduces the ROA of banks. This finding is consistent with the finding of Almaqtari et al. (2022). Notably, this significant negative association may be due to increased government intervention in the banking sector, which may hamper the earning opportunities of commercial banks (i.e., prioritized lending at a lower rate), reducing banks' ROA.



Table 9: Direct effect of country governance indicators on ROA

	OLS			PCSE			
	(1) ROA	(2) ROA	(3) ROA	(4) ROA	(5) ROA	(6) ROA	(8) ROA
lnCCI	0.00604 (0.907)				-0.0355 (0.666)		
lnGEI		-0.188*** (0.000)				-0.283*** (0.001)	
lnRQI			-0.148** (0.015)				-0.267** (0.011)
lnRLI				-0.0915* (0.096)			-0.154 (0.165)
lnPSAVTI	-0.0351 (0.608)	0.113* (0.099)	0.0272 (0.656)	0.0457 (0.529)	-0.0180 (0.839)	0.176 (0.146)	0.0782 (0.417)
lnVAI	0.0722 (0.130)	0.131** (0.004)	0.146** (0.005)	0.104** (0.024)	0.0113 (0.888)	0.108 (0.186)	0.108 (0.608)
BCTA	0.0517*** (0.000)	0.0503*** (0.000)	0.0521*** (0.000)	0.0507*** (0.000)	0.0641*** (0.000)	0.0626*** (0.000)	0.0645*** (0.000)
BCIR	-0.0382*** (0.000)	-0.0382*** (0.000)	-0.0382*** (0.000)	-0.0381*** (0.000)	-0.0382*** (0.000)	-0.0391*** (0.000)	-0.0387*** (0.000)
BOCTA	0.255*** (0.000)	0.236*** (0.000)	0.245*** (0.000)	0.248*** (0.000)	0.184*** (0.000)	0.174*** (0.000)	0.178*** (0.000)
GDGP	0.0386*** (0.000)	0.0384*** (0.000)	0.0387*** (0.000)	0.0384*** (0.000)	0.0326*** (0.000)	0.0322*** (0.000)	0.0328*** (0.000)
IR	-0.00334 (0.287)	-0.00592* (0.063)	-0.00446 (0.156)	-0.00338 (0.278)	-0.00172 (0.650)	-0.00494 (0.189)	-0.00337 (0.353)
C_19D2	-0.0182 (0.731)	-0.0284 (0.588)	-0.0224 (0.670)	-0.0225 (0.669)	-0.0806 (0.180)	-0.0975 (0.096)	-0.0875 (0.138)
CONS	1.917*** (0.000)	1.879*** (0.000)	1.929*** (0.000)	1.896*** (0.000)	1.983*** (0.000)	1.913*** (0.000)	2.025*** (0.000)
N	1287	1287	1287	1287	1287	1287	1287
R-sq	0.497	0.502	0.499	0.498	0.523	0.550	0.527
F-stat./Wald chi2	140.10***	143.09***	141.41***	140.71***	395.70***	391.89***	405.70***
Mean vif	1.68	1.67	1.64	1.70			
Breusch-Pagan	321.80*** (0.000)	225.69*** (0.000)	261.11*** (0.000)	285.03*** (0.000)			
Wooldridge test (F)	15.740*** (0.000)	14.646*** (0.000)	15.027*** (0.000)	14.627*** (0.000)			
Pesaran (2015) CD	2.572** (0.010)	2.103** (0.035)	2.566** (0.010)	2.470** (0.014)			

Note(s): p-values are in parentheses. *, **, and *** denote coefficients are significant at 10%, 5% and 1% level of significance, respectively

In model 7, the negative association between $\ln RQI$ and ROA is statistically significant at a 5% level of significance, and eventually, H_{1a3} is accepted at a 5% level of significance. This finding indicates that increased RQI significantly reduces the ROA of commercial banks. However, this finding contrasts the significant positive association between the same reported by Almaqtari et al. (2022) in India. Meanwhile, the resulting coefficient of $\ln RLI$ and associated p-value in model 8 do not provide sufficient statistical support to accept hypothesis H_{1a4} . This indicates that the negative association between $\ln RLI$ and ROA is statistically insignificant, even at a 10% significance level. Although an improvement in RLI reduces ROA, it is not statistically significant. In addition, this finding is inconsistent with the significant positive association between the same mentioned by Almaqtari et al. (2022). The coefficients of the Natural Log of Political Stability and Violence/Terrorism Index ($\ln PSAVTI$) and Natural Log of Voice and Accountability Index ($\ln VAI$) and their associated p-values in models 5 to 8 demonstrate that the positive associations of $\ln PSAVTI$ (except model 5, where the coefficient is negative, but the p-value is very high) and $\ln VAI$ with ROA is not statistically significant even at a 10% significance level. Eventually, this study does not highlight sufficient statistical evidence to accept hypotheses H_{1a5} and H_{1a6} . Although progress in PSAVTI and VAI enhances ROA, those impacts are not statistically significant. Furthermore, those positive relationships are consistent with the positive relationship between those two pairs, as noted by Almaqtari et al. (2022). As the relationships between $\ln GEI$ and ROA and $\ln RQI$ and ROA are statistically significant, this study accepts hypothesis H_{1a} , suggesting the significant effect of country governance on the ROA of commercial banks.

From models 5 to 8, the resulting coefficients of BCTA and associated p-values highlight that the positive association between BCTA and ROA is statistically significant at a 1% level of significance. This indicates that increased bank capital enhances the ROA of banks. This positive association is consistent with the findings of Rathnayake et al. (2022), Saif-Alyousfi (2022), and Yahaya et al. (2022); however, it is inconsistent with the finding of Le and Ngo (2020), who discovered a negative association between them. The coefficients of BCIR and associated p-values (refer to models 5 to 8) suggest that the negative association between BCIR and ROA is statistically significant at a 1% significance level. This implies that increased BCIR, which means increased operating inefficiency, reduces ROA. Notably, this finding is consistent with the findings of Adelopo et al. (2018) and Saif-Alyousfi (2022) yet inconsistent with the positive association by Almaqtari et al. (2019). Similarly, the coefficients of BOCTA and associated p-values (refer to models 5 to 8) represent that the positive association between BOCTA and ROA is statistically significant at a 1% level of significance. This reflects that a greater BOCTA ratio, which means greater utilization of the bank's assets, enhances the ROA of commercial banks. This finding is inconsistent with the findings of Le and Ngo (2020).

Of the three macroeconomic factors, only GDPG has a significant positive association with ROA (refer to models 5 to 8). The resulting coefficients of GDPG and associated p-values prove that the positive association between GDPG and ROA is statistically significant at a 1% level of significance, meaning that increased GDP growth increases the ROA of commercial banks. This positive association is consistent with the findings of some studies (Le & Ngo, 2020; Saif-Alyousfi, 2022; Yahaya et al., 2022). However, this is inconsistent with the findings of Al-Homaidi et al. (2018) and Tan et al. (2017),

who revealed a negative association between them. The resulting negative association between IR and ROA in this study is not statistically significant, although some studies mention significant positive (Dietrich & Wanzenried, 2014; Tan et al., 2017) as well as negative (Al-Homaidi et al., 2018; Le & Ngo, 2020) association between them. Moreover, this study asserts that the association between COVID-19 and ROA is negative but not statistically significant, indicating that COVID-19 insignificantly reduces ROA. Despite that, DaSouza et al. (2023) and Xiazhi and Shabir (2022) emphasized the significant negative impact of COVID-19 on bank performance.

4.4.1.2 Impact of country governance on ROE

This part of this study is related to research objective one and research question one and tries to demonstrate the impacts of country governance indicators on the ROE of commercial banks by assessing hypotheses H_{1b1} to H_{1b6}. Eventually, models 9 to 12, presented in Table 10, are developed under OLS estimation, considering multicollinearity among the regressors. Breusch-Pagan test for heteroskedasticity and Wooldridge's test for first-order serial correlation is statistically significant, suggesting all the models suffer from heteroskedasticity and first-order serial correlation. However, Pesaran's (2015) CD test is not statistically significant, indicating that models developed under OLS estimation do not suffer from CD in the regressors. Hence, to ensure robustness in estimation and hypothesis testing, this study uses the Feasible Generalized Least Square (FGLS) method to control heteroskedasticity and first-order serial correlation and develop models 13 to 16.

The resulting coefficient of $\ln CCI$ and associated p-value (refer to model 13) do not provide ample statistical evidence to accept hypothesis H_{1b1} . This highlights an insignificant negative association between $\ln CCI$ and ROE, which suggests that an improvement in CCI reduces the ROE of banks; however, it is not statistically significant. Moreover, Almaqtari et al. (2022) stated a significant negative association between them. In model 14, the coefficient of $\ln GEI$ and its p-value provide adequate statistical evidence to accept hypothesis H_{1b2} , implying that the negative association between $\ln GEI$ and ROE is statistically significant at a 5% significance level. Accordingly, this finding indicates that an improvement in GEI significantly reduces the ROE of commercial banks and is consistent with the findings of Almaqtari et al. (2022).

Similarly, in model 15, the coefficients of $\ln RQI$ and its p-value demonstrate that the negative association between $\ln RQI$ and ROE is statistically significant at a 10% significance level. Eventually, this statistical evidence mentions that hypothesis H_{1b3} is accepted at a 10% significance level, suggesting that an improvement in RQI reduces ROE but is marginally significant. In model 16, the coefficient of $\ln RLI$ and associated p-value do not provide statistical support to accept hypothesis H_{1b4} . Eventually, the negative association between $\ln RLI$ and ROE is not statistically significant, even at a 10% significance level. This suggests that although an improvement in RLI reduces ROE, its impact is statistically insignificant. Furthermore, this finding is inconsistent with the significant positive relationship between them, as noted by Almaqtari et al. (2022). The reason behind negative associations between CCI and ROE, GEI and ROE, RQI and ROE, and RLI and ROE may be the formulation and implementation of various policies. Nevertheless, compliance with it may limit investing in financially

feasible investment opportunities or enforce investing in financially less feasible government-prioritized sectors, even at a lower interest rate.

In models 13 to 16, the resulting coefficients of $\ln\text{PSAVTI}$ and associated p-values suggest that the positive association between $\ln\text{PSAVTI}$ and ROE is not statistically significant. Eventually, this study does not observe the necessary statistical evidence to accept hypothesis H_{1b5} . Although PSAVTI positively affects ROE, its impact is not statistically significant. However, Almaqtari et al. (2022) asserted a significant positive association between them. The coefficients of $\ln\text{VAI}$ and p-values indicate that the positive association between $\ln\text{VAI}$ and ROE is statistically significant at a 1% significance level. That is, this study highlights necessary statistical evidence to accept hypothesis H_{1b6} , implying that an improvement in VAI significantly enhances ROE, which is consistent with the finding of Almaqtari et al. (2022). The reason behind the positive association between $\ln\text{VAI}$ and ROE may be increased voice and accountability in society to ensure recovery of bank lending reduces the non-performing assets, enhancing the ROE of banks. As the relationships between $\ln\text{GEI}$ and ROE, $\ln\text{RQI}$ and ROE, as well as $\ln\text{VAI}$ and ROE, are statistically significant, this study partially accepts hypothesis H_{2b} . This demonstrates the significant impact of country governance indicators on the ROE of commercial banks.

Table 10: Direct effect of country governance indicators on ROE

	OLS					FGLS				
	(9) ROE	(10) ROE	(11) ROE	(12) ROE	(13) ROE	(14) ROE	(14) ROE	(14) ROE	(16) ROE	
lnCCI	0.362 (0.377)				-0.210 (0.515)					
lnGEI		-1.090** (0.007)				-0.884** (0.013)				
lnRQI			-1.163** (0.015)				-0.726* (0.085)			
lnRLI				-0.0562 (0.897)					-0.141 (0.708)	
lnPSAVTI	0.632 (0.242)	1.727** (0.001)	1.351** (0.005)	0.951 (0.098)	0.200 (0.689)	0.438 (0.392)	0.318 (0.518)		0.160 (0.752)	
lnVAI	0.615 (0.102)	1.097** (0.002)	1.321** (0.001)	0.783** (0.032)	1.198** (0.000)	1.499** (0.000)	1.364** (0.000)		1.161** (0.000)	
BCTA	-0.401** (0.000)	-0.412** (0.000)	-0.403** (0.000)	-0.406** (0.000)	-0.321** (0.000)	-0.324** (0.000)	-0.319** (0.000)		-0.317** (0.000)	
BCIR	-0.337** (0.000)	-0.337** (0.000)	-0.337** (0.000)	-0.337** (0.000)	-0.326** (0.000)	-0.329** (0.000)	-0.326** (0.000)		-0.326** (0.000)	
BOCTA	2.126** (0.000)	1.993** (0.000)	2.030** (0.000)	2.095** (0.000)	1.884** (0.000)	1.880** (0.000)	1.881** (0.000)		1.897** (0.000)	
GDPG	0.317** (0.000)	0.313** (0.000)	0.316** (0.000)	0.315** (0.000)	0.217** (0.000)	0.216** (0.000)	0.217** (0.000)		0.215** (0.000)	
IR	0.0676** (0.049)	0.0509 (0.140)	0.0517 (0.135)	0.0655* (0.056)	0.0505** (0.035)	0.0500** (0.033)	0.0479** (0.044)		0.0502** (0.035)	
C_19D2	-0.598 (0.152)	-0.679 (0.103)	-0.648 (0.119)	-0.617 (0.139)	-1.525** (0.000)	-1.562** (0.000)	-1.535** (0.000)		-1.528** (0.000)	
CONS	25.01** (0.000)	24.73** (0.000)	25.08** (0.000)	24.94** (0.000)	25.11** (0.000)	25.17** (0.000)	25.25** (0.000)		25.07** (0.000)	
N	1279	1279	1279	1279	1279	1279	1279		1279	
R-sq	0.430	0.433	0.432	0.429						
F stat./Wald chi2	106.25** (0.000)	107.52** (0.000)	107.24** (0.000)	106.10** (0.000)	1935.00** (0.000)	2040.44** (0.000)	1813.83** (0.000)		1923.28** (0.000)	
Mean vif	1.70	1.67	1.66	1.72						
Breusch-Pagan	451.11** (0.000)	313.93** (0.000)	346.92** (0.000)	414.02** (0.000)						
Wooldridge test (F)	44.161** (0.000)	44.834** (0.000)	44.831** (0.000)	44.453** (0.000)						
Pesaran (2015) CD	-0.077 0.939	-0.280 0.780	-0.082 0.934	-0.104 0.917						

Note(s): p-values are in parentheses. *, **, and *** denote coefficients are significant at 10%, 5% and 1% level of significance, respectively

In models 13 to 16, the coefficients of BCTA and associated p-values noted that the negative association between BCTA and ROE is significant at a 1% significance level, suggesting that increased contributed bank capital reduces the ROE of commercial banks. This finding is inconsistent with the findings of some studies (Almaqtari et al., 2019; Saif-Alyousfi, 2022), which discovered a positive association between them. The resulting coefficients of BCIR and its p-values reveal that the negative association between BCIR and ROE is statistically significant at a 1% significance level, indicating that increased operating inefficiency reduces the ROE of commercial banks. This finding is consistent with the findings of Garcia and Guerreiro (2016) and Saif-Alyousfi (2022) yet inconsistent with the insignificant positive relationship between them, as mentioned by Al-Homaidi et al. (2018) and Almaqtari et al. (2019). On the other hand, the positive association between BOCTA and ROE is significant at a 1% level of significance. This suggests that using various assets increases the ROE of commercial banks since whenever banks use various modern assets to diversify their services and increase competitive advantages in the market, it increases their earnings.

Of the three macroeconomic factors, GDPG and IR are positively related to ROE, while C_19D2 is negatively related (refer to models 12 to 16). The positive association between GDPG and ROE is significant at a 1% level of significance, suggesting that GDP growth increases the ROE of banks, and this finding is consistent with the findings of Nippani and Ling (2021). In contrast, Al-Homaidi et al. (2018) and Garcia and Guerreiro (2016) observed a negative association between them. The positive association between IR and ROE is significant at a 5% significance level, which is supported by the findings of Almaqtari et al. (2019) and Saif-Alyousfi (2022). On the contrary, Al-Homaidi et al. (2018) and Yahaya et al. (2022) reported a negative

association between them. Moreover, the negative association between C_19D2 and ROE is significant at a 1% significance level, suggesting that COVID-19 reduces the ROE of banks significantly. This finding is consistent with the significant negative impact of COVID-19 on bank performance by DaSouza et al. (2023) and Xiazhi and Shabir (2022).

4.4.1.3 Impact of country governance on NIM

According to research objective one and research question one, this part of this study demonstrates the direct effect of country governance indicators on the NIM of commercial banks by evaluating hypotheses H_{1c1} to H_{1c6}. In Table 11, models 17 to 20 are developed under OLS estimation. However, the Breusch-Pagan test for heteroskedasticity and the Wooldridge test (F) for first-order serial correlation are statistically significant at a 1% significance level, indicating that all the models suffer from heteroskedasticity and first-order serial correlation. Moreover, Pesaran's (2015) CD test is also significant at a 1% significance level, implying that collected data suffer from CD. Therefore, OLS estimation is not robust for statistical inferences. Therefore, to ensure greater robustness in the estimation by controlling heteroskedasticity, first-order serial correlation, and CD, this study employs PCSE estimation as suggested by Breitung et al. (2022;) and Hoechle (2007) to assess hypotheses H_{1c1} to H_{1c6} and develops models 21 to 24.

In model 21, the negative coefficient of lnCCI is statistically significant at a 1% level of significance, and this study finds enough statistical evidence to accept hypothesis H_{1c1}. This reveals a statistically significant negative impact of lnCCI on the NIM of

commercial banks. That is, an improvement in the country's CCI reduces NIM significantly, and this finding is consistent with the findings of Almaqtari et al. (2022). Similarly, the negative coefficient of $\ln\text{GEI}$ in model 22 is also statistically significant at a 1% level of significance, providing sufficient statistical evidence to accept hypothesis H_{1c2} , emphasizing a statistically significant negative impact of $\ln\text{GEI}$ on the NIM of commercial banks. Specifically, progress in GEI reduces NIM significantly; however, Almaqtari et al. (2022) noted a significant positive association between them in Indian banks. In model 23, the resulting negative coefficient of $\ln\text{RQI}$ is statistically significant at a 1% significance level, which provides the necessary statistical evidence to accept hypothesis H_{1c3} . This highlights a statistically significant negative impact of $\ln\text{RQI}$ on the NIM of commercial banks. On the contrary, Almaqtari et al. (2022) revealed significant and insignificant positive relationships between them in various estimation models.

This study also discovers a statistically significant negative impact of $\ln\text{RLI}$ on NIM as the negative coefficient of $\ln\text{RLI}$ (higher than other governance indicators) in model 24 is statistically significant at a 1% significance level. This provides ample statistical evidence to accept hypothesis H_{1c4} . Specifically, progress in a country's RLI significantly decreases the overall NIM of commercial banks. However, Almaqtari et al. (2022) stated an insignificant negative relationship between them. The resulting coefficients of $\ln\text{PSAVTI}$ in models 21, 22, and 24 (in the first two models negative and in the last model positive) are statistically insignificant even at a 10% level of significance. Still, the negative coefficient of $\ln\text{PSAVTI}$ in model 23 is statistically significant at a 5% significance level, indicating a significant negative impact of $\ln\text{PSAVTI}$ on NIM, and eventually, hypothesis H_{1c5} is supported. However, the

expected positive association turned into negative. This significant negative impact may be political stability, which increases political pressure on commercial banks, reducing interest rates and earnings at the bank level. Nevertheless, Almaqtari et al. (2022) reported significant mixed relationships between them under various estimation models.

On the other hand, the positive coefficients of $\ln VAI$ in models 21 to 24 are statistically significant at a 1% significance level, and this study discovers enough statistical evidence to accept hypothesis H_{1c6} . This suggests a statistically significant positive impact of the country's $\ln VAI$ on the NIM of commercial banks. This finding is inconsistent with the significant negative association between them by Almaqtari et al. (2022). That is, if overall VAI increases in a country, it will increase the NIM of the banking sector. Notably, the reason behind this significant positive association may be increased voice and accountability in the people and increased loan payback in time, which ultimately reduces NPL and increases NIM of banks. As all country governance indicators significantly affect the NIM of commercial banks, this study accepts hypothesis H_{1c} , demonstrating the significant impact of country governance on the NIM of commercial banks.

The coefficients of BCTA and BOCTA in models 21 to 24 indicate that both have statistically significant positive associations with the NIM of banks at a 1% level of significance. This implies that increased bank capital and use of bank assets enhance the NIM of commercial banks. A similar significant positive association between BCTA and NIM was reported by Saif-Alyousfi (2022), and an insignificant positive association was noted by Garcia and Guerreiro (2016). Conversely, Le and Ngo (2020)

revealed a significant negative association between them. On the other hand, Le and Ngo (2020) noted an insignificant positive association between BOCTA and NIM. The resulting coefficients of BCIR in those models are negatively associated with the NIM of banks at a 1% significance level, and this statistically significant negative association demonstrates that increased bank-level inefficiency reduces the NIM of banks. This finding is consistent with Adelopo et al. (2018) and Saif-Alyousfi (2022). However, Garcia and Guerreiro (2016) revealed an insignificant negative association between them.

On the other hand, of three macroeconomic factors, the coefficients of GDPG in models 21 to 24 are negatively associated with the NIM of commercial banks, and they are significant at a 10% level of significance (except in model 22). This finding suggests that NIM decreases with the increases in the GDPG of a county. In addition, this finding is consistent with Al-Homaidi et al. (2018) and Garcia and Guerreiro (2016); however, it is inconsistent with the positive relationship between them, as noted by Adelopo et al. (2018), Al-Matari (2021), Saif-Alyousfi (2022), and Tan et al. (2017). Meanwhile, the coefficients of IR are positively related to NIM, and those coefficients are statistically significant at a 1% level of significance in model 29 and a 10% level of significance in models 31 and 32. Similarly, Dietrich and Wanzenried (2014), Saif-Alyousfi (2022), and Tan et al. (2017) revealed a positive relationship between them. Despite that, Adelopo et al. (2018) and Le and Ngo (2020) highlighted a negative relationship between them. The negative coefficients of C_19D2 are statistically significant at a 1% or 5% level of significance, and this study observes that COVID-19 reduces the NIM of commercial banks significantly over the non-COVID-19 period.

Table 11: Direct effect of country governance indicators on NIM

	OLS				PCSE			
	(17) NIM	(18) NIM	(19) NIM	(20) NIM	(21) NIM	(22) NIM	(23) NIM	(24) NIM
lnCCI	-1.157*** (0.000)	-1.439*** (0.000)	-1.204*** (0.000)	-1.826*** (0.000)	-1.087*** (0.000)	-1.377*** (0.000)	-1.568*** (0.000)	-2.281*** (0.000)
lnGEI								0.146 (0.393)
lnRQI								0.952*** (0.000)
lnRLI								
lnPSAVTI	-0.00552 (0.960)	0.111 (0.288)	-0.369*** (0.000)	0.269*** (0.012)	-0.102 (0.496)	-0.0375 (0.872)	-0.435** (0.019)	
lnVAI	0.469*** (0.000)	0.446*** (0.000)	0.524*** (0.000)	0.645*** (0.000)	0.497*** (0.000)	0.477*** (0.001)	0.715*** (0.000)	
BCTA	0.152*** (0.000)	0.162*** (0.000)	0.174*** (0.000)	0.153*** (0.000)	0.210*** (0.000)	0.233*** (0.000)	0.222*** (0.000)	0.175*** (0.000)
BCIR	-0.0340*** (0.000)	-0.0329*** (0.000)	-0.0319*** (0.000)	-0.0326*** (0.000)	-0.0293*** (0.000)	-0.0299*** (0.000)	-0.0274*** (0.000)	-0.0300*** (0.000)
BOCTA	0.705*** (0.000)	0.630*** (0.000)	0.709*** (0.000)	0.632*** (0.000)	0.439*** (0.000)	0.397*** (0.000)	0.410*** (0.000)	0.397*** (0.000)
GDPG	0.00772 (0.254)	0.00789 (0.225)	0.0107 (0.121)	0.00471 (0.464)	-0.00676* (0.099)	-0.00676 (0.102)	-0.00769* (0.083)	-0.00651* (0.075)
IR	0.0185** (0.007)	0.00433 (0.516)	0.0144** (0.041)	0.0202*** (0.002)	0.0212*** (0.004)	0.00552 (0.414)	0.0140* (0.050)	0.0138* (0.057)
C_19D2	-0.172** (0.034)	-0.217** (0.006)	-0.160* (0.054)	-0.199** (0.010)	-0.263** (0.013)	-0.295*** (0.002)	-0.261** (0.023)	-0.260** (0.007)
CONS	2.312*** (0.000)	2.377*** (0.000)	2.566*** (0.000)	2.588*** (0.000)	2.380*** (0.000)	2.412*** (0.000)	2.951*** (0.000)	3.157*** (0.000)
N	1242	1242	1242	1242	1242	1242	1242	1242
R-sq	0.769	0.787	0.758	0.792	0.861	0.859	0.855	0.868
F stat./Wald chi2	456.86*** (0.000)	507.27*** (0.000)	429.27*** (0.000)	522.43*** (0.000)	1095.29*** (0.000)	1216.14*** (0.000)	836.34*** (0.000)	2487.77*** (0.000)
Mean vif	1.67	1.67	1.65	1.74				
Breusch-Pagan	3377.00*** (0.000)	2283.83*** (0.000)	3586.75*** (0.000)	2462.55*** (0.000)				
Wooldridge test (F)	72.233*** (0.000)	71.689*** (0.000)	71.662*** (0.000)	68.347*** (0.000)				
Pesaran (2015) CD	14.202*** (0.000)	11.882*** (0.000)	16.392*** (0.000)	11.105*** (0.000)				

Note(s): p-values are in parentheses. *, **, and *** denote coefficients are significant at 10%, 5% and 1% level of significance, respectively

4.4.1.4 Summary of direct effects on profitability and theoretical underpinning

This study analyzes CCI as having an insignificant negative impact on ROA and ROE but also a significant negative impact on NIM. In particular, controlling corruption significantly reduces the NIM of commercial banks; however, it insignificantly reduces the ROA and ROE of commercial banks. Additionally, improvement in GEI significantly reduces the ROA, ROE, and NIM of commercial banks. Similarly, improvement in RQI significantly reduces the ROA, ROE, and NIM of commercial banks. However, improvement in RLI insignificantly reduces ROA and ROE but significantly reduces NIM. The reason behind this negative impact may be that in the literature, this study finds that minor corruption is favorable for the economy, and excessive government intervention, regularity control, and unfavorable financial rules hamper the revenue generation of commercial banks. Eventually, focusing excessively on CCI, GEI, RQI, and RLI without addressing their adverse effects significantly or insignificantly reduces the profitability of commercial banks. Moreover, commercial banks are highly regulatory. Therefore, abrupt government intervention through different regulatory and financial policies and rules negatively affects the profitability of commercial banks.

This study also observed that lnPSAVTI insignificantly increases ROA and ROE in various estimation models. However, it has insignificant mixed associations with NIM yet a significant negative association in model 23. Moreover, this study demonstrates that improvement in lnVAI insignificantly increases ROA but significantly increases ROE and NIM of commercial banks. Those positive impacts may be attributed to political instability, violence, and political influences that hamper the smooth functioning of commercial banks. Furthermore, improvement in VAI improves a

favorable working environment by improving accountability at individual and organizational levels. For example, improvement in PSAVTI and VAI can reduce political manipulation in the banking sector. Eventually, PSAVTI and VAI exhibit a positive impact on profitability.

To sum up, most country governance indicators have significant associations with profitability indicators, and these findings are supported by the Resource Dependence Theory (RDT). It highlights the effects of external environmental influences on the organization's policies, strategies, and performance.

4.4.2 Impact of country governance on financial stability

This part of this study is related to the objective and research question two and seeks to measure the impact of country governance on the financial stability of commercial banks by assessing H_2 and its sub-hypotheses.

4.4.2.1 Impact of country governance on NPL

According to research objectives two, research question two, and hypothesis H_{2a} , Table 12 represents the summary of OLS estimation, post-estimation test of OLS, and PCSE estimation to illustrate the impact of a country's governance indicators on the level of NPL. Considering the multicollinearity among $\ln CCI$, $\ln GEI$, $\ln ROI$, and $\ln RLI$, models 25 to 28 are developed under OLS estimation to evaluate hypotheses H_{2a1} to H_{2af} under hypothesis H_{2a} . To examine the robustness of those models, this study employs the Breusch-Pagan test for heteroskedasticity, the Wooldridge test for first-order serial correlation, and the Pesaran (2015) CD test. All the post-estimation

tests are statistically significant at a 1% significance level, indicating that models under OLS estimation suffer from heteroskedasticity, first-order serial correlation, and CD and are not robust for relationship analysis. Accordingly, models 29 to 32 are developed under PCSE estimation suggested by Breitung et al. (2022;) and Hoechle (2007) to ensure robustness in the estimation.

The resulting negative coefficient of $\ln CCI$ (-1.405) in model 29 is statistically significant at a 5% significance level. Therefore, hypothesis H_{2a1} is statistically accepted, suggesting that improvement in the control of corruption at the country level can significantly reduce the NPL of commercial banks. This finding is inconsistent with the significant positive association between CCI and NPL reported by Ozili (2018) in African countries. The reason behind this significant negative association might be the intentional delay of the loan payment, as emphasized by Schiantarelli et al. (2020). Notably, controlling corruption policies can reduce this unfair intention, which reduces the level of NPL. From model 30, the resulting negative coefficient (-0.803) of $\ln GEI$ and associated p-value (0.178) do not provide statistical support to accept hypothesis H_{2a2} . This implies that the improvement in GEI can reduce the level of NPL, but it is not statistically significant.

Table 12: Direct effect of country governance indicators on NPL

Variables	OLS			PCSE				
	(25) NPL	(26) NPL	(27) NPL	(28) NPL	(29) NPL	(30) NPL	(31) NPL	(32) NPL
lnCCI	-2.171*** (0.000)	-2.128*** (0.000)	-2.077*** (0.000)	-1.491*** (0.000)	-1.405*** (0.015)	-0.803 (0.178)		
lnGEI								
lnRQI							-1.405** (0.016)	-1.499*** (0.000)
lnRLI								-1.477** (0.014)
lnPSAVTI	-1.925*** (0.000)	-1.906*** (0.000)	-2.762*** (0.000)	-2.331*** (0.000)	-1.453** (0.030)	-1.829** (0.007)	-1.963*** (0.000)	-1.477** (0.014)
lnVAI	0.998*** (0.001)	0.778** (0.005)	1.138*** (0.000)	0.604** (0.033)	-0.008 (0.987)	-0.293 (0.499)	-0.0154 (0.976)	0.0738 (0.867)
BCTA	0.0955** (0.015)	0.112*** (0.004)	0.137*** (0.000)	0.121*** (0.002)	0.0714* (0.090)	0.110** (0.011)	0.122*** (0.004)	0.0772* (0.084)
BCIR	-0.0007 (0.940)	-0.0020 (0.843)	0.0014 (0.888)	0.0043 (0.670)	0.0224** (0.018)	0.0223** (0.018)	0.0231** (0.012)	0.0230** (0.012)
BOCTA	-0.0274 (0.527)	-0.0390 (0.371)	-0.0090 (0.835)	-0.0066 (0.880)	-0.0021 (0.875)	-0.0002 (0.990)	-0.0012 (0.925)	-0.0014 (0.917)
GDPG	-0.130*** (0.000)	-0.125*** (0.000)	-0.123*** (0.000)	-0.124*** (0.000)	-0.038*** (0.002)	-0.038*** (0.002)	-0.037*** (0.003)	-0.038*** (0.003)
IR	0.066*** (0.000)	0.0441** (0.023)	0.0617*** (0.001)	0.0780*** (0.000)	0.0282 (0.205)	0.0296 (0.185)	0.0278 (0.214)	0.0332 (0.141)
C_19D2	-1.073*** (0.001)	-1.092*** (0.001)	-1.054*** (0.001)	-1.070*** (0.001)	-0.286 (0.135)	-0.281 (0.156)	-0.258 (0.198)	-0.294 (0.130)
CONS	6.613*** (0.000)	6.627*** (0.000)	7.142*** (0.000)	6.551*** (0.000)	5.966*** (0.000)	5.750*** (0.000)	6.179*** (0.000)	6.064*** (0.000)
N	1252	1252	1252	1252	1252	1252	1252	1252
R-sq	0.190	0.191	0.180	0.172	0.401	0.427	0.416	0.422
F-stat,Wald chi2	32.39** (0.000)	32.64*** (0.000)	30.26*** (0.000)	28.60*** (0.000)	32.53*** (0.000)	33.36*** (0.000)	44.56*** (0.000)	41.56*** (0.000)
Mean vif	1.56	1.53	1.52	1.57				
Breusch-Pagan	116.46*** (0.000)	96.82*** (0.000)	83.46*** (0.000)	64.76*** (0.000)				
Wooldridge test (F)	80.461*** (0.000)	82.391*** (0.000)	78.891*** (0.000)	78.353*** (0.000)				
Pesaran (2015) CD	22.959*** (0.000)	22.751*** (0.000)	21.926*** (0.000)	21.587*** (0.000)				

Note(s): p-values are in parentheses. *, **, and *** denote coefficients are significant at 10%, 5% and 1% level of significance, respectively

The negative coefficient of InRQI (-1.405) and associated p-value (0.016) in model 31 provide adequate statistical support to accept hypothesis H_{2a3} at a 5% significance level. This suggests that progress in regulatory quality at the country level significantly reduces the level of NPL of banks. The reason behind the significant negative association between InRQI and NPL may be the inefficient screening and monitoring process of bank loans (Cincinelli & Piatti, 2021). This includes weak regulatory policies (Özkan-Günay et al., 2014), and better regulatory quality can ensure greater compliance in the lending process to improve efficiency and faulty lending processes, reducing NPL. This finding is consistent with the significant negative association between the same during the crisis period but inconsistent with the insignificant mixed association during the pre-and post-crisis period (Ozili, 2018).

In model 32, the negative coefficient of InRLI (-1.499) and associated p-value (0.000) provide enough statistical evidence to accept hypothesis H_{2a4} at a 1% significance level. This suggests that an improvement in RLI can significantly reduce the level of NPL. This finding is consistent with the significant negative association between RLI and NPL, as noted by Ozili (2018). It supports the findings of Schiantarelli et al. (2020), who mentioned that weak legal enforcement to recover collateral of bad loans enhances the level of NPL. This aligns with the findings of Cerulli et al. (2020), who explained that judicial inefficiency in ensuring contract enforcement increases NPL.

The resulting coefficients and p-values of InPSAVTI in models 29 to 32 demonstrate that the negative associations between PSAVTI and NPL are statistically significant at a 1% or 5% significance level. Eventually, hypothesis H_{2a5} is accepted, supporting that an improvement in PSAVTI reduces the NPL of commercial banks. This negative

association is consistent with the findings of Ozili (2018), which is significant in the pre-crisis period but insignificant during the crisis and post-crisis periods. The reason behind the significant negative association may be that increased political stability enhances steady economic growth (Şanlısoy et al., 2017). This, ultimately, enhances the borrowers' loan payback capability. Moreover, the lending growth of commercial banks is also affected by political factors (Jackowicz et al., 2013).

From models 29 and 32, the resulting mixed coefficients of $\ln VAI$ and p-values do not provide sufficient statistical evidence to accept hypothesis H_{2a6} . This suggests that VAI does not significantly affect the NPL of commercial banks. As the relationships between $\ln CCI$ and NPL, $\ln RQI$ and NPL, $\ln RLI$ and NPL, as well as $\ln PSAVTI$ and NPL, are statistically significant, this study partially accepts hypothesis H_2 . This illustrates that country governance indicators affect the NPL of commercial banks. The significant negative associations between country governance indicators and NPL support the external dependence of the banking sector, as explained by the RDT.

From models 29 and 32, the coefficients of $BCTA$ and the associated p-values indicate that the positive associations between $BCTA$ and NPL are significant at 1%, 5%, and 10% significance levels. This suggests that increased bank capital significantly enhances the NPL of commercial banks. This finding is consistent with Kjosevski and Petkovski (2021) yet inconsistent with the negative association between the same, as reported by some studies (Boussaada et al., 2022; Jabbouri & Naili, 2019; Makri et al., 2014). The resulting coefficients of $BCIR$ and p-values noted that the positive association between $BCIR$ and the level of NPL is statistically significant at a 5% level of significance. This implies that increased $BCIR$, which denotes the operating

inefficiency of banks, enhances the level of NPL of banks. The reason behind this significant positive association may be that the increased operating inefficiency can accelerate faulty bank lending which increases the level of NPL of banks. This finding is consistent with the findings of Berger and DeYoung (1997) and Khan et al. (2020). However, this is inconsistent with the findings of Jabbouri and Naili (2019), where a significant negative association is reported. In models 29 to 32, the coefficients of BOCTA and associated p-values suggest that the negative association between BOCTA and NPL is not statistically significant. In contrast, this finding is consistent with the findings in FE estimation but inconsistent with the findings of the two-step system GMM estimation (significant positive association) of Ghosh (2015).

From models 29 and 32, the resulting coefficients and p-values demonstrate that the negative associations between GDPG and NPL are statistically significant at a 1% level of significance, indicating that increased GDP significantly reduces NPL of commercial banks. This finding is consistent with the findings of some studies (Cerulli et al., 2020; Jabbouri & Naili, 2019; Kjosevski & Petkovski, 2021; Mazreku et al., 2018) but inconsistent with the findings (positive association) of Boussaada et al. (2022) and Dimitrios et al. (2016). On the other hand, the positive association between IR and NPL is not statistically significant, demonstrating that increased inflation enhances the level of NPL but is not statistically significant. This finding is inconsistent with the findings (significant negative association) of Boussaada et al. (2022), Mazreku et al. (2018), and Mishra et al. (2021) but consistent with the findings (positive association) of Jabbouri and Naili (2019), and Kjosevski and Petkovski (2021). Moreover, the resulting coefficients of C_19D2 and associated p-values illustrate that the negative association between C_19D2 and NPL is not statistically

significant. This finding suggests that although the level of NPL reduces during COVID-19, it is not statistically significant. This finding contradicts the increased NPL in the Eastern Caribbean Currency Union, as stated by DaSouza et al. (2023). Still, it is supported by the varied impacts of the same on banks across banks and countries (Demirgüç-Kunt et al., 2021).

4.4.2.2 Impact of country governance on Z_Score

This section is related to research objective two, research question two, and hypothesis H_{2b}, and it seeks to measure the impacts of country governance indicators on the financial stability of banks measured by Z_Score. Models 33 to 36 are developed under OLS estimation to assess hypotheses H_{2b1} to H_{2b6}. However, Breusch-Pagan for heteroskedasticity, Wooldridge test for first-order serial correlation, and Pesaran (2015) CD suggest that all the models under OLS estimation in Table 13 suffer from first-order serial correlation and CD. To deal with the first-order serial correlation and CD and ensure greater robustness in hypothesis testing, this study uses PCSE estimation to develop models 37 to 40 as recommended by Breitung et al. (2022;) and Hoechle (2007).

Table 13: Direct effect of country governance indicators on Z_Score

	OLS				PCSE			
	(33) Z_Score	(34) Z_Score	(35) Z_Score	(36) Z_Score	(37) Z_Score	(38) Z_Score	(39) Z_Score	(40) Z_Score
lnCCI	0.0982 (0.870)				0.667 (0.281)			
lnGEI		-1.875*** (0.001)				0.0296 (0.952)		
lnRQI			-0.0374 (0.957)				1.051* (0.065)	
lnRLI				-1.362** (0.030)				-0.205 (0.807)
lnPSAVTI	-0.521 (0.516)	1.015 (0.197)	-0.430 (0.546)	0.717 (0.397)	-1.350* (0.095)	-0.978 (0.234)	-1.351* (0.079)	-0.682 (0.554)
lnVAI	-0.815 (0.144)	-0.143 (0.786)	-0.753 (0.210)	-0.298 (0.580)	-0.0252 (0.966)	0.444 (0.428)	-0.134 (0.802)	0.502 (0.432)
BCTA	-0.391*** (0.000)	-0.429*** (0.000)	-0.394*** (0.000)	-0.422*** (0.000)	0.135 (0.112)	0.113 (0.187)	0.137* (0.096)	0.107 (0.228)
BCIR	-0.059*** (0.003)	-0.067*** (0.001)	-0.060*** (0.003)	-0.063*** (0.002)	-0.058*** (0.000)	-0.059*** (0.000)	-0.057*** (0.000)	-0.056*** (0.000)
BOCTA	-0.022 (0.789)	-0.083 (0.323)	-0.025 (0.761)	-0.055 (0.511)	0.006 (0.647)	-0.008 (0.587)	-0.006 (0.676)	-0.010 (0.464)
GDPG	0.127** (0.015)	0.122** (0.018)	0.126** (0.015)	0.124* (0.017)	0.0355* (0.093)	0.0339 (0.105)	0.0350* (0.090)	0.0355* (0.098)
IR	-0.0360 (0.315)	-0.0675* (0.065)	-0.0370 (0.306)	-0.0393 (0.269)	0.00636 (0.615)	0.00495 (0.702)	0.00834 (0.498)	0.00441 (0.731)
C_19D2	0.254 (0.687)	0.195 (0.756)	0.252 (0.689)	0.221 (0.725)	-0.651** (0.020)	-0.666** (0.019)	-0.644** (0.019)	-0.699** (0.013)
_CONS	24.03*** (0.000)	23.93*** (0.000)	24.03*** (0.000)	23.87*** (0.000)	19.68*** (0.000)	19.42*** (0.000)	19.28*** (0.000)	19.04*** (0.000)
N	1256	1256	1256	1256	1256	1256	1256	1256
R-sq	0.039	0.047	0.039	0.042	0.850	0.841	0.852	0.835
F-stat./Wald chi2	5.57*** (0.000)	6.84*** (0.000)	5.56*** (0.000)	6.11*** (0.000)	65.25*** (0.000)	52.27*** (0.000)	62.81*** (0.000)	52.84*** (0.000)
Mean vif	1.58	1.52	1.52	1.58				
Breusch-Pagan	0.38 (0.537)	0.71 (0.399)	0.38 (0.539)	0.14 (0.707)				
Wooldridge test (F)	46.165*** (0.000)	50.176*** (0.000)	65.575*** (0.000)	11.686*** (0.000)				
Pesaran (2015) CD	11.69*** (0.000)	11.44*** (0.000)	11.669*** (0.000)	51.409*** (0.000)				

Note(s): p-values are in parentheses. *, **, and *** denote coefficients are significant at 10%, 5% and 1% level of significance, respectively

In model 37, the positive coefficient of InCCI (0.667) and associated p-value (0.281) do not provide enough statistical evidence to accept hypothesis H_{2b1}. The positive relationship between InCCI and Z_Score is not statistically significant. Although an improvement in the CCI enhances the Z_Score of commercial banks, the impact is not statistically significant. This finding is consistent with the insignificant positive association between CCI and Z-Score during pre-crisis and the crisis yet inconsistent with the significant negative association between them in the post-crisis period mentioned by Ozili (2018). It supports the negative impact of corruption on the financial stability of banks (Zaman et al., 2020). In addition, the resulting coefficient of InGEI (0.0296) and associated p-value (0.952) in model 38 also do not provide sufficient statistical support to accept hypothesis H_{2b2} at a 5% level of significance. Therefore, an improvement in GEI increases Z_Score but is not statistically significant. This finding is consistent with the positive and marginally significant association between the same during the post-crisis (financial crisis) period. In contrast, it is inconsistent with the insignificant negative association between the same during the pre-crisis period, as reported by Ozili (2018).

The positive association between InRQI and Z_Score in model 39 is marginally significant at a 10% significance level, providing enough statistical evidence to accept hypothesis H_{2b3} at a 10% significance level. This finding reveals that improved regulatory quality enhances the Z_Score of commercial banks. This finding is inconsistent with the negative association between the same, as discovered by Ozili (2018). Still, it is supported by the findings of Ofori-Sasu et al. (2023), who reported the positive impact of macro-prudential actions and monetary policies on the financial stability of banks. The resulting negative coefficient of InRLI (-0.205) and associated

p-value (0.807) in model 40 do not provide sufficient statistical evidence to accept hypothesis H_{2b4}. Rather, the expected positive association changed to an insignificant negative association. This finding is consistent with the findings of Chalid et al. (2019) and the insignificant negative association between the same during the pre-crisis period. However, it is inconsistent with insignificant (during post-crises) and significant (during crises) positive relationships between them, as mentioned by Ozili (2018). This negative association may be caused by banks being highly regulated financial organizations. In addition, frequent changes in the rule of law may hamper the smooth functioning of commercial banks, reducing their Z_Score.

The resulting coefficients of InPSAVTI and associated p-values in models 37 to 40 indicate that the negative association between PSAVT and Z_Score is marginally significant at a 10% level of significance (refer to models 37 and 38), and eventually, hypothesis H_{2b5} is supported at a 10% level of significance. However, the expected positive association turned into negative. These findings indicate that when the same party remains in power for a long time, it causes political manipulation and undue pressure in the banking sector. This, ultimately, reduces good governance and well-functioning in the banking sector. Therefore, financial stability is reduced. For example, Bangladesh's last government ruled that country for 15 years. Due to undue political involvement and influence in the banking sectors, nine banks are at risk of becoming financially insolvent¹⁶. This finding is supported by the significant negative association between the same by Ozili (2018) but inconsistent with the findings of Chalid et al. (2019), who revealed a positive impact of political stability on the

¹⁶ Please visit <https://www.thedailystar.net/business/economy/banks/news/bb-rescue-problem-banks-3698031> for more information. Accessed on 23/01/2025

financial stability of banks. On the other hand, the resulting coefficients of $\ln VAI$ and associated p-values do not provide enough statistical evidence to accept hypothesis H_{2b6} . Nonetheless, this study observes an insignificant mixed impact of VAI on the Z_Score of commercial banks in various models. Despite that, the p-values of negative coefficients are much higher than positive coefficients. From the above analysis, this study highlights that $\ln RQI$ and $\ln PSAVTI$ have a marginally significant association with the Z_Score of commercial banks. Eventually, this study partially accepts hypothesis $H3$, suggesting a marginally significant impact of two country governance indicators on the Z_Score of commercial banks.

From models 37 to 40, this study emphasizes that $BCTA$ is positively associated with the Z_Score of commercial banks, and this association is marginally significant at 10% significance level in model 39. This indicates that the increased bank capital marginally enhances the financial stability of banks. This finding is consistent with the findings of Abad-González et al. (2018) and Ozili (2018) yet inconsistent with the negative association discovered by Ofori-Sasu et al. (2023). The resulting negative coefficients of $BCIR$ and associated p-values demonstrate that the negative association between the same is significant at a 1% level of significance. This implies that an increased bank's operating inefficiency significantly reduces the level of financial stability of banks. This negative association is consistent with the findings of Azmi et al. (2019) and Ozili (2018). On the other hand, this study proves that $BOCTA$ has an insignificant negative association with the Z_Score of commercial banks (refer to models 37 to 40).

Similarly, the resulting coefficients of GDPG and associated p-values reveal that the positive association between GDPG and Z_Score is marginally significant at a 10% significance level, meaning that the growth of a country's GDP enhances the financial stability of banks. This finding is consistent with the findings of Chand et al. (2021) and Ozili (2018). However, Azmi et al. (2019) and Ofori-Sasu et al. (2023) discovered a negative association between them. The resulting coefficients of IR and associated p-values demonstrate that the positive association between IR and Z_Score (refer to models 37 to 40) is not statistically significant. However, Chand et al. (2021) noted a significant positive, while Abad-González et al. (2018) and Azmi et al. (2019) revealed a significant negative association. The coefficients of C_19D2 and associated p-values demonstrate that the negative association between them is statistically significant at a 5% significance level. This suggests that COVID-19 significantly reduces the financial stability of banks. In essence, this finding reconfirms the negative impact of COVID-19 on the financial performance of the firms, as highlighted by Hu and Zhang (2021) and Xiazi and Shabir (2022).

4.4.2.3 Summary of direct effects on financial stability and theoretical underpinning

From the above discussion, this study discovers that improvement in lnCCI significantly reduces NPL and insignificantly increases the Z_Score of commercial banks. Improvement in lnGEI insignificantly reduces NPL but increases Z_Score. However, improvement in lnRQI significantly reduces NPL and increases the Z_Score of commercial banks (marginally significant). This study also reveals that improvement in lnRLI significantly reduces NPLs (favorable for financial stability) but insignificantly reduces Z_Score (unfavorable for financial stability). Similarly,

improvement in lnPSAVTI reduces NPL (significant) and Z_Score (marginally significant).

On the other hand, VAI demonstrates insignificant mixed association with NPL and Z_Score of commercial banks. To sum up, all the governance indicators (except GEI and VAI) significantly reduce NPLs of commercial banks, which is favorable for financial stability. Nevertheless, only RQI has marginally significant positive, and PSAVTI has marginally insignificant negative associations with Z_Score of commercial banks. Finally, this concludes that improvement in country governance indicators mostly has a favorable effect on financial stability except for the marginally significantly negative impact of lnPSAVTI on Z_Score, and these findings also prove the effect of external environmental influences on bank financial stability explained by the RDT.

4.5 Results of moderating effects analysis and discussion

This section is related to research objectives two and four, research questions two and four, and hypotheses H₃ and H₄, their sub-hypotheses, and represents the moderating effects of a Country's Income Level (CIL) on the relationship between country governance indicators and the profitability and financial stability of commercial banks. Specifically, this part discusses the moderating effect of a country's HI, UMI and LMI affect the relationship between country governance indicators and the profitability (measured by ROA, ROE and NIM) and financial stability (measured by NPL and Z_Score) of commercial banks.

4.5.1 Moderating effects of country's income level on the relationship between Country governance and bank profitability

According to the research objective and question three, this part of this study represents the moderating effect of a CIL on the relationship between country governance indicators and profitability indicators of commercial banks, evaluating hypothesis H₃ and its sub-hypotheses. Specifically, this part details the moderating effect of a CIL, such as HI, UMI, and LMI, on the relationship between six country governance and bank profitability indicators.

4.5.1.1 Moderating effects of HI on the relationship between Country governance indicators and ROA

Following the research objective and question three, this part demonstrates the moderating effect of the country's HI on the relationship between country governance indicators and ROA by testing hypotheses H_{3a1} to H_{3a6}. Table 14 summarizes the regression outputs in this regard. Model 41.a is developed to demonstrate the individual effect of lnCCI and HI on ROA, where lnCCI insignificantly increases ROA but HI significantly reduces ROA. However, in model 41.b, the resulting positive coefficients of lnCCI_HI are statistically significant at a 1% level of significance, providing enough statistical evidence to accept hypothesis H_{3a1}. This suggests a statistically significant positive moderating effect of the country's HI on the relationship between lnCCI and ROA. That is, whenever a country is shifted to the HI category, the country's HI significantly strengthens the insignificant positive effect of lnCCI on ROA presented in model 41.a.

Similarly, controlling a country's HI in model 42.a, this study reveals that both $\ln\text{GEI}$ and HI significantly reduce the ROA of commercial banks. Furthermore, the positive coefficient of $\ln\text{GEI_HI}$ (interaction term between $\ln\text{GEI}$ and HI) in model 42.b is statistically significant at a 1% significance level. This provides enough statistical evidence to accept hypothesis H_{3a2} , suggesting a significant positive moderating effect of a country's HI on the significant negative relationship between $\ln\text{GEI}$ and ROA in model 42.a. Specifically, although the country's HI significantly reduces ROA, the significant positive moderating effect demonstrates that it significantly weakens or reverses the negative impact of $\ln\text{GEI}$ on ROA.

Controlling a country's HI, model 43.a presents that both $\ln\text{RQI}$ and HI significantly reduce the ROA of commercial banks. However, in model 43.b, the positive coefficient of $\ln\text{RQI_HI}$ is statistically significant at a 1% significance level, which provides enough statistical evidence to accept hypothesis H_{3a3} . This demonstrates a significant positive moderating effect of a country's HI on the significant negative relationship between $\ln\text{RQI}$ and ROA in model 43.a. This finding suggests that a country's HI significantly weakens or reverses the negative impact of $\ln\text{RQI}$ on ROA. Similarly, controlling the country's HI, model 44.a asserts that $\ln\text{RLI}$ has an insignificant negative effect on ROA, $\ln\text{PSAVTI_HI}$, and $\ln\text{VAI_HI}$ have insignificant positive effects on ROA, but HI reveals a significantly negative impact.

Moreover, the resulting positive coefficient of $\ln\text{RLI_HI}$ in model 44.b is statistically significant at a 5% significance level, providing enough statistical evidence to accept hypothesis H_{3a4} . It also demonstrates a positive moderating effect of a country's HI on the insignificant negative relationship between $\ln\text{RLI}$ and ROA in model 44.a.

Specifically, a country's HI significantly weakens or reverses the insignificant negative impact of $\ln RLI$ on the ROA of commercial banks. On the other hand, the positive coefficients of $\ln PSAVTI_HI$ and $\ln VAI_HI$ in models 44.c and 44.d, respectively, are not statistically significant, even at a 10% significance level. At the same time, this study does not observe the necessary statistical evidence to accept hypotheses H_{3a5} and H_{3a6} . Eventually, this study does not reveal a significant moderating effect of a country's HI on the insignificant positive relationships between $\ln PSAVTI$ and ROA and $\ln VAI$ and ROA (observed in model 44.a).

From the above discussion, this study notes that a country's HI has a significantly negative effect on ROA; however, it significantly enhances the positive effect of $\ln CCI$ on ROA and significantly weakens the negative impact of $\ln GEI$, $\ln RQI$, $\ln RLI$ on ROA of commercial banks. Furthermore, this study does not reveal a significant moderating effect of the country's HI on the relationship between $\ln PSAVTI$ and ROA and $\ln VAI$ and ROA. Despite that, this study observes necessary statistical evidence in models 41.b, 42.b, 43.b, and 44.b to partially support hypothesis H_{3a} (a country's HI significantly moderates the relationship between country governance indicators and ROA). The reason behind the favorable moderating effect of HI between most country governance indicators and ROA may be banked in HI countries' better corporate governance practices and more investable fund supply, which can reduce the negative impact of country governance on ROA of commercial banks. Accordingly, these findings are supported by the RDT, which explains that business firms' performance is influenced by external resources like a CIL.

Table 14: Moderating effect of HI on the relationship between country governance indicators and ROA

	PCSE									
	(41.a) ROA	(41.b) ROA	(42.a) ROA	(42.b) ROA	(43.a) ROA	(43.b) ROA	(44.a) ROA	(44.b) ROA	(44.c) ROA	(44.d) ROA
lnCCI	0.111 (0.244)	-0.0136 (0.897)	-0.233** (0.010)	-0.278*** (0.002)	-0.188* (0.080)	-0.256** (0.018)	-0.0741 (0.537)	-0.108 (0.389)	-0.0431 (0.730)	-0.0658 (0.607)
lnGEI										
lnRQI										
lnRLI										
lnPSAVTI	0.0168 (0.866)	0.0187 (0.848)	0.201 (0.105)	0.182 (0.144)	0.126 (0.240)	0.111 (0.296)	0.126 (0.273)	0.115 (0.318)	0.0543 (0.702)	0.128 (0.295)
lnVAI	-0.00721 (0.925)	-0.0135 (0.865)	0.111 (0.178)	0.0964 (0.257)	0.100 (0.265)	0.101 (0.265)	0.0493 (0.561)	0.0315 (0.715)	-0.000548 (0.996)	0.0241 (0.830)
BCTA	0.0622*** (0.000)	0.0677*** (0.000)	0.0605*** (0.000)	0.0661*** (0.000)	0.0617*** (0.000)	0.0678*** (0.000)	0.0603*** (0.000)	0.0639*** (0.000)	0.0642*** (0.000)	0.0611*** (0.000)
BCIR	-0.037*** (0.000)	-0.037*** (0.000)	-0.039*** (0.000)	-0.038*** (0.000)	-0.038*** (0.000)	-0.038*** (0.000)	-0.038*** (0.000)	-0.037*** (0.000)	-0.037*** (0.000)	-0.038*** (0.000)
BOCTA	0.179*** (0.000)	0.172*** (0.000)	0.171*** (0.000)	0.174*** (0.000)	0.174*** (0.000)	0.176*** (0.000)	0.176*** (0.000)	0.177*** (0.000)	0.174*** (0.000)	0.176*** (0.000)
GDPG	0.0320*** (0.000)	0.0310*** (0.000)	0.0318*** (0.000)	0.0310*** (0.000)	0.0322*** (0.000)	0.0314*** (0.000)	0.0318*** (0.000)	0.0313*** (0.000)	0.0311*** (0.000)	0.0317*** (0.000)
IR	-0.00206 (0.578)	-0.00304 (0.397)	-0.00471 (0.216)	-0.00528 (0.150)	-0.00328 (0.370)	-0.00379 (0.284)	-0.00216 (0.563)	-0.00229 (0.533)	-0.00269 (0.466)	-0.00207 (0.584)
C_19D2	-0.0888 (0.140)	-0.0977 (0.091)	-0.101* (0.087)	-0.0998* (0.086)	-0.0929 (0.118)	-0.0926 (0.112)	-0.0936 (0.122)	-0.0947 (0.111)	-0.0976* (0.099)	-0.0940 (0.120)
HI	-0.289*** (0.000)	-0.752*** (0.000)	-0.142** (0.018)	-0.737*** (0.000)	-0.175*** (0.002)	-0.903*** (0.000)	-0.210*** (0.001)	-0.772*** (0.000)	-0.847* (0.053)	-0.266** (0.028)
lnCCI_HI		0.645*** (0.001)								
lnGEI_HI				0.785*** (0.000)						
lnRQI_HI						0.775*** (0.002)				
lnRLI_HI								0.617** (0.013)	0.547 (0.146)	0.0587 (0.600)
lnPSAVTI_HI										
lnVAI_HI										
CONS	1.996*** (0.000)	1.950*** (0.000)	1.925*** (0.000)	1.859*** (0.000)	2.006*** (0.000)	1.957*** (0.000)	1.958*** (0.000)	1.920*** (0.000)	1.997*** (0.000)	1.963*** (0.000)
N	1287	1287	1287	1287	1287	1287	1287	1287	1287	1287
R-sq	0.518	0.536	0.541	0.564	0.524	0.537	0.517	0.528	0.518	0.510
Wald chi2	576.13*** (0.000)	645.02*** (0.000)	516.01*** (0.000)	607.62*** (0.000)	561.62*** (0.000)	595.34*** (0.000)	578.39*** (0.000)	620.40*** (0.000)	608.69*** (0.000)	610.69*** (0.000)
Note(s): p-values are in parentheses. *, **, and *** denote coefficients are significant at 10%, 5% and 1% level of significance, respectively										

Note(s): p-values are in parentheses. *, **, and *** denote coefficients are significant at 10%, 5% and 1% level of significance, respectively

4.5.1.2 Moderating effects of UMI on the relationship between Country governance indicators and ROA

According to the research objective and question three, this part of this study demonstrates the moderating effect of the country's UMI on the relationship between country governance indicators and the ROA of commercial banks by testing hypotheses H_{3b1} to H_{3b6}. Table 15 summarizes the regression outputs in this regard. Controlling the country's UMI in model 45.a, this study reveals that lnCCI insignificantly reduces ROA, while the country's UMI insignificantly increases the same. However, the positive coefficient of lnCCI_UMI (interaction between lnCCI and UMI) in model 45.b is statistically significant at a 1% level of significance, which provides enough statistical evidence to accept hypothesis H_{3b1}. This suggests a significant positive moderating effect of the country's UMI on the insignificant negative relationship between lnCCI and ROA, as discovered in model 45.a. Specifically, whenever a CIL is shifted to the UMI level, it significantly weakens or reverses the insignificant negative impact of lnCCI on ROA.

In model 46.a, controlling the country's UMI, this study demonstrates that lnGEI significantly reduces ROA, while the country's UMI insignificantly increases the same. However, in model 46.b, the coefficient of lnGEI_UMI is statistically significant at a 10% significance level, demonstrating the necessary statistical evidence to accept hypothesis H_{3b2} at a 10% significance level. Eventually, this finding represents a marginally significant positive moderating effect of UMI on the significant negative relationship between lnGEI and ROA. Although UMI has an insignificant positive impact on ROA, it weakens or reverses the significant negative impact of lnGEI on the ROA of commercial banks observed in model 46.a with marginal significance.

Table 15: Moderating effect of UMI on the relationship between country governance indicators and ROA

PCSE	(45.a) ROA	(45.b) ROA	(46.a) ROA	(46.b) ROA	(47.a) ROA	(47.b) ROA	(48.a) ROA	(48.b) ROA	(48.c) ROA	(48.d) ROA
lnCCI	-0.0289 (0.738)	-0.0934 (0.302)	-0.284*** (0.001)	-0.321*** (0.000)	-0.268** (0.011)	-0.268** (0.009)	-0.150 (0.184)	-0.254** (0.128)	-0.163 (0.128)	-0.144 (0.194)
lnGEI										
lnRQI										
lnRLI										
lnPSAVTI	-0.0209 (0.817)	-0.0489 (0.557)	0.177 (0.141)	0.168 (0.157)	0.0826 (0.399)	0.0921 (0.361)	0.0989 (0.377)	0.0942 (0.388)	0.00616 (0.939)	0.0823 (0.433)
lnVAI	0.00603 (0.941)	0.0195 (0.806)	0.107 (0.194)	0.113 (0.156)	0.105 (0.242)	0.100 (0.281)	0.0406 (0.640)	0.0773 (0.348)	0.0558 (0.510)	-0.0201 (0.837)
BCTA	0.0628*** (0.000)	0.0651*** (0.000)	0.0612*** (0.000)	0.0618*** (0.000)	0.0627*** (0.000)	0.0625*** (0.000)	0.0613*** (0.000)	0.0615*** (0.000)	0.0611*** (0.000)	0.0625*** (0.000)
BCIR	-0.038*** (0.000)	-0.038*** (0.000)	-0.039*** (0.000)	-0.039*** (0.000)	-0.039*** (0.000)	-0.039*** (0.000)	-0.038*** (0.000)	-0.038*** (0.000)	-0.038*** (0.000)	-0.038*** (0.000)
BOCTA	0.184*** (0.000)	0.180*** (0.000)	0.173*** (0.000)	0.172*** (0.000)	0.177*** (0.000)	0.177*** (0.000)	0.180*** (0.000)	0.176*** (0.000)	0.179*** (0.000)	0.180*** (0.000)
GDPG	0.0326*** (0.000)	0.0324*** (0.000)	0.0321*** (0.000)	0.0319*** (0.000)	0.0328*** (0.000)	0.0327*** (0.000)	0.0323*** (0.000)	0.0321*** (0.000)	0.0324*** (0.000)	0.0319*** (0.000)
IR	-0.00165 (0.663)	-0.00157 (0.663)	-0.00493 (0.189)	-0.00416 (0.275)	-0.00333 (0.361)	-0.00301 (0.420)	-0.00165 (0.661)	-0.00193 (0.605)	-0.00230 (0.531)	-0.00103 (0.787)
C_19D2	-0.0812 (0.178)	-0.0815 (0.168)	-0.0986* (0.094)	-0.0934 (0.112)	-0.0883 (0.135)	-0.0889 (0.132)	-0.0889 (0.141)	-0.0876 (0.146)	-0.0902 (0.132)	-0.0917 (0.128)
UMI	0.0337 (0.514)	-0.0815 (0.213)	0.0331 (0.483)	-0.0234 (0.692)	0.0411 (0.381)	0.0217 (0.865)	0.0245 (0.628)	-0.0907 (0.324)	-0.171 (0.307)	-0.182 (0.182)
lnCCI_UMI	0.439*** (0.001)									
lnGEI_UMI				0.182* (0.091)						
lnRQI_UMI						0.0296 (0.861)				
lnRLI_UMI								0.222 (0.127)	0.193 (0.263)	
lnPSAVTI_UMI										
lnVAI_UMI										0.285* (0.087)
_CONS	1.984*** (0.000)	2.006*** (0.000)	1.914*** (0.000)	1.907*** (0.000)	2.021*** (0.000)	2.008*** (0.000)	1.946*** (0.000)	2.006*** (0.000)	2.048*** (0.000)	1.990*** (0.000)
N	1287	1287	1287	1287	1287	1287	1287	1287	1287	1287
R-sq	0.523	0.534	0.551	0.554	0.532	0.527	0.528	0.532	0.529	0.521
Wald chi2	470.53*** (0.000)	610.76*** (0.000)	437.22*** (0.000)	598.48*** (0.000)	457.64*** (0.000)	581.47*** (0.000)	449.87*** (0.000)	526.17*** (0.000)	508.57*** (0.000)	481.81*** (0.000)

Note(s): p-values are in parentheses. *, **, and *** denote coefficients are significant at 10%, 5% and 1% level of significance, respectively

Similarly, when model 47.a controls the country's UMI, lnRQI still significantly reduces ROA, and UMI insignificantly enhances it. However, the resulting positive coefficient of lnRQI_UMI in model 47.b is not statistically significant. This study also does not present enough statistical support to accept hypothesis H_{3b3} and presents an insignificantly positive moderating effect of UMI. Notably, whenever a CIL is shifted to the UMI level, it insignificantly weakens the significant negative impact of lnRQI on ROA. In model 48.a, controlling UMI, this study observes that improvement in lnRLI insignificantly reduces ROA, whereas UMI insignificantly increases it. Furthermore, the resulting positive coefficient of lnRLI_UMI is not statistically significant, which does not provide sufficient statistical evidence to accept hypothesis H_{3b4}. In addition, this study reports an insignificant moderating effect of the country's UMI on the significant relationship between lnRLI and ROA.

Controlling the country's UMI in models 45.a, 46.a, 47.a, and 48.a, this study observes that improvement in lnPSAVTI and lnVAI insignificantly increases the ROA of commercial banks. Furthermore, in model 48.c, the positive coefficient of lnPSAVTI is not statistically significant to accept hypothesis H_{3b5}, suggesting that the country's UMI insignificantly strengthens the insignificant positive association between lnPSAVTI and ROA. Nevertheless, the positive coefficient of lnVAI_UMI in model 48.d is statistically significant at a 10% significance level. This provides necessary statistical evidence to accept hypothesis H_{5b6} at a 10% significance level, indicating a marginally significant positive moderating effect of UMI. This finding implies that the country's UMI significantly (at a 10% significance level) strengthens the insignificant positive effect of lnVAI on ROA.

Eventually, hypothesis H_{3b}, a country's UMI significantly moderates the relationship between country governance indicators and ROA, is partially supported by hypotheses H_{3a1}, H_{3b2}, and H_{3b6}. Although the country's UMI insignificantly enhances the ROA of commercial banks, it significantly weakens the negative impacts of lnCCI and lnGEI on ROA and strengthens the positive impact of lnVAI. The reason behind the positive moderating effect may be that commercial banks in UMI countries have better corporate governance, greater fund supply, and favorable working environments than LMI countries. This, ultimately, reduces the negative impact of improvement in country governance on ROA and enhances the positive impact of country governance (for example, the positive impact of VAI on ROA).

4.5.1.3 Moderating effects of LMI on the relationship between Country governance indicators and ROA

According to the research objective and question three, this part details the moderating effect of the country's LMI on the relationship between country governance indicators and ROA of commercial banks by examining hypotheses H_{3c1} to H_{3c6} under hypothesis H₃. Table 16 represents the regression outputs in this regard. Controlling the country's LMI, model 49.a reveals that improvement in lnCCI insignificantly enhances ROA, whereas LMI significantly enhances it. Furthermore, the resulting negative coefficient of lnCCI_LMI in model 49.b is statistically significant at a 5% significance level, providing enough statistical evidence to accept hypothesis H_{3c1}. Eventually, this study observes a significant negative moderating effect of the country's LMI on the insignificant positive relationship between lnCCI and ROA, as noted in model 49.a. Therefore, when a country is shifted to the LMI group, the country's LMI significantly weakens or reverses the insignificant positive impact of lnCCI on the ROA of commercial banks.

Similarly, controlling the country's LMI in model 50.a, this study reveals a significant negative impact of $\ln\text{GEI}$ and an insignificant positive impact of LMI on ROA. Nevertheless, in model 50.b, the negative coefficient of $\ln\text{GEI_LMI}$ is significant at a 5% significance level, and this study obtains sufficient statistical evidence to accept hypothesis H_{3c2} . This significant negative moderating effect suggests that the country's LMI significantly strengthens the negative impact of $\ln\text{GEI}$ on the ROA of commercial banks.

Controlling the country's LMI in model 51.a, this study highlights an insignificant negative impact of $\ln\text{RQI}$ on ROA and a marginally significant positive of LMI on the ROA of commercial banks. Furthermore, the positive coefficient $\ln\text{RQI_LMI}$ in model 51.b is not statistically significant even at a 10% level of significance. Thus, this study fails to accept hypothesis H_{3c3} and reveals an insignificant positive moderating effect of LMI on the insignificant negative relationship between $\ln\text{RQI}$ and ROA, as reported in model 51.a. Similarly, controlling LMI in model 52.a, this study adds that improvement in $\ln\text{RLI}$ insignificantly reduces ROA; however, the country's LMI significantly increases the same. In model 52.b, the negative coefficient of $\ln\text{RLI_LMI}$ is insignificant even at a 10% significance level, which does not provide the necessary statistical evidence to accept hypothesis H_{3c4} . Therefore, this study mentions an insignificant negative moderating effect of LMI, suggesting that the country's LMI insignificantly strengthens the insignificant negative impact of $\ln\text{RLI}$ on ROA.

Controlling the country's LMI, this study reveals that $\ln\text{PSAVTI}$ and $\ln\text{VAI}$ have an insignificant positive impact on the ROA of commercial banks, as viewed in models 49.a, 50.a, 51.a, and 52.a. Furthermore, the negative coefficients of $\ln\text{PSAVTI_LMI}$

and $\ln VAI_LMI$ in models 52.c and 52.d, respectively, are not statistically significant, even at a 10% significance level. Therefore, this study does not highlight the necessary statistical evidence to accept hypotheses H_{3c5} and H_{3c6} . These findings demonstrate an insignificant negative moderating effect. Eventually, although the country's LMI significantly increases ROA, it insignificantly weakens the positive impacts of $\ln PSAVTI$ and $\ln VAI$ on ROA.

As the country's LMI significantly moderates the relationship between $\ln CCI$ and ROA as well as $\ln GEI$ and ROA, this study discovers enough evidence to partially support hypothesis H_{3c} , a country's LMI significantly moderates the relationship between country governance indicators and ROA. Specifically, the country's LMI either weakens the positive impact of country governance indicators on ROA or strengthens the negative impact of the same on it (significantly or insignificantly). The reason behind these unfavorable moderating effects of LMI may be that commercial banks in LMI countries have lower fund supply, poor corporate governance practices, and unfavorable working environments compared to HI and UMI counties. This includes commercial banks failing to oversee the negative impact of country governance on ROA and materializing the positive impact of the same on ROA. This finding is supported by the RDT, emphasizing the effect of external resources and environmental factors on the ROA of commercial banks.

Table 16: Moderating effect of LMI on the relationship between country governance indicators and ROA

PCSE	(49.a) ROA	(49.b) ROA	(50.a) ROA	(50.b) ROA	(51.a) ROA	(51.b) ROA	(52.a) ROA	(52.b) ROA	(52.c) ROA	(52.d) ROA
lnCCI	0.0384 (0.635)	0.167** (0.039)	-0.233** (0.006)	-0.111 (0.290)	-0.187 (0.112)	-0.244 (0.185)	-0.0986 (0.366)	-0.0822 (0.511)	-0.103 (0.332)	-0.0968 (0.381)
lnGEI										
lnRQI										
lnRLI										
lnPSAVTI	0.0334 (0.722)	-0.0334 (0.709)	0.170 (0.143)	0.119 (0.296)	0.0948 (0.308)	0.131 (0.209)	0.118 (0.268)	0.119 (0.273)	0.139 (0.379)	0.108 (0.304)
lnVAI	0.0483 (0.548)	0.0421 (0.601)	0.122 (0.129)	0.105 (0.202)	0.123 (0.157)	0.121 (0.212)	0.0871 (0.305)	0.0853 (0.309)	0.0848 (0.371)	0.103 (0.244)
BCTA	0.0719*** (0.000)	0.0746*** (0.000)	0.0654*** (0.000)	0.0683*** (0.000)	0.0686*** (0.000)	0.0679*** (0.000)	0.0681*** (0.000)	0.0690*** (0.000)	0.0685*** (0.000)	0.0687*** (0.000)
BCIR	-0.038*** (0.000)	-0.038*** (0.000)	-0.039*** (0.000)	-0.039*** (0.000)	-0.039*** (0.000)	-0.039*** (0.000)	-0.038*** (0.000)	-0.038*** (0.000)	-0.038*** (0.000)	-0.038*** (0.000)
BOCTA	0.179*** (0.000)	0.179*** (0.000)	0.172*** (0.000)	0.174*** (0.000)	0.175*** (0.000)	0.174*** (0.000)	0.176*** (0.000)	0.177*** (0.000)	0.176*** (0.000)	0.177*** (0.000)
GDPG	0.0322*** (0.000)	0.0322*** (0.000)	0.0321*** (0.000)	0.0320*** (0.000)	0.0325*** (0.000)	0.0326*** (0.000)	0.0321*** (0.000)	0.0322*** (0.000)	0.0320*** (0.000)	0.0320*** (0.000)
IR	-0.00243 (0.494)	-0.00247 (0.483)	-0.00505 (0.170)	-0.00440 (0.228)	-0.00362 (0.307)	-0.00364 (0.317)	-0.00263 (0.460)	-0.00261 (0.465)	-0.00254 (0.476)	-0.00257 (0.463)
C_19D2	-0.0863 (0.144)	-0.0816 (0.164)	-0.0979* (0.094)	-0.0852 (0.150)	-0.0895 (0.127)	-0.0914 (0.118)	-0.0914 (0.124)	-0.0886 (0.136)	-0.0909 (0.127)	-0.0910 (0.124)
LMI	0.278*** (0.001)	0.244*** (0.002)	0.129 (0.117)	0.0796 (0.303)	0.179* (0.070)	0.138 (0.297)	0.229** (0.007)	0.234** (0.010)	0.252 (0.208)	0.249** (0.034)
lnCCI_LMI		-0.317** (0.016)								
lnGEI_LMI				-0.283*** (0.037)						
lnRQI_LMI										
lnRLI_LMI										
lnPSAVTI_LMI								-0.0622 (0.753)	-0.0295 (0.918)	-0.0562 (0.738)
lnVAI_LMI										
CONS	1.737*** (0.000)	1.732*** (0.000)	1.829*** (0.000)	1.794*** (0.000)	1.864*** (0.000)	1.879*** (0.000)	1.770*** (0.000)	1.751*** (0.000)	1.748*** (0.000)	1.760*** (0.000)
N	1287	1287	1287	1287	1287	1287	1287	1287	1287	1287
R-sq	0.524	0.528	0.555	0.564	0.537	0.534	0.537	0.533	0.536	0.537
Wald chi2	416.60*** (0.000)	437.53*** (0.000)	404.04*** (0.000)	415.00*** (0.000)	416.81*** (0.000)	420.58*** (0.000)	415.67*** (0.000)	428.01*** (0.000)	416.34*** (0.000)	454.03*** (0.000)

Note(s): p-values are in parentheses. *, **, and *** denote coefficients are significant at 10%, 5% and 1% level of significance, respectively

4.5.1.4 Moderating effects of HI on the relationship between Country governance indicators and ROE

This part of this study demonstrates the moderating effect of the country's HI on the relationship between country governance indicators and ROE of commercial banks by testing hypotheses H_{3d1} to H_{3d6} under hypothesis H_{3d} following the research objective and question three. Table 17 provides the regression outputs in this regard. Controlling the country's HI in models 53.a, 54.a, 55.a, and 56.a, this study suggests the individual impacts of country HI and each country's governance indicator on the ROE of commercial banks. In model 53.a, this study reports that improvement in lnCCI insignificantly increases ROE, whereas the country's HI significantly reduces the same. However, in model 53.b, the positive coefficient of lnCCI_HI is statistically significant at a 5% significance level. This provides enough statistical evidence to accept hypothesis H_{3d1} and presents a significant positive moderating effect of the country's HI on the insignificant positive relationship between lnCCI and ROE, as observed in model 53.a. This finding suggests that the country's HI significantly strengthens the insignificant positive relationship between lnCCI and ROE.

In model 54.a, the country's HI significantly reduces ROE, while improvement in lnGEI insignificantly reduces the ROE of commercial banks. However, the positive coefficient of lnGEI_HI in model 54.b is significant at a 1% significance level. This provides sufficient statistical evidence to accept hypothesis H_{3d2} and demonstrate a significant positive moderating effect of HI on the insignificant negative relationship between lnGEI and ROE. This finding indicates that despite the negative impact of the country's HI on ROE, it significantly weakens or reverses the negative impact of improvement in lnGEI on ROE. Similarly, in model 55.a, this study notes that lnRQI

insignificantly reduces, and HI significantly reduces the ROE of commercial banks. However, the positive coefficient of $\ln RQI_HI$ in model 55.b is statistically significant at a 1% level of significance, which provides enough statistical evidence to accept hypothesis H_{3d3} . It also indicates a significant positive moderating effect of the country's HI on the insignificant negative relationship between $\ln RQI$ and ROE. In other words, this finding indicates that the country's HI significantly weakens or reverses the negative impact of $\ln RQI$ on ROE.

In model 56.a, $\ln RLI$ insignificantly increases ROE, and the country's HI significantly reduces the ROE of commercial banks. However, the positive coefficient of $\ln RLI_HI$ in model 56.b is not statistically significant even at a 10% significance level, and this study does not highlight the necessary statistical evidence to accept hypothesis H_{3d4} . Although the country's HI significantly reduces ROE, it insignificantly strengthens the positive effect of $\ln RLI$ on ROE, indicating an insignificant positive moderating effect of HI.

Table 17: Moderating effect of HI on the relationship between country governance indicators and ROE

	FGLS									
	(53.a) ROE	(53.b) ROE	(54.a) ROE	(54.b) ROE	(55.a) ROE	(55.b) ROE	(56.a) ROE	(56.b) ROE	(56.c) ROE	(56.d) ROE
lnCCI	0.524 (0.204)	0.137 (0.756)	-0.569 (0.160)	-0.812* (0.061)						
lnGEI										
lnRQI					-0.257 (0.601)	-0.726 (0.163)				
lnRLI							0.746 (0.107)	0.601 (0.213)	0.652 (0.160)	0.609 (0.193)
lnPSAVTI	0.431 (0.418)	0.428 (0.428)	0.774 (0.151)	0.592 (0.285)	0.708 (0.175)	0.523 (0.321)	0.391 (0.456)	0.357 (0.507)	0.907 (0.115)	0.745 (0.157)
lnVAI	1.316*** (0.001)	1.350*** (0.001)	1.860*** (0.000)	1.480*** (0.000)	1.758*** (0.000)	1.546*** (0.000)	1.354*** (0.000)	1.336*** (0.001)	1.628*** (0.000)	1.577*** (0.000)
BCTA	-0.301*** (0.000)	-0.297*** (0.000)	-0.324*** (0.000)	-0.308*** (0.000)	-0.324*** (0.000)	-0.289*** (0.000)	-0.304*** (0.000)	-0.304*** (0.000)	-0.326*** (0.000)	-0.319*** (0.000)
BCIR	-0.322*** (0.000)	-0.314*** (0.000)	-0.326*** (0.000)	-0.315*** (0.000)	-0.323*** (0.000)	-0.319*** (0.000)	-0.323*** (0.000)	-0.319*** (0.000)	-0.325*** (0.000)	-0.323*** (0.000)
BOCTA	1.780*** (0.000)	1.768*** (0.000)	1.822*** (0.000)	1.858*** (0.000)	1.816*** (0.000)	1.850*** (0.000)	1.817*** (0.000)	1.819*** (0.000)	1.815*** (0.000)	1.813*** (0.000)
GDPG	0.211*** (0.000)	0.211*** (0.000)	0.215*** (0.000)	0.214*** (0.000)	0.213*** (0.000)	0.212*** (0.000)	0.213*** (0.000)	0.212*** (0.000)	0.215*** (0.000)	0.214*** (0.000)
IR	0.0502** (0.037)	0.0487** (0.043)	0.0474** (0.045)	0.0475** (0.043)	0.0480** (0.044)	0.0472** (0.047)	0.0488** (0.042)	0.0483** (0.044)	0.0509** (0.034)	0.0518** (0.032)
C_19D2	-1.619*** (0.000)	-1.636*** (0.000)	-1.637*** (0.000)	-1.602*** (0.000)	-1.619*** (0.000)	-1.619*** (0.000)	-1.617*** (0.000)	-1.627*** (0.000)	-1.610*** (0.000)	-1.655*** (0.000)
HI	-1.809*** (0.000)	-3.155*** (0.000)	-1.342*** (0.003)	-3.973*** (0.000)	-1.569*** (0.001)	-4.770*** (0.000)	-1.921*** (0.000)	-2.630** (0.022)	1.108 (0.452)	-1.099* (0.065)
lnCCI_HI	1.667** (0.032)									
lnGEI_HI				3.516*** (0.000)						
lnRQI_HI										
lnRLI_HI						3.519*** (0.001)		0.871 (0.419)		
lnPSAVTI_HI									-2.598** (0.032)	-1.005* (0.069)
lnVAI_HI										
CONS	25.26*** (0.000)	24.80*** (0.000)	25.14*** (0.000)	24.55*** (0.000)	25.16*** (0.000)	24.84*** (0.000)	25.09*** (0.000)	24.93*** (0.000)	24.88*** (0.000)	24.95*** (0.000)
N	1279	1279	1279	1279	1279	1279	1279	1279	1279	1279
Wald chi2	1888.37*** (0.000)	1833.18*** (0.000)	2054.50*** (0.000)	1842.52*** (0.000)	1898.74*** (0.000)	2088.84*** (0.000)	1954.19*** (0.000)	1909.32*** (0.000)	1978.94*** (0.000)	1949.55*** (0.000)

Note(s): p-values are in parentheses. *, **, and *** denote coefficients are significant at 10%, 5% and 1% level of significance, respectively

This study observes an insignificant positive impact of lnPSAVTI on ROE in models 53.a, 54.a, 55.a, and 56.a. However, the negative coefficient of lnPSAVTI_HI in model 56.c is statistically significant at a 5% significance level. This provides enough statistical evidence to accept hypothesis H_{3d5} and indicates a significant negative moderating effect of the country's HI on the insignificant positive relationship between lnPSAVTI and ROE. This finding suggests that the country's HI significantly weakens or reverses the insignificant positive relationship between lnPSAVTI and ROE. Similarly, controlling the country's HI, this study reveals that improvement in lnVAI significantly increases the ROE of commercial banks. However, the negative coefficient of lnVAI_HI in model 56.d is significant at a 10% level of significance. This study also establishes necessary evidence to accept hypothesis H_{3d6}, demonstrating a marginally significant negative moderating effect of the country's HI on the significant positive relationship between lnVAI and ROE. This finding indicates that the country's HI weakens the significant positive relationship between the same and the marginal significance.

To sum up, this study highlights a significant negative impact of the country's HI on ROE. The reason behind this significant negative impact may be that commercial banks in HI countries have comparatively more stable and developed economies and can lend money at a lower rate compared to UMI and LMI countries. Moreover, the country's HI significantly moderates the relationship between most country governance indicators and ROE, partially supporting hypothesis H_{3d}. It illustrates a significant mixed moderating effect of the country's HI on the relationship between country governance indicators and the ROE of commercial banks. These findings imply the commercial banks' dependence on the external environment and the impact

of external resources and environmental factors on the profitability of commercial banks, which the RDT explains.

4.5.1.5 Moderating effects of UMI on the relationship between country governance indicators and ROE

Following the research objective and question three, this part demonstrates the moderating effect of the country's UMI on the relationship between country governance indicators and commercial bank ROE by testing hypotheses H_{3e1} to H_{3e6} under hypothesis H_3 . Table 18 presents the outputs of the regression analysis on it. Controlling the country's UMI in models 57.a, 58.a, 59.a, and 60.a, this study reveals the individual effect of country governance indicators and UMI on the ROE of commercial banks. In those models, this study discovers that the country's UMI insignificantly reduces the ROE of commercial banks.

In model 57.a, improvement in $\ln CCI$ insignificantly reduces ROE; however, in model 57.b, the positive coefficient of $\ln CCI_UMI$ (interaction between $\ln CCI$ and UMI) is statistically significant at a 1% level of significance, providing ample statistical evidence to accept hypothesis H_{3e1} . Eventually, this study presents a significant positive moderating effect of the country's UMI on the insignificant negative relationship between $\ln CCI$ and ROE of banks, indicating that the country's UMI significantly weakens or reverses the insignificant negative effect of $\ln CCI$ on ROE. Similarly, model 58.a present that improvement in $\ln GEI$ significantly reduces the ROE of commercial banks. In model 58.b, the coefficient of $\ln GEI_UMI$ is statistically at a 1% significance level, providing enough statistical evidence to accept hypothesis H_{3e2} . This finding demonstrates a significant positive moderating effect of the

country's UMI on the significant negative relationship between lnGEI and ROE of banks, suggesting that when a CIL is shifted to the UMI group, it significantly weakens or reverses the negative effect of lnGEI on ROE.

In model 59.a, lnRQI indicates a marginally significant negative relationship with ROE. However, this study does not observe a significant moderating effect of the country's UMI on the marginally significant negative relationship between lnRQI and ROE as the positive coefficient of lnRQI_UMI in model 59.b is not statistically significant even at a 10% level of significance. Eventually, this study does not highlight the necessary statistical evidence to support hypothesis H_{3e3}. The insignificant positive moderating effect suggests that the country's UMI insignificantly weakens the negative impact of lnRQI on ROE. In model 60.a, lnRLI exhibits an insignificant negative association with ROE; however, in model 60.b, the positive coefficient of lnRLI_UMI is statistically significant at a 1% significance level, proving enough statistical evidence to accept hypothesis H_{3e4}. This finding points to a significant positive moderating effect of the country's UMI on the insignificant negative relationship between lnRLI and ROE. Specifically, the country's UMI significantly weakens or reverses the insignificant negative effect of lnRLI on ROE.

Table 18: Moderating effect of UMI on the relationship between country governance indicators and ROE

	FGLS									
	(57.a) ROE	(57.b) ROE	(58.a) ROE	(58.b) ROE	(59.a) ROE	(59.b) ROE	(60.a) ROE	(60.b) ROE	(60.c) ROE	(60.d) ROE
lnCCI	-0.227 (0.489)	-0.663* (0.067)	-0.898** (0.012)	-1.708*** (0.000)	-0.780* (0.066)	-1.178** (0.011)	-0.149 (0.695)	-1.235** (0.007)	-0.456 (0.228)	-0.177 (0.642)
lnGEI							0.136 (0.789)	0.353 (0.483)	-0.871 (0.085)	0.597 (0.232)
lnRQI							1.161*** (0.000)	1.442*** (0.000)	1.529*** (0.000)	0.580* (0.091)
lnRLI							-0.315*** (0.000)	-0.321*** (0.000)	-0.325*** (0.000)	-0.334*** (0.000)
lnPSAVTI	0.183 (0.717)	0.268 (0.579)	0.377 (0.466)	0.768 (0.139)	0.264 (0.595)	0.438 (0.377)	-0.326*** (0.000)	-0.328*** (0.000)	-0.330*** (0.000)	-0.329*** (0.000)
lnVAI	1.211*** (0.000)	1.282*** (0.000)	1.463*** (0.000)	1.702*** (0.000)	1.375*** (0.000)	1.416*** (0.000)	-0.326*** (0.000)	-0.328*** (0.000)	-0.330*** (0.000)	-0.329*** (0.000)
BCTA	-0.316*** (0.000)	-0.317*** (0.000)	-0.320*** (0.000)	-0.320*** (0.000)	-0.313*** (0.000)	-0.316*** (0.000)	-0.326*** (0.000)	-0.328*** (0.000)	-0.330*** (0.000)	-0.329*** (0.000)
BCIR	-0.327*** (0.000)	-0.327*** (0.000)	-0.329*** (0.000)	-0.329*** (0.000)	-0.326*** (0.000)	-0.326*** (0.000)	-0.326*** (0.000)	-0.328*** (0.000)	-0.330*** (0.000)	-0.329*** (0.000)
BOCTA	1.877*** (0.000)	1.888*** (0.000)	1.903*** (0.000)	1.935*** (0.000)	1.881*** (0.000)	1.892*** (0.000)	1.901*** (0.000)	1.961*** (0.000)	1.918*** (0.000)	1.892*** (0.000)
GDPG	0.217*** (0.000)	0.207*** (0.000)	0.217*** (0.000)	0.213*** (0.000)	0.218*** (0.000)	0.215*** (0.000)	0.216*** (0.000)	0.212*** (0.000)	0.220*** (0.000)	0.218*** (0.000)
IR	0.0506** (0.034)	0.0481** (0.043)	0.0498** (0.033)	0.0464* (0.052)	0.0479** (0.043)	0.0472** (0.047)	0.0502** (0.035)	0.0489** (0.041)	0.0551** (0.020)	0.0588** (0.014)
C_19D2	-1.530*** (0.000)	-1.573*** (0.000)	-1.555*** (0.000)	-1.559*** (0.000)	-1.539*** (0.000)	-1.558*** (0.000)	-1.530*** (0.000)	-1.570*** (0.000)	-1.508*** (0.000)	-1.560*** (0.000)
UMI	-0.135 (0.677)	-0.684* (0.086)	-0.375 (0.258)	-0.748* (0.066)	-0.301 (0.360)	-0.942 (0.107)	-0.152 (0.634)	-1.128** (0.017)	-3.917*** (0.000)	-1.362** (0.006)
lnCCI_UMI		2.622*** (0.000)								
lnGEI_UMI				1.960*** (0.004)						
lnRQI_UMI						1.383 (0.106)				
lnRLI_UMI								1.971*** (0.004)		
lnPSAVTI_UMI									4.115*** (0.000)	
lnVAI_UMI										2.312*** (0.000)
_CONS	25.13*** (0.000)	25.35*** (0.000)	25.28*** (0.000)	25.13*** (0.000)	25.37*** (0.000)	25.50*** (0.000)	25.10*** (0.000)	25.68*** (0.000)	26.45*** (0.000)	25.42*** (0.000)
N	1279	1279	1279	1279	1279	1279	1279	1279	1279	1279
Wald chi2	1936.70*** (0.000)	1929.56*** (0.000)	2023.85*** (0.000)	2207.59*** (0.000)	1811.28*** (0.000)	1806.18*** (0.000)	1916.76*** (0.000)	2000.42*** (0.000)	2093.68*** (0.000)	1914.14*** (0.000)

Note(s): p-values are in parentheses. *, **, and *** denote coefficients are significant at 10%, 5% and 1% level of significance, respectively

This study controls the country's UMI and reveals that improvement in lnPSAVTI insignificantly increases ROE in models 57.a, 58.a, 59.a, and 60.a. However, the positive coefficient of lnPSAVTI_UMI in model 60.c is relatively big and statistically significant at a 1% significance level. This provides enough statistical evidence to accept hypothesis H_{3e5}. Eventually, this study mentions a significant positive moderating effect of the country's UMI on the insignificant positive relationship between lnPSAVTI and ROE. This insignificant positive moderating effect suggests that the country's UMI significantly strengthens the positive effect of lnPSAVTI on ROE. Similarly, this study reports a significant positive impact of lnVAI on ROE. Moreover, the positive coefficient of lnVAI_UMI is statistically significant at a 1% significance level, which provides enough statistical evidence to accept hypothesis H_{3e6}. The resulting significant positive moderating effect of the country's UMI highlights that the country's UMI significantly strengthens the significant positive impact of lnVAI on ROE. Eventually, hypothesis H_{3e}, a country's UMI significantly moderates the relationship between country governance indicators and ROE, is partially supported by hypotheses H_{3e1} to H_{3e6} (except H_{3e3}).

4.5.1.6 Moderating effects of LMI on the relationship between Country governance indicators and ROE

According to the research objective and question three, this part demonstrates the moderating effect of the country's LMI on the relationship between country governance indicators and ROE of commercial banks by testing hypotheses H_{3f1} to H_{3f6} under hypothesis H_{3f}. Table 19 represents the regression outputs in this regard. This study controls the country's LMI to demonstrate the individual effect of LMI and country governance indicators on the ROE of commercial banks in model 61.a, 62.a,

63.a and 64.a. The positive coefficients of LMI in those models are statistically significant at a 1% significance level, displaying a significant positive impact of the country's LMI on ROE. That is, the country's LMI significantly enhances the ROE of commercial banks.

In model 61.a, this study finds that improvement in lnCCI insignificantly increases ROE. Furthermore, the negative coefficient of lnCCI_LMI in model 61.b is not statistically significant even at a 10% significance level, which does not provide the necessary statistical evidence to accept hypothesis H_{3f1}. This finding reveals an insignificant negative moderating effect of the country's LMI on the insignificant positive relationship between lnCCI and ROE. This suggests that the country's LMI insignificantly weakens the insignificant positive effect of lnCCI on ROE. In model 62.a, the improvement in lnGEI significantly reduces the ROE of commercial banks. However, the negative coefficient of lnGEI_LMI in model 62.b is statistically significant at a 5% significance level, providing enough statistical evidence to accept hypothesis H_{3f2}. Therefore, this study notes a significant negative moderating effect of the country's LMI on the insignificant negative relationship between lnGEI and ROE, suggesting that the significant negative relationship between the same is significantly strengthened for the country's LMI.

In model 63.a, lnRQI also has an insignificant negative impact on ROE. However, in model 63.b, the negative coefficient of lnRQI_LMI is significant at a 10% level of significance, which provides statistical evidence to accept hypothesis H_{3f3} at a 10% significance level. Eventually, this study depicts a marginally significant negative moderating effect of the country's LMI on the insignificant negative relationship

between $\ln RQI$ and ROE. This finding implies that the country's LMI significantly strengthens the insignificant negative impact of $\ln RQI$ on ROE. Controlling the country's LMI, this study mentions insignificant positive impacts of $\ln RLI$ and $\ln PSAVTI$ on ROE and a significant positive effect of $\ln VAI$ on ROE. However, the positive coefficient of $\ln RLI_LMI$ in model 64.b and the negative coefficient of $\ln PSAVTI_LMI$ and $\ln VAI_LMI$ in models 64.c and 64.d are not statistically significant even at a 10% level of significance. Therefore, this study does not have statistical evidence to accept hypotheses H_{3f4} to H_{3f6} .

Eventually, this study discovers an insignificant positive moderating effect of LMI on the insignificant positive relationship between $\ln RLI$ and ROE and an insignificant negative relationship between $\ln PSAVTI$ and ROE as well as $\ln VAI$ and ROE. These findings reveal that the country's LMI insignificantly strengthens the insignificant positive effect of $\ln RLI$ on ROE, weakens the insignificant positive effect of $\ln PSAVTI$ on ROE, and weakens the significant positive impact of $\ln VAI$ on ROE. Nevertheless, hypothesis H_{3f} , a country's LMI significantly moderates the relationship between country governance indicators and ROE, is partially supported by H_{5f2} and H_{5f3} .

Table 19: Moderating effect of LMI on the relationship between country governance indicators and ROE

	FGLS									
	(61.a) ROE	(61.b) ROE	(62.a) ROE	(62.b) ROE	(63.a) ROE	(63.b) ROE	(64.a) ROE	(64.b) ROE	(64.c) ROE	(64.d) ROE
lnCCI	0.584 (0.131)	0.863** (0.048)	-0.455 (0.252)	0.0912 (0.848)	-0.284 (0.516)	0.371 (0.526)	0.371 (0.410)	0.355 (0.476)	0.337 (0.470)	0.395 (0.377)
lnGEI							0.432 (0.378)	0.422 (0.400)	0.491 (0.481)	0.377 (0.458)
lnRQI						1.277*** (0.001)	1.135*** (0.001)	1.140*** (0.001)	1.117*** (0.001)	1.190*** (0.001)
lnRLI										
lnPSAVTI	0.350 (0.456)	0.254 (0.595)	0.753 (0.130)	0.696 (0.174)	0.654 (0.165)	0.469 (0.333)	0.371 (0.410)	0.355 (0.476)	0.337 (0.470)	0.395 (0.377)
lnVAI	0.996*** (0.003)	0.948** (0.005)	1.485*** (0.000)	1.286*** (0.000)	1.383*** (0.000)	1.277*** (0.001)	1.135*** (0.001)	1.140*** (0.001)	1.117*** (0.001)	1.190*** (0.001)
BCTA	-0.306*** (0.000)	-0.297*** (0.000)	-0.319*** (0.000)	-0.313*** (0.000)	-0.317*** (0.000)	-0.301*** (0.000)	-0.312*** (0.000)	-0.313*** (0.000)	-0.315*** (0.000)	-0.306*** (0.000)
BCIR	-0.320*** (0.000)	-0.319*** (0.000)	-0.325*** (0.000)	-0.324*** (0.000)	-0.323*** (0.000)	-0.322*** (0.000)	-0.322*** (0.000)	-0.322*** (0.000)	-0.322*** (0.000)	-0.322*** (0.000)
BOCTA	1.935*** (0.000)	1.945*** (0.000)	1.922*** (0.000)	1.966*** (0.000)	1.919*** (0.000)	1.963*** (0.000)	1.955*** (0.000)	1.955*** (0.000)	1.951*** (0.000)	1.959*** (0.000)
GDPG	0.212*** (0.000)	0.211*** (0.000)	0.215*** (0.000)	0.215*** (0.000)	0.214*** (0.000)	0.213*** (0.000)	0.213*** (0.000)	0.214*** (0.000)	0.213*** (0.000)	0.212*** (0.000)
IR	0.0465** (0.047)	0.0462** (0.048)	0.0464** (0.047)	0.0440* (0.062)	0.0463** (0.048)	0.0467** (0.047)	0.0459* (0.051)	0.0457* (0.052)	0.0460* (0.050)	0.0454 (0.054)
C_19D2	-1.578*** (0.000)	-1.566*** (0.000)	-1.613*** (0.000)	-1.540*** (0.000)	-1.610*** (0.000)	-1.602*** (0.000)	-1.592*** (0.000)	-1.586*** (0.000)	-1.593*** (0.000)	-1.602*** (0.000)
LMI	2.221*** (0.000)	2.213*** (0.000)	1.922*** (0.000)	1.853*** (0.000)	1.929*** (0.000)	2.545*** (0.000)	2.104*** (0.000)	2.080*** (0.000)	2.188** (0.013)	2.301*** (0.000)
lnCCI_LMI	-1.138 (0.129)									
lnGEI_LMI			-1.541** (0.039)							
lnRQI_LMI						-1.512* (0.086)				
lnRLI_LMI								0.157 (0.867)		
lnPSAVTI_LMI									-0.132 (0.893)	
lnVAI_LMI										-0.427 (0.588)
_CONS	23.80*** (0.000)	23.58*** (0.000)	24.07*** (0.000)	23.74*** (0.000)	24.11*** (0.000)	23.46*** (0.000)	23.84*** (0.000)	23.88*** (0.000)	23.85*** (0.000)	23.75*** (0.000)
N	1279	1279	1279	1279	1279	1279	1279	1279	1279	1279
Wald chi2	1893.26*** (0.000)	1889.63*** (0.000)	1987.40*** (0.000)	1908.84*** (0.000)	1881.95*** (0.000)	1868.72*** (0.000)	1922.70*** (0.000)	1922.48*** (0.000)	1904.59*** (0.000)	1904.01*** (0.000)

Note(s): p-values are in parentheses. *, **, and *** denote coefficients are significant at 10%, 5% and 1% level of significance, respectively

4.5.1.7 Moderating effects of HI on the relationship between Country governance indicators and NIM

According to the research objective and question three, this part of this study demonstrates the moderating effect of the country's HI on the relationship between country governance indicators and NIM of commercial banks by testing hypotheses H_{3g1} to H_{3g6} under hypothesis H_{3g} . Table 20 represents the regression outputs using the PCSE estimation method. Controlling the country's HI in models 65.a, 66.a, 67.a, and 68.a, this study reports that the country's HI income significantly reduces the NIM of commercial banks at a 1% significance level. This study also demonstrates that improvement in $\ln CCI$, $\ln GEI$, $\ln RQI$, and $\ln RLI$ significantly reduces the NIM of commercial banks, whereas $\ln PSAVTI$ (marginally significant) and $\ln VAI$ (significant) have positive impacts on the NIM of commercial banks.

In model 65.b, the negative coefficient of $\ln CCI_HI$ is not statistically significant, even at a 10% significance level. This study does not gather enough statistical evidence to accept hypothesis H_{3g1} and demonstrates an insignificant negative moderating effect of the country's HI on the significant negative relationship between $\ln CCI$ and NIM. This finding indicates that the country's HI insignificantly strengthens the significant negative impact of $\ln CCI$ on NIM, as presented in 65.a. Similarly, the resulting negative coefficient of $\ln GEI_HI$ in model 66.a is statistically significant at a 5% significance level, which provides enough statistical evidence to accept hypothesis H_{3g2} . This study reports a significant negative moderating effect of the country's HI on the significant negative relationship between $\ln GEI$ and NIM in model 66.a. In essence, this indicates that the country's HI significantly strengthens the negative impact of $\ln GEI$ on NIM.

The negative coefficient of $\ln RQI_HI$ in model 67.b is significant at a 1% significance level. This study collects enough statistical evidence to accept hypothesis H_{3g3} , demonstrating a statistically significant negative moderating effect of the country's HI on the significant negative relationship between $\ln RQI$ and NIM, as viewed in model 67.a. This finding suggests that the country's HI significantly strengthens the significant negative impact of $\ln RQI$ on NIM. In model 68.b, the coefficient of $\ln RLI_HI$ is also significant at a 1% significance level, which provides enough statistical evidence to accept hypothesis H_{3g4} . Eventually, this study reports a significant negative moderating effect of the country's HI on the significant negative relationship between $\ln RLI$ and NIM, as observed in model 68.a. This indicates that the country's HI significantly strengthens the significant negative impact of $\ln RLI$ on NIM.

Table 20: Moderating effect of HI on the relationship between country governance indicators and NIM

	PCSE							
	(65 a) NIM	(65 b) NIM	(66 a) NIM	(66 b) NIM	(67 a) NIM	(67 b) NIM	(68 a) NIM	(68 c) NIM
lnCCI	-0.779*** (0.000)	-0.771*** (0.000)	-1.076*** (0.000)	-1.005*** (0.000)	-1.036*** (0.000)	-0.846*** (0.000)	-1.814*** (0.000)	-1.761*** (0.000)
lnGEI								
lnRQI								
lnRLI								
lnPSAVTI	0.203 (0.149)	0.203 (0.156)	0.201 (0.289)	0.221 (0.243)	0.00994 (0.962)	0.0757 (0.721)	-1.598*** (0.000)	-1.839*** (0.000)
lnVAI	0.671*** (0.000)	0.672*** (0.000)	0.622*** (0.000)	0.639*** (0.000)	0.823*** (0.000)	0.802*** (0.000)	0.327* (0.076)	0.369* (0.101)
BCTA	0.194*** (0.000)	0.193*** (0.000)	0.209*** (0.000)	0.201*** (0.000)	0.202*** (0.000)	0.186*** (0.000)	0.920*** (0.000)	0.944*** (0.000)
BCIR	-0.026*** (0.000)	-0.026*** (0.000)	-0.027*** (0.000)	-0.026*** (0.000)	-0.025*** (0.000)	-0.026*** (0.000)	0.171*** (0.000)	0.169*** (0.000)
BOCTA	0.426*** (0.000)	0.427*** (0.000)	0.396*** (0.000)	0.387*** (0.000)	0.405*** (0.000)	0.397*** (0.000)	-0.027*** (0.000)	-0.027*** (0.000)
GDPG	-0.00739* (0.059)	-0.00729* (0.065)	-0.0075* (0.062)	-0.00729 (0.074)	-0.00956* (0.028)	-0.0093** (0.032)	0.396*** (0.000)	0.397*** (0.000)
IR	0.0183** (0.011)	0.0183** (0.011)	0.00846 (0.192)	0.00905 (0.166)	0.0141** (0.043)	0.0152* (0.029)	-0.00734** (0.045)	-0.0072** (0.047)
C_19D2	-0.265** (0.008)	-0.265** (0.008)	-0.298*** (0.001)	-0.306*** (0.001)	-0.268** (0.013)	-0.282*** (0.007)	0.0138 (0.059)	0.0153** (0.039)
HI	-1.165*** (0.000)	-1.114*** (0.000)	-0.992*** (0.000)	-0.421 (0.267)	-1.207*** (0.000)	0.0593 (0.896)	-0.276*** (0.003)	-0.274** (0.005)
lnCCI_HI	-0.0614 (0.820)						0.215 (0.623)	-0.382** (0.013)
lnGEI_HI				-0.794** (0.038)				
lnRQI_HI								
lnRLI_HI								
lnPSAVTI_HI								
lnVAI_HI								
CONS	2.322*** (0.000)	2.319*** (0.000)	2.427*** (0.000)	2.461*** (0.000)	2.726*** (0.000)	2.859*** (0.000)	2.998*** (0.000)	2.877*** (0.000)
N	1242	1242	1242	1242	1242	1242	1242	1242
R-sq	0.865	0.866	0.863	0.864	0.854	0.856	0.874	0.869
Wald chi2	1531.14*** (0.000)	1592.15*** (0.000)	1533.77*** (0.000)	2631.16*** (0.000)	1711.68 (0.000)	2134.62*** (0.000)	2380.44*** (0.000)	2406.07*** (0.000)

Note(s): p-values are in parentheses. *, **, and *** denote coefficients are significant at 10%, 5% and 1% level of significance, respectively

In model 68.c, the negative coefficient of $\ln\text{PSAVTI_HI}$ is statistically significant at a 5% significance level, which provides enough statistical evidence to accept hypothesis H_{3g5} . This study demonstrates a significant negative moderating effect of the country's HI on the marginally positive relationship between $\ln\text{PSAVTI}$ and NIM in model 68.a. This implies that the country's HI significantly weakens the positive impact of $\ln\text{PSAVTI}$ on NIM. Likewise, the negative coefficient of $\ln\text{VAI_HI}$ in model 68.d is statistically significant at a 5% significance level, providing enough statistical evidence to accept hypothesis H_{3g6} . This study notes a significant negative moderating effect of the country's HI on the significant positive relationship between $\ln\text{VAI}$ and NIM, as observed in model 68.a. This finding suggests that the country's HI significantly weakens the significant positive relationship between them. As the country's HI significantly moderates most of the relationships between country governance indicators and NIM of commercial banks, the hypothesis H_{3g} , a country's HI significantly moderates the relationship between country governance indicators and NIM of banks, is supported by hypotheses H_{3g2} to H_{3g6} .

4.5.1.8 Moderating effects of UMI on the relationship between Country governance indicators and NIM

Following the research objective and research question three, this part entails the moderating effect of the country's UMI on the relationship between country governance indicators and NIM by testing hypotheses H_{3h1} to H_{3h6} . Table 21 represents the regression outputs in this regard, using the PCSE estimation method. In Table 21, this study controls the country's UMI in models 69.a, 70.a, 71.a, and 72.a and highlights that the country's UMI significantly (in models 69.a and 72.a) and insignificantly (in models 70.a and 71.a) increases NIM of commercial banks.

Moreover, this study also mentions that improvement in $\ln\text{CCI}$, $\ln\text{GEI}$, $\ln\text{RQI}$, and $\ln\text{RLI}$ significantly reduces NIM. In contrast, improvement in $\ln\text{PSAVTI}$ is insignificant, and $\ln\text{VAI}$ significantly increases NIM in model 72.a. However, in other models, this study reveals insignificant and marginally significant negative associations between $\ln\text{PSAVTI}$ and NIM.

In model 69.b, the resulting positive coefficient of $\ln\text{CCI_UMI}$ is statistically significant at a 10% level of significance, and this study obtains the necessary statistical evidence to accept hypothesis H_{3h1} . This demonstrates a marginally significant positive moderative effect of the country's UMI on the significant negative relationship between $\ln\text{CCI}$ and NIM of banks. This finding suggests that when a country is shifted to the UMI group, the country's UMI significantly weakens the significant negative impact of $\ln\text{CCI}$ on NIM, as observed in model 69.a. Similarly, the positive coefficient of $\ln\text{GEI_UMI}$ in model 70.b is marginally significant. This study gathers enough statistical evidence to accept hypothesis H_{3h2} at a 10% significance level. Accordingly, this finding exhibits a marginally significant positive moderating effect of the country's UMI on the significant negative relationship between $\ln\text{GEI}$ and NIM. This suggests that the country's UMI marginally significantly weakens the significant negative impact of $\ln\text{GEI}$ on NIM, as presented in model 70.a.

Table 21: Moderating effect of UMI on the relationship between country governance indicators and NIM

	PCSE		(70.a)	(70.b)	(71.a)	(71.b)	(72.a)	(72.b)	(72.c)	(72.d)
	NIM	NIM	NIM	NIM	NIM	NIM	NIM	NIM	NIM	NIM
lnCCI	-1.123*** (0.000)	-1.267*** (0.000)	-1.371*** (0.000)	-1.539*** (0.000)	-1.582*** (0.000)	-1.866*** (0.000)	-2.290*** (0.000)	-2.483*** (0.000)	-2.196*** (0.000)	-2.227*** (0.000)
lnGEI										
lnRQI										
lnRLI										
lnPSAVTI	-0.0579 (0.678)	-0.0585 (0.678)	-0.0388 (0.861)	0.0805 (0.727)	-0.369* (0.060)	-0.254 (0.210)	0.176 (0.313)	0.276* (0.090)	-0.0970 (0.605)	0.209 (0.207)
lnVAI	0.539*** (0.000)	0.555*** (0.000)	0.473*** (0.000)	0.496*** (0.000)	0.710*** (0.000)	0.757*** (0.000)	0.969*** (0.000)	0.962*** (0.000)	0.965*** (0.000)	0.810*** (0.000)
BCTA	0.206*** (0.000)	0.199*** (0.000)	0.231*** (0.000)	0.228*** (0.000)	0.218*** (0.000)	0.215*** (0.000)	0.173*** (0.000)	0.167*** (0.000)	0.177*** (0.000)	0.174*** (0.000)
BCIR	-0.028*** (0.000)	-0.028*** (0.000)	-0.030*** (0.000)	-0.029*** (0.000)	-0.028*** (0.000)	-0.027*** (0.000)	-0.029*** (0.000)	-0.029*** (0.000)	-0.029*** (0.000)	-0.029*** (0.000)
BOCTA	0.437*** (0.000)	0.436*** (0.000)	0.399*** (0.000)	0.395*** (0.000)	0.411*** (0.000)	0.412*** (0.000)	0.394*** (0.000)	0.395*** (0.000)	0.396*** (0.000)	0.396*** (0.000)
GDPG	-0.00656 (0.107)	-0.0065* (0.096)	-0.00668 (0.106)	-0.007* (0.088)	-0.008* (0.084)	-0.008* (0.058)	-0.00673 (0.066)	-0.007* (0.064)	-0.0063* (0.082)	-0.007* (0.074)
IR	0.0207** (0.005)	0.0196** (0.009)	0.00578 (0.392)	0.00766 (0.257)	0.0141** (0.047)	0.0146** (0.038)	0.0137* (0.060)	0.0150** (0.037)	0.0140* (0.054)	0.017** (0.022)
C_19D2	-0.260*** (0.012)	-0.260*** (0.011)	-0.293*** (0.002)	-0.287*** (0.003)	-0.254*** (0.026)	-0.268** (0.020)	-0.263*** (0.006)	-0.264*** (0.005)	-0.255*** (0.008)	-0.262*** (0.006)
UMI	0.233** (0.028)	0.00311 (0.985)	0.0990 (0.288)	-0.0450 (0.739)	0.123 (0.186)	-0.369* (0.059)	0.181** (0.036)	-0.273 (0.188)	-1.202** (0.017)	-0.223 (0.305)
lnCCI_UMI		0.725* (0.055)								
lnGEI_UMI				0.627* (0.074)						
lnRQI_UMI						1.097*** (0.001)				
lnRLI_UMI							1.116** (0.007)			
lnPSAVTI_UMI									1.411** (0.008)	
lnVAI_UMI										0.659** (0.024)
_CONS	2.232*** (0.000)	2.326*** (0.000)	2.400*** (0.000)	2.323*** (0.000)	2.912*** (0.000)	2.962*** (0.000)	3.057*** (0.000)	3.083*** (0.000)	3.262*** (0.000)	3.069*** (0.000)
N	1242	1242	1242	1242	1242	1242	1242	1242	1242	1242
R-sq	0.863	0.869	0.859	0.862	0.851	0.850	0.869	0.877	0.869	0.869
Wald chi2	1281.88*** (0.000)	1638.50*** (0.000)	1244.84*** (0.000)	1361.24*** (0.000)	828.04*** (0.000)	1767.13*** (0.000)	2788.34*** (0.000)	3312.98*** (0.000)	2986.49*** (0.000)	3153.65*** (0.000)

Note(s): p-values are in parentheses. *, **, and *** denote coefficients are significant at 10%, 5% and 1% level of significance, respectively

In model 71.b, the positive coefficient of $\ln RQI_UMI$ is statistically significant at a 1% significance level. Therefore, this study collects enough statistical evidence to accept hypothesis H_{3h3} . This finding reveals a significant positive moderating effect of the country's UMI on the significant negative relationship between $\ln RQI$ and NIM of banks, as observed in model 71.a. The resulting significant positive moderating effect indicates that the country's UMI significantly weakens or reverses the negative impact of $\ln RQI$ on NIM. Similarly, the coefficient of $\ln RLI_UMI$ in model 72.b is also significant at a 5% level of significance. This study also reports ample statistical evidence to accept hypothesis H_{3h4} , demonstrating a significant positive moderating effect of the country's UMI on the significant negative relationship between $\ln RLI$ and NIM. This finding suggests that the country's UMI significantly weakens or reverses the significant negative relationship between $\ln RLI$ and NIM, as reported in model 72.a.

Likewise, the positive coefficient of $\ln PSAVTI_UMI$ in model 72.b is statistically significant at a 5% significance level, providing enough statistical evidence to accept hypothesis H_{3h5} . This finding reveals a significant positive moderating effect of the country's UMI on the insignificant positive relationship between $\ln PSAVTI$ and NIM revealed in model 72.a. This suggests that the country's UMI significantly strengthens the insignificant positive impact of $\ln PSAVTI$ on NIM seen in model 72.a. Similarly, the positive coefficient of $\ln VAI_UMI$ is statistically significant at a 5% significance level. As such, this study gathers sufficient statistical evidence to accept hypothesis H_{3h5} , demonstrating a significant positive moderating effect of the country's UMI on the significant positive relationship between $\ln VAI$ and NIM, as discovered in model 72.a. This finding implies that the country's UMI significantly strengthens the

significant positive impact of $\ln VAI$ on NIM. Eventually, hypothesis H_{3h} , a country's UMI significantly moderates the relationship between country governance indicators and NIM, is fully supported by hypotheses H_{3h1} to H_{3h6} .

4.5.1.9 Moderating effects of LMI on the relationship between Country governance indicators and NIM

According to the research question and research objective three, this part demonstrates the moderating effect of the country's LMI on the relationship between country governance indicators and NIM by testing hypotheses H_{3i1} to H_{3i6} under hypothesis H_3 . The regression outputs, using the PCSE estimation method, are presented in Table 22. Controlling the country's LMI, this study notes that LMI significantly increases the NIM of commercial banks in models 73.a, 74.a, 75.a, and 76.a. This study also mentions that improvement in $\ln CCI$, $\ln GEI$, $\ln RQI$, and $\ln RLI$ significantly reduces NIM in those models. Accordingly, $\ln PSAVTI$ has marginally significant mixed effects on NIM in various models. However, based on the value of Wald χ^2 in model 76.a, the marginally significant positive impact is more representative than the marginally significant negative impact in model 75.a. Moreover, those models demonstrate that improvement in $\ln VAI$ significantly increases the NIM of commercial banks.

The positive coefficient of $\ln CCI_LMI$ in model 73.b is statistically significant at a 1% significance level, providing enough statistical evidence to accept hypothesis H_{3i1} . This study also reports a significant positive moderating effect of the country's LMI on the significant negative relationship between $\ln CCI$ and NIM, as mentioned in model 73.a. This suggests that when the CIL is shifted to the LMI group, the significant

negative impact of $\ln\text{CCI}$ on NIM is significantly weakened. In model 74.b, the positive coefficient of $\ln\text{GEI_LMI}$ is also statistically significant at a 1% significance level, offers sufficient statistical evidence to accept hypothesis H_{3i2} , demonstrating a positive moderating effect of the country's LMI on the significant negative relationship between $\ln\text{GEI}$ and NIM. Accordingly, this finding reveals that the country's LMI significantly weakens the significant negative impact of $\ln\text{GEI}$ on NIM. In other words, the country's LMI significantly reduces the negative impact of $\ln\text{GEI}$ on the NIM of commercial banks.

Table 22: Moderating effect of LMI on the relationship between country governance indicators and NIM

PCSE										
	(73.a) NIM	(73.b) NIM	(74.a) NIM	(74.b) NIM	(75.a) NIM	(75.b) NIM	(76.a) NIM	(76.b) NIM	(76.c) NIM	(76.d) NIM
lnCCI	-0.829*** (0.000)	-1.199*** (0.000)	-1.270*** (0.000)	-1.632*** (0.000)	-1.263*** (0.000)	-1.807*** (0.000)	-2.103*** (0.000)	-2.372*** (0.000)	-2.050*** (0.000)	-2.080*** (0.000)
lnGEI										
lnRQI										
lnRLI										
lnPSAVTI	-0.115 (0.537)	0.145 (0.320)	0.156 (0.481)	0.174 (0.376)	-0.386* (0.053)	-0.149 (0.535)	0.261* (0.083)	0.300 (0.101)	0.0435 (0.887)	0.252 (0.170)
lnVAI	0.515*** (0.000)	0.540*** (0.000)	0.597*** (0.000)	0.690*** (0.000)	0.794*** (0.000)	0.783*** (0.000)	0.939*** (0.000)	0.934*** (0.000)	0.924*** (0.000)	0.854*** (0.000)
BCTA	0.215*** (0.000)	0.206*** (0.000)	0.222*** (0.000)	0.202*** (0.000)	0.228*** (0.000)	0.204*** (0.000)	0.175*** (0.000)	0.171*** (0.000)	0.170*** (0.000)	0.173*** (0.000)
BCIR	-0.0287*** (0.000)	-0.0271*** (0.000)	-0.0294*** (0.000)	-0.0266*** (0.000)	-0.0267*** (0.000)	-0.0258*** (0.000)	-0.0293*** (0.000)	-0.0275*** (0.000)	-0.0298*** (0.000)	-0.0289*** (0.000)
BOCTA	0.436*** (0.000)	0.430*** (0.000)	0.398*** (0.000)	0.393*** (0.000)	0.414*** (0.000)	0.396*** (0.000)	0.401*** (0.000)	0.393*** (0.000)	0.400*** (0.000)	0.400*** (0.000)
GDPG	-0.008* (0.059)	-0.008* (0.064)	-0.007* (0.090)	-0.007 (0.104)	-0.008* (0.075)	-0.008* (0.080)	-0.006* (0.076)	-0.007* (0.064)	-0.007* (0.079)	-0.006* (0.072)
IR	0.023*** (0.002)	0.024*** (0.001)	0.006 (0.376)	0.006 (0.357)	0.0142*** (0.044)	0.0135* (0.063)	0.0158*** (0.030)	0.0152*** (0.037)	0.0149*** (0.033)	0.0151*** (0.039)
C_19D2	-0.268** (0.012)	-0.277** (0.010)	-0.305*** (0.002)	-0.333*** (0.001)	-0.269** (0.020)	-0.279** (0.011)	-0.259*** (0.007)	-0.269** (0.006)	-0.265** (0.007)	-0.265** (0.006)
LMI	0.638*** (0.024)	0.597** (0.024)	0.666*** (0.005)	0.660*** (0.001)	0.715*** (0.002)	0.330 (0.179)	0.371** (0.041)	0.173 (0.358)	0.207 (0.523)	0.299 (0.130)
lnCCI_LMI		0.705*** (0.001)								
lnGEI_LMI				0.803*** (0.000)						
lnRQI_LMI										
lnRLI_LMI						1.388*** (0.000)		0.923*** (0.002)	0.163 (0.696)	0.158 (0.477)
lnPSAVTI_LMI										
lnVAI_LMI										
CONS	2.015*** (0.000)	1.968*** (0.000)	1.956*** (0.000)	2.103*** (0.000)	2.360*** (0.000)	2.768*** (0.000)	2.784*** (0.000)	2.914*** (0.000)	3.103*** (0.000)	2.855*** (0.000)
N	1242	1242	1242	1242	1242	1242	1242	1242	1242	1242
R-sq	0.861	0.860	0.868	0.872	0.855	0.855	0.870	0.867	0.871	0.867
Wald chi2	1469.77*** (0.000)	1531.03*** (0.000)	1618.15*** (0.000)	1789.32*** (0.000)	1408.10*** (0.000)	1894.37*** (0.000)	2453.55*** (0.000)	2434.49*** (0.000)	2448.80*** (0.000)	2370.45*** (0.000)

Note(s): p-values are in parentheses. *, **, and *** denote coefficients are significant at 10%, 5% and 1% level of significance, respectively

In model 75.b, the positive coefficient of $\ln RQI_LMI$ is significant at a 1% significance level, providing enough statistical evidence to accept hypothesis H_{3i3} . Eventually, this study highlights a significant positive moderating impact of the country's LMI on the significant negative relationship between $\ln RQI$ and NIM, as presented in model 75.a. Specifically, the country's LMI significantly weakens the significant negative impact of $\ln RQI$ on NIM. Similarly, the positive coefficient of $\ln RLI_LMI$ in model 76.b is significant at a 1% significance level. Notably, this study gathers ample statistical evidence to accept hypothesis H_{3i4} , indicating a significant positive moderating impact of the country's LMI on the significant negative relationship between $\ln RLI$ and NIM seen in model 76.a. Therefore, this finding emphasizes that the country's LMI significantly weakens the significant negative impact of $\ln RLI$ on NIM.

On the other hand, the coefficients of $\ln PSAVTI_LMI$ and $\ln VAI_LMI$ in models 76.c and 76.d, respectively, are not statistically significant, even at a 10% significance level. Therefore, this study does not observe the necessary statistical evidence to accept hypotheses H_{3i5} and H_{3i6} . This demonstrates an insignificant positive moderating effect of the country's LMI on the marginally significant positive relationship between $\ln PSAVTI$ and NIM, as well as on the significant positive relationship between $\ln VAI$ and NIM, as revealed in model 76.a. These findings reveal that the country's LMI insignificantly strengthens the marginally significant positive relationship between $\ln PSAVTI$ and NIM) as well as significant positive relationship between $\ln VAI$ and NIM. In summary, the acceptance of hypotheses H_{5i1} to H_{5i4} provides enough evidence to partially support hypothesis H_{3i} . This highlights that the country's LMI significantly moderates the relationship between some country governance indicators and the NIM of commercial banks.

4.5.1.10 Comparative moderating effect for profitability and theoretical underpinning

After controlling the country's HI, this study notes that HI significantly negatively affects ROA and ROE. This may be attributed to the fact that in HI countries, commercial banks can offer loans at a lower interest rate than UMI and LMI countries, pay high salaries, and incur high operating costs. However, its significant positive moderating effect on ROA and ROE is favorable for the bank's profitability. It suggests that either the country's HI strengthens the positive impact of country governance indicators on ROA and ROE or weakens their negative impacts. The reason may be that HI countries ensure greater fund supply to the banking channel, better corporate governance, and a favorable working environment. Consequently, this enables commercial banks to overcome the adverse effects and use the opportunity for better country governance.

On the other hand, the significant negative moderating effects of the country's HI on the relationship between country governance indicators and NIM are unfavorable for NIM. This is, the country's HI either strengthens the negative effect of country governance indicators on NIM or weakens the positive impact of the same on it. Notably, this unfavorable moderating effect may be due to the fact that, in HI countries, the interest rate is low. Moreover, people are less reliant on banks for financial support through loans. Eventually, the country's HI strengthens the negative effect of further improvement in country governance indicators on NIM.

Controlling the country's UMI, this study observes its insignificant positive impact on ROA and ROE, as well as the significant positive impact on NIM compared to negative

effects in HI countries. This may result from the fact that in UML countries, the quality of country governance is relatively poorer, people rely more on bank financing, and commercial banks charge a higher interest rate than in HI countries. In contrast, countries with UMI have more fund supply to banking channels, better corporate governance, and a favorable working environment than LMI countries. This, ultimately, weakens the negative impact of some country's governance indicators on ROA, ROE, and NIM and strengthens the positive effect of a few country's governance indicators on them.

Likewise, by controlling the country's LMI, this study reports that LMI significantly increases ROA, ROE, and NIM. The reason may be that people in LMI counties have lower financial solvency, people largely depend on bank financings, and commercial banks can offer loans at a higher interest rate and service charges. This, in turn, helps them generate revenues. Nevertheless, this study mentions the mostly unfavorable moderating effect of the county's LMI – either the country's LMI significantly or insignificantly strengthens the negative impact of some country governance indicators on ROA, ROE, and NIM or insignificantly weakens the positive impacts of a few country governance indicators on them.

This may be attributed to the fact that improvement in country governance restricts commercial banks from charging higher interest rates on bank financings and forces commercial banks to pay loans to the prioritized sectors at a lower rate. Moreover, commercial banks in LMI countries have lower funds for the banking channel, an unfavorable socio-economic environment, and lower quality corporate governance. This makes them unable to manage the increased challenges or opportunities for further improvement in country governance. For example, whenever the government

forces commercial banks to offer loans in the prioritized sectors at lower interest rates and service changes for socio-economic development, it becomes very challenging for the commercial to oversee this situation with limited investable funds, especially in LMI countries.

From the above discussion, it is evident that the CILs affect commercial banks' profitability indicators differently. Their moderating effects on the relationship between country governance and profitability indicators are also diverse. This is, based on the CILs, the impacts of country governance indicators on profitability indicators vary. Notably, these findings are supported by the RDT, which explains the role of external control and external resources on the financial performance of business organizations. Moreover, the diverse moderating effect of HI, UMI, and LMI on the relationship between country governance and profitability indicators is also supported by the findings of Dietrich and Wanzenried (2011). The authors discovered that the determinants of bank profitability widely differ in different income levels. Similarly, Kamarudin (2015) posited that the effects of country governance indicators on the revenue efficiency of Islamic and conventional banks vary at different levels. These findings align with those of Khan et al. (2023), who asserted that the quality of country governance indicators affects financial system efficiency in different income levels.

4.5.2 Moderating effects of a country's income level on the relationship between Country governance and financial stability

According to the research objective and research question four, and hypothesis H₄, this section details the moderating effect of the CIL on the relationship between country governance indicators and financial stability (measured by NPL and Z_Score) of commercial banks.

4.5.2.1 Moderating effects of country's HI on the relationship between Country governance indicators and NPL

To illustrate the moderating effect of the country's HI on the relationship between country governance indicators and NPL by testing hypotheses H_{4a1} to H_{4a6} under hypothesis H_{4a}. Table 23 summarizes regression outputs under PCSE estimation. Controlling the country's HI, models 77.a, 78.a, 79.a, and 80.a demonstrate that the country's HI significantly reduces the NPL of commercial banks. Moreover, improvement in lnCCI and lnGEI significantly reduces NPL. However, improvement in lnRQI, RLI, and lnPSAVTI significantly reduces the NPL of commercial banks. Furthermore, lnVAI reveals an insignificant mixed impact on NPL.

In model 77.b, the negative coefficient of lnCCI_HI (interaction between lnCCI and HI) is statistically significant at a 1% significance level, which provides necessary statistical evidence to accept hypothesis H_{4a1}. Therefore, this study finds a significant negative moderating effect of the country's HI on the insignificant negative relationship between lnCCI and NPL, meaning that the country's HI significantly strengthens the negative impact of lnCCI on NPL of commercial banks, as discovered in model 77.a. In model 78.b, the coefficient of lnGEI_HI and associated p-value suggest that the negative relationship between lnGEI_HI and NPL is statistically significant at a 5% level of significance, which provides necessary statistical support to accept hypothesis H_{4a2}. Eventually, this study finds a significant negative moderating effect of HI on the relationship between lnGEI and NPL. This finding means that although lnGEI insignificantly reduces NPL after controlling the country's HI in model 78.a, the country's HI significantly strengthens the negative impact of lnGEI on NPL.

Table 23: Moderating effect of HI on the relationship between country governance indicators and NPL

Variables	PCSE estimation									
	(77.a) NPL	(77.b) NPL	(78.a) NPL	(78.b) NPL	(79.a) NPL	(79.b) NPL	(80.a) NPL	(80.b) NPL	(80.c) NPL	(80.d) NPL
lnCCI	-0.908 (0.131)									
lnGEI			-0.451 (0.466)	-0.218 (0.731)						
lnRQI					-1.062** (0.047)	-0.760 (0.185)				
lnRLI							-1.230*** (0.000)	-1.154*** (0.001)	-1.241*** (0.000)	-1.225*** (0.000)
lnPSAVTI	-1.274** (0.045)	-1.384** (0.028)	-1.725** (0.007)	-1.731** (0.007)	-1.757*** (0.000)	-1.738*** (0.000)	-1.411** (0.011)	-1.289** (0.023)	-1.362** (0.020)	-1.410** (0.011)
lnVAI	0.264 (0.569)	0.346 (0.447)	-0.0903 (0.824)	0.00846 (0.984)	0.149 (0.742)	0.162 (0.715)	0.106 (0.801)	0.328 (0.465)	0.123 (0.771)	-0.0366 (0.935)
BCTA	0.0592 (0.129)	0.0580 (0.168)	0.0916** (0.024)	0.0741* (0.055)	0.0951** (0.020)	0.0720 (0.070)	0.0702* (0.083)	0.0526 (0.204)	0.0705* (0.081)	0.0644 (0.110)
BCIR	0.0219** (0.019)	0.0222** (0.014)	0.0222** (0.017)	0.0225** (0.015)	0.0224** (0.014)	0.0223* (0.013)	0.0225** (0.012)	0.0221** (0.013)	0.0225** (0.012)	0.0217** (0.016)
BOCTA	-0.00644 (0.630)	-0.00476 (0.729)	-0.00381 (0.774)	-0.00438 (0.745)	-0.00525 (0.689)	-0.00787 (0.558)	-0.00587 (0.655)	-0.00612 (0.647)	-0.00592 (0.652)	-0.00565 (0.664)
GDPG	-0.0375*** (0.002)	-0.0372** (0.007)	-0.038*** (0.002)	-0.037*** (0.003)	-0.037*** (0.003)	-0.0373** (0.002)	-0.038*** (0.003)	-0.036*** (0.004)	-0.038*** (0.003)	-0.037*** (0.002)
IR	0.0278 (0.215)	0.0306 (0.175)	0.0310 (0.171)	0.0331 (0.146)	0.0268 (0.233)	0.0288 (0.202)	0.0308 (0.175)	0.0318 (0.162)	0.0311 (0.172)	0.0305 (0.179)
C_19D2	-0.290 (0.132)	-0.245 (0.246)	-0.275 (0.164)	-0.273 (0.164)	-0.259 (0.197)	-0.252 (0.202)	-0.284 (0.145)	-0.269 (0.168)	-0.284 (0.146)	-0.284 (0.141)
HI	-1.792** (0.008)	3.092* (0.098)	-1.490** (0.019)	2.429 (0.206)	-1.507** (0.010)	3.541 (0.235)	-1.187** (0.049)	3.807 (0.155)	-0.0342 (0.985)	-2.452*** (0.004)
lnCCI_HI		-4.515*** (0.003)								
lnGEI_HI			-4.532** (0.008)							
lnRQI_HI										
lnRLI_HI						-5.007** (0.046)		-4.857** (0.020)	-0.912 (0.422)	
lnPSAVTI_HI										1.253 (0.109)
lnVAI_HI										
CONS	6.273*** (0.000)	6.108*** (0.000)	6.092*** (0.000)	6.240*** (0.000)	6.442*** (0.000)	6.526*** (0.000)	6.280*** (0.000)	6.285*** (0.000)	6.226*** (0.000)	6.447*** (0.000)
N	1252	1252	1252	1252	1252	1252	1252	1252	1252	1252
R-sq	0.409	0.437	0.432	0.435	0.427	0.424	0.429	0.427	0.429	0.430
Wald Chi2	38.67*** (0.000)	210.30*** (0.000)	36.13*** (0.000)	222.35*** (0.000)	50.54 (0.000)	123.35*** (0.000)	45.84*** (0.000)	142.88*** (0.000)	53.46*** (0.000)	68.67*** (0.000)

Note(s): p-values are in parentheses. *, **, and *** denote coefficients are significant at 10%, 5% and 1% level of significance, respectively

Similarly, in model 79.b, the resulting negative coefficient of $\ln RQI_HI$ and associated p-value provide enough statistical evidence to accept hypothesis H_{4a3} at a 5% significance level. Consequently, this study finds a significant negative moderating effect of the country's HI on the significant negative relationship between $\ln RQI$ and NPL fund in model 79.a, demonstrating that the country's HI significantly strengthens (increases) the negative impact of $\ln RQI$ on NPL. Likewise, the negative coefficient of $\ln RLI_HI$ and associated p-value in model 80.b provide enough evidence to accept hypothesis H_{4a4} at a 5% significance level, presenting a significant negative moderating effect of the country's HI on the significant negative relationship between $\ln RLI$ and NPL seen in model 80.a. Specifically, this finding means that when a CIL is shifted to HI group, the country's HI significantly strengthen the significant negative impact of $\ln RLI$ on NPL. That is, in countries with HI, further improvement in $\ln RLI$ reduces NPL at a higher rate.

From model 80.c, the resulting negative coefficients of $\ln PSAVTI_HI$ (-0.912) and associated p-value (0.422) do not provide the necessary statistical evidence to accept hypothesis H_{4a5} even at a 10% significance level. Eventually, this finding suggests an insignificant negative moderating effect of the country's HI on the significant negative relationship between $\ln PSAVTI$ and NPL, as noted in model 80.a, meaning that the country's HI insignificantly strengthens the significant negative effect of $\ln PSAVTI$ on NPL. Similarly, the positive coefficient of $\ln VAI$ and associated p-value in model 80.d do not provide enough statistical evidence to accept hypothesis H_{4a6} . This study reveals an insignificant positive moderating effect of the country's HI on the insignificant positive relationship between $\ln VAI$ and NPL seen in model 80.a. To sum up, this study finds a significant negative moderating effect of the country's HI on the

relationship between lnCCI and NPL, lnGEI and NPL, lnRQI and NPL, and lnRLI and NPL in model 77.b, 78.b, 79.b and 80.b, respectively. Eventually, hypothesis H_{4a}, a country's HI significantly moderates the relationship between country governance indicators and NPL, is partially accepted.

4.5.2.2 Moderating effects of country's UMI on the relationship between Country governance indicators and NPL

To illustrate the moderating effect of the country's UMI on the relationship between country governance indicators and NPL by testing hypotheses H_{4b1} to H_{4b6}, Table 24 summarizes regression outputs using the PCSE estimation method. Controlling the country's UMI, this study indicates the individual effect of country governance indicators and UMI on the NPL of commercial banks. The resulting coefficients of UMI and associated p-values in 82.a, 83.a, and 84.a present that the country's UMI has an insignificant negative impact on NPL; however, an insignificant positive impact of the same on NPL is discovered in model 81.a. Moreover, improvement in lnCCI, lnRQI, lnRLI, and lnPSAVTI significantly reduces the NPL of commercial banks. lnGEI has an insignificantly negative association with NPL, while lnVAI demonstrates insignificant mixed effects on NPL in various estimation models.

In model 81.b, the negative coefficient of lnCCI_UMI is not statistically significant even at a 10% significance level, which does not provide enough statistical evidence to accept hypothesis H_{4b1}. Therefore, this study finds an insignificant negative moderating effect of the country's UMI on the significant negative relationship between lnCCI and NPL seen in model 81.a, meaning that UMI insignificantly strengthens the negative impact of lnCCI on NPL. Similarly, the negative coefficient

of $\ln\text{GEI_UMI}$ and the associated p-value in model 82.a do not provide enough statistical evidence to accept hypothesis H_{4b2} , even at a 10% significance level. Eventually, this study finds an insignificant negative moderating effect of the country's UMI on the insignificant negative relationship between $\ln\text{GEI}$ and NPL, as noted in model 82.a.



Table 24: Moderating effect of UMI on the relationship between country governance indicators and NPL

Variables	PCSE estimation									
	(81.a) NPL	(81.b) NPL	(82.a) NPL	(82.b) NPL	(83.a) NPL	(83.b) NPL	(84.a) NPL	(84.b) NPL	(84.c) NPL	(84.d) NPL
lnCCI	-1.357** (0.022)	-1.307* (0.065)	-0.826 (0.171)	-0.767 (0.278)	-1.409** (0.017)	-1.638** (0.011)	-1.497*** (0.000)	-1.972** (0.015)	-1.517*** (0.000)	-1.477*** (0.000)
lnGEI								-1.410** (0.016)	-2.070*** (0.001)	-1.472** (0.014)
lnRQI								0.187 (0.654)	0.0884 (0.823)	-0.0298 (0.952)
lnRLI								0.079* (0.088)	0.0904** (0.031)	0.0817* (0.078)
lnPSAVTI	-1.478** (0.025)	-1.501** (0.024)	-1.801*** (0.007)	-1.818** (0.007)	-1.954*** (0.000)	-2.018*** (0.000)	-1.466** (0.016)	0.0754* (0.086)	0.0226** (0.011)	0.0228** (0.012)
lnVAI	0.0350 (0.942)	0.0163 (0.973)	-0.251 (0.558)	-0.255 (0.555)	-0.0148 (0.977)	0.0115 (0.981)	0.0948 (0.827)	-0.0017 (0.895)	-0.0039 (0.771)	-0.0006 (0.964)
BCTA	0.0664 (0.129)	0.0661 (0.129)	0.111** (0.013)	0.111** (0.013)	0.124** (0.005)	0.126*** (0.004)	0.079* (0.088)	0.0754* (0.086)	0.0904** (0.031)	0.0817* (0.078)
BCIR	0.0225** (0.017)	0.0226** (0.016)	0.022** (0.018)	0.0224** (0.018)	0.0231** (0.012)	0.0231** (0.012)	0.023** (0.012)	0.0216** (0.018)	0.0226** (0.011)	0.0228** (0.012)
BOCTA	-0.0006 (0.964)	-0.0005 (0.971)	0.0006 (0.965)	0.0007 (0.958)	-0.0013 (0.924)	-0.0008 (0.949)	-0.0008 (0.953)	-0.0017 (0.895)	-0.0039 (0.771)	-0.0006 (0.964)
GDPG	-0.0374*** (0.002)	-0.0374*** (0.002)	-0.039*** (0.002)	-0.038*** (0.003)	-0.037*** (0.003)	-0.038*** (0.002)	-0.038*** (0.003)	-0.0381*** (0.002)	-0.0384*** (0.002)	-0.0381*** (0.003)
IR	0.0286 (0.201)	0.0281 (0.213)	0.0301 (0.177)	0.0284 (0.205)	0.0280 (0.212)	0.0293 (0.204)	0.0340 (0.134)	0.0342 (0.133)	0.0360 (0.113)	0.0351 (0.125)
C_19D2	-0.289 (0.133)	-0.288 (0.133)	-0.285 (0.148)	-0.290 (0.140)	-0.257 (0.198)	-0.256 (0.195)	-0.297 (0.125)	-0.297 (0.120)	-0.283 (0.147)	-0.299 (0.121)
UMI	0.316 (0.581)	0.354 (0.615)	-0.0783 (0.870)	-0.0340 (0.951)	-0.105 (0.844)	-0.477 (0.575)	-0.115 (0.831)	-0.531 (0.504)	-1.259 (0.360)	-0.496 (0.543)
lnCCI_UMI	-0.252 (0.802)									
lnGEI_UMI				-0.228 (0.779)						
lnRQI_UMI						0.610 (0.515)				
lnRLI_UMI								0.806 (0.355)		
lnPSAVTI_UMI									1.247 (0.232)	
lnVAI_UMI										0.599 (0.531)
_CONS	5.929*** (0.000)	5.933*** (0.000)	5.741*** (0.000)	5.748*** (0.000)	6.184*** (0.000)	6.274*** (0.000)	6.087*** (0.000)	6.299*** (0.000)	6.453*** (0.000)	6.119*** (0.000)
N	1252	1252	1252	1252	1252	1252	1252	1252	1252	1252
R-sq	0.401	0.401	0.429	0.429	0.416	0.420	0.423	0.421	0.424	0.426
Wald chi2	35.27*** 0.000	35.87*** 0.000	32.92*** 0.000	33.63*** 0.000	45.31*** 0.000	51.41*** 0.000	41.78*** 0.000	43.84*** 0.000	48.32*** 0.000	40.37*** 0.000

Note(s): p-values are in parentheses. *, **, and *** denote coefficients are significant at 10%, 5% and 1% level of significance, respectively

On the other hand, the positive coefficients of $\ln RQI_UMI$, $\ln RLI_UMI$, $\ln PSAVTI_UMI$, and $\ln VAI_UMI$ in model 83.b, 84.b, 84.c, and 84.d, respectively, and their associated P-values do not provide the necessary statistical evidence to accept hypotheses H_{4b3} , H_{4b4} , H_{4b5} , and H_{4b6} , even at a 10% significance level. Eventually, this study finds an insignificant positive moderating effect of the country's UMI on the significant negative relationship between $\ln RQI$ and NPL, $\ln RLI$ and NPL, $\ln PSAVTI$ and NPL seen in models 83.a and 84.a, as well as on the insignificant positive relationship between $\ln VAI$ and NPL, as revealed in model 84.a. These findings mean that when a CIL is shifted to the UMI group, the country's UMI insignificantly weakens the significant negative impacts of $\ln RQI$, $\ln RLI$, and $\ln PSAVTI$ on NPL.

To summarize, this study does not find a significant moderating effect of the country's UMI on the relationship between country governance indicators and the NPL of commercial banks. Eventually, this study does not find enough evidence to accept hypothesis H_{4b} , a country's UMI significantly moderates the relationship between country governance indicators and NPL.

4.5.2.3 Moderating effects of LMI on the relationship between Country governance indicators and NPL

According to the research objective and research question four, this part of this study emphasizes the moderating effect of the country's LMI on the relationship between country governance indicators and NPL by testing hypothesis H_{4c1} to H_{4c6} under hypothesis H_{4c} . Table 25 summarizes the regression outputs using PCSE estimation. This study controls the country's LMI in model 85.a, 86.a, 87.a, and 88.a, and find that

the country's LMI significantly increases the NPL of commercial banks. After controlling the country's LMI, this study finds that improvement in $\ln\text{CCI}$, $\ln\text{RQI}$, $\ln\text{RLI}$, and $\ln\text{PSAVTI}$ significantly reduces the NPL of commercial banks. However, $\ln\text{GEI}$ has an insignificant negative association with NPL, and $\ln\text{VAI}$ has an insignificant positive association with NPL.

The resulting positive coefficient of $\ln\text{CCI_LMI}$ in model 85.b is statistically significant at a 1% level of significance, and this study finds enough statistical evidence to accept hypothesis H_{4c1} , revealing a significant positive moderating effect of the country's LMI on the marginally significant negative relationship between $\ln\text{CCI}$ and NPL seen in model 85.a. This finding means that the country's LMI significantly weakens or reverses the marginally significant negative impact of $\ln\text{CCI}$ on NPL. Similarly, the positive coefficient of $\ln\text{GEI_LMI}$ in model 86.b is statistically significant at a 1% significance level, providing enough statistical evidence to accept hypothesis H_{4c2} . Eventually, this study finds a significant positive moderating effect of the country's LMI on the insignificant negative relationship between $\ln\text{GEI}$ and NPL, meaning that the country's LMI significantly reverses or weakens the insignificant negative relationship between $\ln\text{GEI}$ and NPL.

In model 87. b, the positive coefficient of $\ln\text{RQI_LMI}$ is also statistically significant at a 1% significance level, providing enough statistical evidence to accept hypothesis H_{4c3} . Eventually, this study finds a significant positive moderating effect of the country's LMI on the significant negative relationship between $\ln\text{RQI}$ and NPL seen in model 87.b, meaning that the country's LMI significantly weakens or reverses the significant negative impact of $\ln\text{RQI}$ on NPL. Similarly, the coefficient of $\ln\text{RLI_LMI}$

(3.014) and associated p-value (0.000) in model 88.b provides enough statistical evidence to accept hypothesis H_{4c4} , indicating a significant positive moderating effect of the country's LMI on the significant negative relationship between $\ln RLI$ and NPL, as highlighted in model 88.a. This finding means that when a CIL is in LMI group, the country's LMI significantly weakens or reverses the significant negative impact of $\ln RLI$ on NPL.

On the other hand, the negative coefficient of $\ln PSAVTI_LMI$ in model 88.c is not statistically significant, even at a 10% significance level. This study does not find enough statistical evidence to accept hypothesis H_{4c5} . It suggests an insignificant negative moderating effect of the country's LMI on the significant negative relationship between $\ln PSAVTI$ and NPL seen in model 88.a. Likewise, the resulting positive coefficient of $\ln VAI_LMI$ and associated p-value in model 88.d do not provide enough statistical evidence to accept hypothesis H_{4c6} , suggesting an insignificant positive moderating effect of the country's LMI on the insignificant positive relationship between $\ln VAI$ and NPL, as emphasized in model 88.a.

As the country's LMI significantly moderates the relationships between $\ln CCI$ and NPL, $\ln GEI$ and NPL, $\ln RQI$, and NPL, and $\ln RLI$ and NPL, this study finds enough evidence to partially support hypothesis H_{4c} , meaning that the country's LMI significantly moderates the relationship between few country governance indicators and NPL of commercial banks.

Table 25: Moderating effect of LMI on the relationship between country governance indicators and NPL

PCSE estimation										
Variables	(85.a) NPL	(85.b) NPL	(86.a) NPL	(86.b) NPL	(87.a) NPL	(87.b) NPL	(88.a) NPL	(88.b) NPL	(88.c) NPL	(88.d) NPL
lnCCI	-1.075* (0.054)	-2.967*** (0.000)	-0.523 (0.378)	-2.265*** (0.000)	-1.088** (0.035)	-3.071*** (0.000)	-1.200*** (0.000)	-2.029*** (0.000)	-1.212*** (0.000)	-1.234*** (0.000)
lnGEI										
lnRQI										
lnRLI										
lnPSAVTI	-1.300** (0.039)	-0.907 (0.148)	-1.627** (0.010)	-1.502** (0.016)	-1.553*** (0.003)	-1.287** (0.009)	-1.255** (0.021)	-1.283** (0.026)	-1.330 (0.174)	-1.176** (0.035)
lnVAI	0.0830 (0.857)	0.517 (0.287)	0.0245 (0.954)	0.467 (0.329)	0.280 (0.543)	0.572 (0.204)	0.258 (0.521)	0.201 (0.585)	0.318 (0.425)	0.0701 (0.898)
BCTA	0.0828* (0.058)	0.0786** (0.046)	0.115** (0.009)	0.0703* (0.071)	0.124*** (0.004)	0.0789* (0.053)	0.0900** (0.047)	0.0727* (0.071)	0.0969** (0.033)	0.0787* (0.073)
BCIR	0.0216** (0.024)	0.0226** (0.012)	0.0214** (0.026)	0.0234** (0.015)	0.0218** (0.020)	0.0223** (0.014)	0.0215** (0.019)	0.0236*** (0.007)	0.0217** (0.017)	0.0216** (0.018)
BOCTA	-0.00184 (0.894)	-0.0188 (0.227)	-0.0013 (0.926)	-0.0071 (0.629)	-0.0036 (0.782)	-0.0083 (0.528)	-0.0034 (0.792)	-0.0093 (0.508)	-0.0040 (0.756)	-0.0036 (0.783)
GDPG	-0.0387*** (0.001)	-0.0368*** (0.002)	-0.0394*** (0.001)	-0.0378*** (0.002)	-0.0384*** (0.002)	-0.0358*** (0.003)	-0.0391*** (0.001)	-0.0387*** (0.002)	-0.0392*** (0.002)	-0.0387*** (0.002)
IR	0.0317 (0.155)	0.0243 (0.275)	0.0341 (0.132)	0.0155 (0.468)	0.0313 (0.165)	0.0235 (0.299)	0.0357 (0.117)	0.0325 (0.149)	0.0363 (0.109)	0.0356 (0.116)
C_19D2	-0.287 (0.132)	-0.235 (0.248)	-0.275 (0.156)	-0.341* (0.079)	-0.263 (0.182)	-0.264 (0.179)	-0.297 (0.118)	-0.229 (0.253)	-0.299 (0.120)	-0.294 (0.121)
LMI	1.287 (0.175)	1.143 (0.118)	1.497* (0.057)	1.930** (0.016)	1.642* (0.057)	0.296 (0.744)	1.462* (0.087)	0.837 (0.289)	1.419 (0.290)	1.317* (0.079)
lnCCI_LMI		3.941*** (0.000)								
lnGEI_LMI				3.655*** (0.000)						
lnRQI_LMI						3.182*** (0.000)		3.014*** (0.000)		
lnRLI_LMI									-0.0307 (0.977)	0.282 (0.741)
lnPSAVTI_LMI										
lnVAI_LMI										
CONS	5.154*** (0.000)	5.525*** (0.000)	4.802*** (0.000)	5.575*** (0.000)	4.929*** (0.000)	6.420*** (0.000)	5.059*** (0.000)	5.678*** (0.000)	5.098*** (0.000)	5.248*** (0.000)
N	1252	1252	1252	1252	1252	1252	1252	1252	1252	1252
R-sq	0.410	0.469	0.440	0.473	0.428	0.444	0.438	0.543	0.429	0.432
Wald chi2	35.39*** 0.000	87.95*** 0.000	35.57*** 0.000	56.72*** 0.000	45.19*** 0.000	61.66*** 0.000	42.45*** 0.000	104.35*** 0.000	42.19*** 0.000	51.76*** 0.000

Note(s): p-values are in parentheses. *, **, and *** denote coefficients are significant at 10%, 5% and 1% level of significance, respectively

4.5.2.4 Moderating effects of HI on the relationship between Country governance indicators and Z_Score

This part explains the moderating effect of the country's HI on the relationship between country governance indicators and Z_Score by testing hypotheses H_{4d1} to H_{4d6} under hypothesis H_{4d}. Table 26 summarizes the regression outputs using the PCSE estimation method in this regard. Controlling the country's HI, models 89.a, 90.a, 91.a, and 92.a are developed to demonstrate the effect of the country's HI and country governance indicators on the Z_Score of commercial banks. This study finds that the positive impact of the country's HI on Z_Score is significant at a 5% significance level in model 90.a; however, it is marginally significant in model 92.a, meaning that the country's HI enhances the financial stability of banks. Moreover, this study also finds that lnCCI has an insignificant positive effect on Z_Score, while lnGEI and lnRLI have an insignificant negative impact. lnRQI has a significant positive impact on Z_Score; however, lnPSAVTI has a marginally significant and insignificant negative impact on Z_Score in those models. Furthermore, lnVAI also reveals an insignificant mixed effect on it in those models.

The resulting negative coefficient of lnCCI_HI in model 89.b is not statistically significant even at 10% significance, which does not provide the necessary statistical evidence to accept hypothesis H_{4d1}. Therefore, this study finds an insignificant negative moderating effect of the country's HI on the insignificant positive relationship between lnCCI and Z_Score, meaning that the country's HI insignificantly weakens the insignificant positive impact of lnCCI on Z_Score. However, the positive coefficient of lnGEI_HI in model 90.b is very high and statistically significant at a 1% level of significance, providing enough statistical evidence to accept hypothesis H_{4d2},

suggesting a significant positive moderating effect of the country's HI on the insignificant negative relationship between lnGEI and Z_Score seen in model 90.a. This finding means that the country's HI weakens or reverses the insignificant negative impact of lnGEI on Z_Score, which is favorable for the bank's financial stability.



Table 26: Moderating effect of HI on the relationship between country governance indicators and Z_Score

PCSE										
	(89.a) Z_Score	(89.b) Z_Score	(90.a) Z_Score	(90.b) Z_Score	(91.a) Z_Score	(91.b) Z_Score	(92.a) Z_Score	(92.b) Z_Score	(92.c) Z_Score	(92.d) Z_Score
lnCCI	0.754 (0.239)	1.044 (0.143)								
lnGEI			-0.233 (0.634)	-0.360 (0.480)						
lnRQI					1.398** (0.013)	0.743 (0.187)				
lnRLI										
lnPSAVTI	-1.667* (0.055)	-1.788** (0.033)	-1.033 (0.209)	-1.027 (0.218)	-1.728* (0.052)	-1.434* (0.084)	-0.0410 (0.959)	0.0629 (0.938)	-0.240 (0.780)	-0.391 (0.647)
lnVAI	-0.249 (0.666)	-0.425 (0.475)	0.339 (0.540)	0.00627 (0.991)	-0.266 (0.620)	-0.273 (0.602)	0.132 (0.823)	0.180 (0.773)	0.498 (0.409)	0.986 (0.143)
BCTA	0.231** (0.005)	0.231*** (0.003)	0.160* (0.050)	0.220** (0.006)	0.201** (0.017)	0.222** (0.006)	0.184** (0.030)	0.191** (0.017)	0.207** (0.014)	0.184** (0.046)
BCIR	-0.052*** (0.000)	-0.058*** (0.000)	-0.060*** (0.000)	-0.054*** (0.000)	-0.054*** (0.000)	-0.062*** (0.000)	-0.057*** (0.000)	-0.058*** (0.000)	-0.055*** (0.000)	-0.047*** (0.000)
BOCTA	-0.006 (0.686)	-0.004 (0.773)	-0.003 (0.841)	-0.005 (0.710)	-0.008 (0.577)	-0.001 (0.962)	-0.004 (0.788)	-0.006 (0.664)	-0.005 (0.736)	-0.004 (0.777)
GDPG	0.0327* (0.092)	0.0333* (0.092)	0.0335* (0.090)	0.0341* (0.091)	0.0327* (0.094)	0.0343* (0.074)	0.0326 (0.101)	0.0345* (0.096)	0.0303 (0.115)	0.0360* (0.086)
IR	0.0106 (0.385)	0.0109 (0.369)	0.00656 (0.606)	0.00761 (0.552)	0.00962 (0.435)	0.00991 (0.412)	0.00792 (0.531)	0.00785 (0.537)	0.00816 (0.518)	0.00772 (0.544)
C_19D2	-0.593** (0.035)	-0.573** (0.030)	-0.659** (0.021)	-0.596** (0.029)	-0.596** (0.034)	-0.565** (0.039)	-0.625** (0.030)	-0.640** (0.016)	-0.627** (0.025)	-0.629** (0.032)
HI	0.981 (0.342)	0.868 (0.590)	1.788** (0.041)	-3.420** (0.005)	0.852 (0.392)	-3.882** (0.006)	1.872* (0.057)	0.0829 (0.966)	3.575 (0.173)	4.900** (0.018)
lnCCI_HI	-0.699 (0.666)									
lnGEI_HI				5.421*** (0.000)						
lnRQI_HI						5.249*** (0.001)				
lnRLI_HI								0.421 (0.835)	-1.719 (0.397)	-3.661* (0.075)
lnPSAVTI_HI										
lnVAI_HI										
CONS	18.57*** (0.000)	18.96*** (0.000)	18.60*** (0.000)	17.77*** (0.000)	18.45*** (0.000)	18.49*** (0.000)	18.44*** (0.000)	18.52*** (0.000)	17.76*** (0.000)	17.46*** (0.000)
N	1256	1256	1256	1256	1256	1256	1256	1256	1256	1256
R-sq	0.801	0.833	0.841	0.840	0.800	0.827	0.827	0.845	0.813	0.812
Wald chi2	64.32*** (0.000)	90.94*** (0.000)	55.48*** (0.000)	119.35*** (0.000)	69.76*** (0.000)	102.96*** (0.000)	54.45*** (0.000)	65.28*** (0.000)	52.80*** (0.000)	55.12*** (0.000)

Note(s): p-values are in parentheses. *, **, and *** denote coefficients are significant at 10%, 5% and 1% level of significance, respectively

In model 91.b, the positive coefficient of $\ln RQI_HI$ is statistically significant at a 5% significance level, which offers enough statistical evidence to accept hypothesis H_{4d3} . This finding demonstrates a significant positive moderating effect of the country's HI on the significant positive relationship between $\ln RQI$ and Z_Score , as noted in model 91.a, meaning the country's HI significantly strengthens the positive effect of $\ln RQI$ on Z_Score , which is favorable for commercial banks' financial stability. The positive coefficient of $\ln RLI_HI$ in model 92.b is not statistically significant even at a 10% significance level. This study does not find enough statistical evidence to accept hypothesis H_{4d4} , indicating an insignificant positive moderating effect of the country's HI on the insignificant negative relationship between $\ln RLI$ and Z_Score , as discovered in model 92.a. This finding means that the country's HI insignificantly weakens (reduces) the insignificant negative impact of $\ln RLI$ on Z_Score .

The resulting negative coefficient of $\ln PSAVTI_HI$ in model 92.c is not statistically significant, which does not provide the necessary statistical evidence to accept Hypothesis H_{4d5} . Eventually, it reveals an insignificant negative moderating effect of the country's HI on the insignificant negative relationship between $\ln PSAVTI$ and Z_Score , as observed in model 92.a, meaning that the country's HI insignificantly strengthens the negative impact of $\ln PSAVTI$ on Z_Score . On the other hand, the negative coefficient of $\ln VAI_HI$ is significant at a 10% significance level. This study finds the necessary statistical evidence to accept hypothesis H_{4d6} at 10% significance level, indicating a marginally significant negative moderating effect of the country's HI on the insignificant positive relationship between $\ln VAI$ and Z_Score , as noted in model 92.a. This marginally significant negative moderating effect illustrates that the country's HI reverses or weakens the insignificant positive of $\ln VAI$ on Z_Score of commercial banks.

From the above discussion, this study finds that the country's HI significantly moderates the relationships between lnGEI and Z_Score, lnRQI and Z_Score as well as lnVAI and Z_Score. Eventually, hypothesis H_{4d}, a country's HI significantly moderates the relationships between country governance indicators and Z_Score, is partially supported, meaning that the country's HI significantly moderates the relationship between a few country governance indicators and Z_Score of commercial banks.

4.5.2.5 Moderating effects of UMI on the relationship between Country governance indicators and Z_Score

This section represents the moderating effect of the country's UMI on the relationship between country governance indicators and Z_Score of commercial banks by testing hypotheses H_{4e1} to H_{4e6} under hypothesis 4_e. Table 27 summarizes the regression outputs of the PCSE estimation method in this regard. Controlling the country's UMI, this study seeks to measure the individual effects of the country's UMI and country governance indicators on Z_Score in models 93.a, 94.a, 95.a, and 96.a.

In model 93.a, the country's UMI and lnCCI have insignificant associations with the Z_Score of commercial banks; however, the negative coefficient of lnCCI_UMI (interaction between lnCCI and UMI) is statistically significant at a 5% level of significance in model 93.b. This study finds enough statistical evidence to accept hypothesis H_{4e1}, indicating a significant negative moderating effect of the country's UMI on the insignificant positive relationship between lnCCI and Z_Score, as observed in model 93.a. These findings mean that although the country's UMI insignificantly increases Z_Score, it weakens or reverses the insignificant positive

impact of $\ln CCI$ on Z_Score . In model 94.a, improvement in $\ln GEI$ insignificantly increases Z_Score , whereas the country's UMI insignificantly reduces it. However, the negative coefficient of $\ln GEI_UMI$ in model 94.b is statistically significant at a 1% significance level, providing enough statistical evidence to accept hypothesis H_{4e2} . This finding reveals a significant negative moderating effect of the country's UMI on the insignificant positive relationship between $\ln GEI$ and Z_Score . The resulting significant negative moderating effect means the country's UMI significantly reverses or weakens the insignificant positive impact of $\ln GEI$ on Z_Score .

In model 95.a, this study finds that improvement in $\ln RQI$ significantly increases Z_Score , whereas the country's UMI insignificantly increases it. Nevertheless, in model 95.b, the negative coefficient of $\ln RQI_UMI$ is significant at a 1% level of significance, which provides enough statistical evidence to accept hypothesis H_{4e3} . Eventually, this study finds a significant negative moderating effect of the country's UMI on the significant positive relationship between $\ln RQI$ and Z_Score , meaning that the country's UMI significantly weakens the positive impact of $\ln RQI$ on Z_Score . Model 96.a suggests that the country's UMI and $\ln RLI$ both have insignificant negative impacts on Z_Score ; however, the negative coefficient of $\ln RLI_UMI$ in model 96.b is significant at 1% significance level, which provides enough statistical evidence to accept hypothesis H_{4e4} . Consequently, this study finds a significant negative moderating effect of the country's UMI on the insignificant negative relationship between $\ln RLI$ and Z_Score , suggesting that the country's UMI significantly strengthens the insignificant negative impact of $\ln RLI$ on Z_Score .

In model 96.c, the negative coefficient of $\ln\text{PSAVTI_UMI}$ is statistically significant at a 10% level of significance, and eventually, hypothesis H6b5 is accepted at a 10% significance level. This finding demonstrates a marginally significant negative moderating effect of the country's UMI on the insignificant negative relationship between $\ln\text{PSAVTI}$ and Z-Score, as highlighted in model 96.a, indicating that the country's UMI significantly (at a 10% significance level) strengthens the insignificant negative effect of $\ln\text{PSAVTI}$ on Z-Score. On the other hand, the negative coefficient of $\ln\text{VAI_UMI}$ in model 96.d is not statistically significant, even at a 10% significance level. Eventually, this study finds insufficient statistical evidence to accept hypothesis H4e6. Therefore, this study finds an insignificant negative moderating effect of the country's UMI on the insignificant positive relationship between $\ln\text{VAI}$ and Z_Score, as reported in model 96.a.

To sum up, this study does not find a significant impact of the country's UMI on Z_Score of commercial banks; however, it finds significant negative moderating effects of the country's UMI on the relationship between country governance indicators and Z_Score, except $\ln\text{VAI}$. Eventually, hypothesis H4e is partially accepted, meaning that the country's UMI significantly moderates the relationships between most country governance indicators and the Z_Score of commercial banks.

Table 27: Moderating effect of UMI on the relationship between country governance indicators and Z_Score

	PCSE							
	(93.a) Z Score	(93.b) Z Score	(94.a) Z Score	(94.b) Z Score	(95.a) Z Score	(95.b) Z Score	(96.a) Z Score	(96.d) Z Score
lnCCI	0.799 (0.165)	1.915*** (0.001)	0.0651 (0.891)	1.364** (0.016)	1.278** (0.023)	2.400*** (0.000)		
lnGEI								
lnRQI								
lnRLI								
lnPSAVTI	-1.354* (0.096)	-0.393 (0.622)	-0.973 (0.223)	0.140 (0.857)	-1.391* (0.083)	0.273 (0.718)	-0.145 (0.868)	0.172 (0.845)
lnVAI	0.00304 (0.996)	-0.636 (0.295)	0.529 (0.366)	0.0914 (0.873)	-0.0841 (0.874)	-0.242 (0.656)	-0.786 (0.488)	-0.800 (0.438)
BCTA	0.160* (0.061)	0.200** (0.011)	0.153* (0.075)	0.191** (0.014)	0.167** (0.041)	0.208*** (0.004)	0.149* (0.093)	0.604 (0.565)
BCIR	-0.057*** (0.000)	-0.053*** (0.000)	-0.057*** (0.000)	-0.053*** (0.000)	-0.056*** (0.000)	-0.054*** (0.000)	-0.055*** (0.000)	0.624 (0.440)
BOCTA	-0.00685 (0.618)	-0.00499 (0.709)	-0.00716 (0.615)	-0.00398 (0.769)	-0.00643 (0.640)	-0.00267 (0.848)	-0.00995 (0.474)	-0.001 (0.999)
GDPG	0.0353* (0.088)	0.0344 (0.104)	0.0332* (0.099)	0.0339* (0.089)	0.0346* (0.082)	0.0345* (0.084)	0.0347* (0.094)	0.135 (0.131)
IR	0.00842 (0.501)	0.0118 (0.355)	0.00767 (0.551)	0.00188 (0.881)	0.0108 (0.374)	0.00713 (0.557)	0.00648 (0.610)	0.052*** (0.000)
C_19D2	-0.610** (0.032)	-0.600** (0.033)	-0.638** (0.031)	-0.734** (0.014)	-0.599** (0.032)	-0.602** (0.030)	-0.653** (0.025)	-0.055*** (0.000)
UMI	0.140 (0.834)	0.555 (0.418)	-0.167 (0.818)	-0.100 (0.887)	0.0365 (0.954)	2.229** (0.007)	-0.304 (0.685)	-0.00918 (0.510)
lnCCI_UMI	-2.646** (0.007)							0.0376* (0.071)
lnGEI_UMI			-3.011*** (0.000)					0.0340* (0.098)
lnRQI_UMI								0.0119 (0.0603)
lnRLI_UMI								0.362 (0.646)
lnPSAVTI_UMI								-0.718** (0.021)
lnVAI_UMI								2.714 (0.993)
CONS	19.47*** (0.000)	17.70*** (0.000)	19.21*** (0.000)	17.29*** (0.000)	19.02*** (0.000)	16.19*** (0.000)	18.93*** (0.000)	0.0376* (0.158)
N	1256	1256	1256	1256	1256	1256	1256	19.05*** (0.000)
R-sq	0.839	0.842	0.829	0.810	0.840	0.857	0.813	1256
Wald chi2	70.32*** (0.000)	73.41*** (0.000)	56.20*** (0.000)	73.08*** (0.000)	70.02*** (0.000)	103.21*** (0.000)	56.93*** (0.000)	59.76*** (0.000)

Note(s): p-values are in parentheses. *, **, and *** denote coefficients are significant at 10%, 5% and 1% level of significance, respectively

4.5.2.6 Moderating effects of LMI on the relationship between Country governance indicators and Z_Score

This study tests hypotheses H_{4f1} to H_{4f6} to represent the moderating effect of the country's LMI on the relationship between country governance indicators and commercial bank Z_Score and summarizes the regression outputs of PCSE estimation in Table 28. To control the country's LMI models 97.a, 98.a, 99.a, and 100.a is developed to demonstrate the effect of LMI and individual country governance indicators on commercial bank Z_Score.

Model 97.a suggests that improvement in $\ln CCI$ significantly increases Z_Score at a 10% significance level; however, the country's LMI insignificantly reduces it. In model 97.a, the resulting positive coefficient of $\ln CCI_LMI$ is statistically significant at a 1% significance level, which provides enough statistical evidence to accept hypothesis H_{4f1} . Eventually, this study demonstrates a significant positive moderating effect of the country's LMI on the marginally significant positive relationship between $\ln CCI$ and Z_Score, meaning that when a CIL is shifted to the LMI group, the country's LMI strengthens the marginally significant positive impact of $\ln CCI$ on Z_Score. In other words, improvement in $\ln CCI$ in LMI countries increases Z_Score at a higher rate.

In model 98.a, $\ln GEI$ insignificantly increases Z_Score, whereas the country's LMI insignificantly reduces it. However, in model 98.b, the positive coefficient of $\ln GEI_LMI$ is not statistically significant, even at a 10% significance level, which does not provide the necessary statistical evidence to accept hypothesis H_{4f2} . Eventually, this finding demonstrates an insignificant positive moderating effect of the country's

LMI on the insignificant positive relationship between $\ln\text{GEI}$ and Z_Score . Model 99.a demonstrates that improvement in $\ln\text{RQI}$ significantly increases Z_Score . Moreover, the positive coefficient $\ln\text{RQI_LMI}$ is significant at a 10% significance level, demonstrating a marginally significant positive moderating effect of the country's LMI on the significant positive relationship between $\ln\text{RQI_LMI}$ and Z_Score . Eventually, this finding provides statistical evidence to accept hypothesis H_{4f3} at a 10% significance level and demonstrates that the country's LMI significantly strengthens the positive impact of $\ln\text{RQI}$ on Z_Score at a 10% significance level.

After controlling the country's LMI, model 100.a suggests that $\ln\text{RLI}$ has an insignificant positive impact on Z_Score , whereas the country's LMI has an insignificant negative impact. However, in model 100.b, the positive coefficient of $\ln\text{RLI_LMI}$ is statistically significant at a 1% significance level, providing enough statistical evidence to accept hypothesis H_{4f4} . Eventually, this study finds a significant positive moderating effect of the country's LMI on the insignificant positive relationship between $\ln\text{RLI}$ and Z_Score , meaning that the country's LMI significantly strengthens the insignificant positive impact of improvement in $\ln\text{RLI}$ on Z_Score .

Table 28: Moderating effect of LMI on the relationship between Country governance indicators and Z_Score

	PCSE							
	(97.a) Z Score	(97.b) Z Score	(98.a) Z Score	(98.b) Z Score	(99.a) Z Score	(99.b) Z Score	(100.a) Z Score	(100.d) Z Score
lnCCI	1.257* (0.094)	0.295 (0.707)	0.0651 (0.889)	-0.470 (0.458)	2.090** (0.004)	0.546 (0.646)		
lnGEI								
lnRQI								
lnRLI							0.133 (0.866)	0.273 (0.769)
lnPSAVTI	-1.695 (0.131)	-1.143 (0.235)	-1.109 (0.222)	-0.564 (0.471)	-1.265 (0.331)	-1.332 (0.132)	0.755 (0.445)	-0.714 (0.537)
lnVAI	-0.621 (0.309)	-0.698 (0.259)	0.156 (0.773)	0.245 (0.692)	-0.593 (0.313)	0.187 (0.747)	-2.174 (0.165)	-1.551 (0.235)
BCTA	0.201** (0.009)	0.247*** (0.001)	0.169** (0.034)	0.161** (0.038)	0.181** (0.019)	0.183** (0.015)	0.215** (0.007)	0.199** (0.018)
BCIR	-0.045*** (0.001)	-0.044*** (0.000)	-0.051*** (0.000)	-0.055*** (0.000)	-0.043*** (0.002)	-0.050*** (0.000)	-0.054*** (0.000)	-0.048*** (0.000)
BOCTA	-0.0104 (0.448)	-0.0118 (0.384)	-0.0106 (0.470)	-0.0111 (0.478)	-0.0109 (0.420)	-0.00852 (0.558)	-0.00691 (0.629)	-0.0113 (0.436)
GDPG	0.0355* (0.065)	0.0342* (0.078)	0.0337* (0.078)	0.0314 (0.100)	0.0362* (0.060)	0.0353* (0.067)	0.0341* (0.080)	0.0351* (0.086)
IR	0.0142 (0.266)	0.0148 (0.239)	0.0122 (0.350)	0.00977 (0.448)	0.0162 (0.200)	0.0108 (0.396)	0.0136 (0.292)	0.00872 (0.493)
C_19D2	-0.667** (0.018)	-0.622** (0.021)	-0.661** (0.020)	-0.703** (0.017)	-0.706** (0.012)	-0.656** (0.016)	-0.634** (0.024)	-0.623** (0.030)
LMI	-0.413 (0.711)	-0.0521 (0.955)	-0.424 (0.669)	0.118 (0.910)	0.00562 (0.996)	-0.918 (0.416)	-0.596 (0.556)	-2.391* (0.066)
lnCCI_LMI	2.759*** (0.004)							
lnGEI_LMI			1.505 (0.111)					
lnRQI_LMI								
lnRLI_LMI						2.507* (0.062)	4.116*** (0.000)	
lnPSAVTI_LMI							2.342 (0.140)	2.966** (0.024)
lnVAI_LMI								19.58*** (0.000)
CONS	19.13*** (0.000)	18.52*** (0.000)	19.06*** (0.000)	18.84*** (0.000)	17.84*** (0.000)	18.75*** (0.000)	19.42*** (0.000)	19.69*** (0.000)
N	1256	1256	1256	1256	1256	1256	1256	1256
R-sq	0.764	0.793	0.800	0.815	0.744	0.790	0.812	0.830
Wald chi2	65.17*** (0.000)	92.99*** (0.000)	53.91*** (0.000)	61.35*** (0.000)	85.50*** (0.000)	104.23*** (0.000)	58.00*** (0.000)	63.07*** (0.000)

Note(s): p-values are in parentheses. *, **, and *** denote coefficients are significant at 10%, 5% and 1% level of significance, respectively

In model 100.a, lnPSAVTI insignificantly reduces Z_Score. Likewise, the positive coefficient of lnPSAVTI_LMI in model 100.c is not statistically significant, even at a 10% significance level. Therefore, the study does not find the necessary statistical evidence to accept hypothesis H_{4f5} and indicates an insignificant positive moderating effect of the country's LMI on the insignificant negative relationship between lnPSAVTI and Z_Score, meaning that the country's LMI insignificantly weakens the negative relationship between lnPSAVTI and Z_Score. Similarly, in model 100.a improvement in lnVAI insignificantly reduces Z_Score; however, the positive coefficient of lnVAI_LMI in model 100.d is statistically at a 5% significance level, providing enough statistical evidence to accept hypothesis H_{4f6}. Eventually, this study reveals a significant positive moderating effect of the country's LMI on the insignificant negative relationship between lnVAI and Z_Score. This finding means that the country's LMI significantly weakens or reverses the negative impact of lnVAI on Z_Score, as reported in model 100.a.

From the above analysis, it is discovered that the country's LMI significantly moderates the relationships between lnCCI and Z_Score, lnRQI and Z_Score, lnRLI and Z_Score, and lnVAI and Z_Score. This study finds enough evidence to partially support hypothesis H_{4f}, suggesting that the country's LMI significantly moderates the relationships between some of the country's governance indicators and the Z_Score of commercial banks.

4.5.2.7 Comparative moderating effect for financial stability and theoretical underpinning

From the above analysis, this study finds that the country's HI significantly reduces NPL and increases commercial banks' Z_Score, which is favorable for the bank's financial stability. The country's UMI has insignificant mixed impacts on the NPL and

Z_Score of commercial banks. On the other hand, the country's LMI significantly increases NPL and insignificantly reduces Z_Score, which is unfavorable for the bank's financial stability. These findings mean that the CIL plays an important role in the financial stability of commercial banks. The reasons behind those findings may be that if the CIL increases, the loan payback capability of the borrowers will increase and ensure increased fund supply to commercial banks, which will contribute favorably to financial stability. Moreover, commercial banks can have a favorable working environment and better corporate governance when the CIL increases. These findings are supported by the RDT, which explains the firm's dependence on external resources and environmental factors for its performance.

Moreover, this study also finds that the country's HI negatively and significantly and the country's LMI positively and significantly moderate the negative relationship between some of the country's governance indicators (e.g., lnCCI, lnGEI, lnRQI, and lnRLI) and NPL of commercial banks. However, the moderating effect of UMI on the same is statistically insignificant. The reasons behind these findings may be that the country's HI increases loan payback capability and could ensure better country governance, better corporate governance, and a favorable working environment, which eventually strengthens the negative effect of further improvement in country governance on the NPL of commercial banks. Unlikely, a country with LMI mostly fails to ensure greater payback capability of the borrowers, better corporate governance as a result of lower quality country governance, and a favorable working environment, which ultimately weakens the negative effect of country governance indicators on NPL. These findings prove the effect of external influences on banks, as explained by the RDT.

This study also finds that the country's HI has significant and insignificant mixed, UMI has significant negative, and LMI has significant positive moderating effects on the relationship between country governance indicators and Z_Score of commercial banks. The positive moderating effect of HI is mostly favorable (that is, it either significantly weakens the negative impact or significantly strengthens the positive impact of the country governance indicator on Z_Score) for financial stability (except for lnVAI, which is unfavorable with marginal significance). The reason behind the mostly insignificant and few favorable significant moderating impacts of HI may be that in HI countries, the quality of country governance, greater fund supply and better corporate governance at the bank level, and overall working environment are, on average, at a high level compared to LMI and UMI countries. Eventually, further improvement in country governance (except lnRQI) will not be very fruitful for Z_Score.

In contrast, the significant negative moderating effect of UMI is unfavorable (it either significantly weakens the positive impact or strengthens the negative impact of the country governance indicator on Z_Score) for bank financial stability. The reason behind the unfavorable moderating effect of the country's UMI may be that UMI countries have a lower fund supply to the banks, lower quality corporate governance compared to HI countries, and a relatively less favorable working environment, which weakens the positive impact of better country governance on Z_Score and strengthens the negative impact of the same on it.

On the other hand, although the country's LMI has an insignificant negative effect on Z_Score, it has a favorable (either strengthens the positive impact or weakens the

negative impact of country governance indicator on Z_Score) positive moderating impact on bank financial stability. The reasons behind this may be that LMI countries have higher corruption, greater political influences in the banking sector, higher NPL, and a comparatively unfavorable working environment. Moreover, the country's LMI supplies lower funds to the banking channel, and corporate governance is relatively poor. Eventually, substantial improvement in the country governance in LMI countries will be favorable for commercial banks' financial stability.

In summary, different income levels have diverse moderating effects on the relationship between country governance indicators and bank financial stability indicators (some are negative or positive, while some are significant or insignificant, or any combination). Eventually, hypothesis H₄, a CIL moderates the relationship between country governance indicators and the financial stability of commercial banks, is partially supported. The above discussion proves the impact of external control and resources on the financial stability of commercial banks, which the RDT supports. The diverse moderating effects of the country's HI, UMI, and LMI on the relationship between country governance and financial stability indicators are supported by Eldomiaty et al. (2023), Khan et al. (2023) and Tran et al. (2023), who find the effect of country governance indicators on financial stability and other performance indicators differ based on the CILs.

4.6 Chapter summary

The chapter summarizes the outputs of all the statistical analyses. From the descriptive analysis and graphical presentation, this study discovers that the mean values of

dependent and IVs differ in HI, UMI, and LMI counties. Thus, to ensure robustness in inferential statistical analysis, the data are cleaned from outliers using the “rstudent” technique in STATA-15. From multiple correlation and VIF tests, this study notes that lnCCI, lnGEI, lnRQI, and lnRLI suffer from multicollinearity, and to deal with multicollinearity, several models are developed. For the direct effect analysis, in OLS estimation, ROA, NIM, NPL, and Z_Score suffer from heteroskedasticity and/or serial correlation as well as form CD, and to ensure robustness in estimation, the PCSE estimation model is used. In addition, OLS estimation for ROE suffers from heteroskedasticity and serial correlation, and to ensure robustness in estimation, the FGLS estimation model is used. Simultaneously, moderating effect analysis uses the same method used in direct effect analysis. The outputs of direct and moderating effect analysis are summarized in Table 29.

4.6.1 Summary of direct and moderating effect analysis

From the regression analysis, this study reveals a significant and insignificant mixed impact of country governance indicators on banks’ profitability indicators (ROA, ROE, and NIM). Particularly, GEI and RQI have negative effects on each profitability indicator of commercial banks, while VAI has positive impacts. Moreover, this study observes that country governance indicators negatively impact NPL, which is favorable for the banking sector. However, this study reports mixed impacts of country governance indicators, mostly insignificant, on Z_Score. Notably, the moderating effects of the country’s HI, UMI, and LMI are also mixed. The moderate effects of HI and LMI on the relationship between country governance indicators and ROA, ROE, and NIM are opposite. The same scenarios are reported for NPL as well. However, the

moderating effects of HI and LMI on the relationship between country governance indicators and Z_Score have similarities and dissimilarities. In other words, the moderating effects of UMI occasionally match with HI but contradict with LMI and vice versa or sometimes contradict both.

Table 29: Summary of direct and moderating effects analysis

Relationship between	Direct effect		Moderating effect of					
			HI		UMI		LMI	
lnCCI and ROA	N	H_{1a1}	P***	H_{3a1}	P***	H_{3b1}	N**	H_{3c1}
lnGEI and ROA	N***	H_{1a2}	P***	H_{3a2}	P*	H_{3b2}	N**	H_{3c2}
lnRQI and ROA	N**	H_{1a3}	P***	H_{3a3}	P	H_{3b3}	P	H_{3c3}
lnRLI and ROA	N	H_{1a4}	P**	H_{3a4}	P	H_{3b4}	N	H_{3c4}
lnPSAVTI and ROA	N/P	H_{1a5}	P	H_{3a5}	P	H_{3b5}	N	H_{3c5}
lnVAI and ROA	P	H_{1a6}	P	H_{3a6}	P*	H_{3b6}	N	H_{3c6}
lnCCI and ROE	N	H_{1b1}	P**	H_{3d1}	P***	H_{3e1}	N	H_{3f1}
lnGEI and ROE	N**	H_{1b2}	P***	H_{3d2}	P***	H_{3e2}	N**	H_{3f2}
lnRQI and ROE	N*	H_{1b3}	P***	H_{3d3}	P	H_{3e3}	N*	H_{3f3}
lnRLI and ROE	N	H_{1b4}	P	H_{3d4}	P***	H_{3e4}	N	H_{3f4}
lnPSAVTI and ROE	P	H_{1b5}	N**	H_{3d5}	P***	H_{3e5}	N	H_{3f5}
lnVAI and ROE	P***	H_{1b6}	N*	H_{3d6}	P***	H_{3e6}	N	H_{3f6}
lnCCI and NIM	N	H_{1c1}	N	H_{3g1}	P*	H_{3h1}	P***	H_{3i1}
lnGEI and NIM	N	H_{1c2}	N**	H_{3g2}	P*	H_{3h2}	P***	H_{3i2}
lnRQI and NIM	N	H_{1c3}	N***	H_{3g3}	P***	H_{3h3}	P***	H_{3i3}
lnRLI and NIM	N	H_{1c4}	N***	H_{3g4}	P**	H_{3h4}	P***	H_{3i4}
lnPSAVTI and NIM	N**/P	H_{1c5}	N**	H_{3g5}	P**	H_{3h5}	P	H_{3i5}
lnVAI and NIM	P***	H_{1c6}	N**	H_{3g6}	P**	H_{3h6}	P	H_{3i6}
lnCCI and NPL	N**	H_{2a1}	N***	H_{4a1}	N	H_{4b1}	P***	H_{4c1}
lnGEI and NPL	N	H_{2a2}	N**	H_{4a2}	N	H_{4b2}	P***	H_{4c2}
lnRQI and NPL	N**	H_{2a3}	N**	H_{4a3}	P	H_{4b3}	P***	H_{4c3}
lnRLI and NPL	N***	H_{2a4}	N**	H_{4a4}	P	H_{4b4}	P***	H_{4c4}
lnPSAVTI and NPL	N**	H_{2a5}	N	H_{4a5}	P	H_{4b5}	N	H_{4c5}
lnVAI and NPL	P/N	H_{2a6}	P	H_{4a6}	P	H_{4b6}	P	H_{4c6}
lnCCI and Z_Score	P	H_{2b1}	N	H_{4d1}	N***	H_{4e1}	P**	H_{4f1}
lnGEI and Z_Score	P	H_{2b2}	P***	H_{4d2}	N***	H_{4e2}	P	H_{4f2}
lnRQI and Z_Score	P*	H_{2b3}	P***	H_{4d3}	N***	H_{4e3}	P*	H_{4f3}
lnRLI and Z_Score	N	H_{2b4}	P	H_{4d4}	N***	H_{4e4}	P***	H_{4f4}
lnPSAVTI and Z_Score	N*	H_{2b5}	N	H_{4d5}	N*	H_{4e5}	P	H_{4f5}
lnVAI and Z_Score	P	H_{2b6}	N*	H_{4d6}	N	H_{4e6}	P**	H_{4f6}

Note(s): N stands for negative association. P stands for positive association. ***, ** and * denote associations are significant at 1%, 5% and 10% level of significance. H stands for hypothesis.

4.6.2 Summary of hypotheses tests

This study has four main hypotheses, and under those four hypotheses, several sub-hypotheses are developed for each country's governance indicator for profitability indicators and financial stability. The respective sub-hypotheses support the main

hypotheses. This study reports that no main hypothesis is fully supported by all the sub-hypotheses under each main hypothesis. Although the regression outputs of sub-hypotheses partially support all the main hypotheses, mixed impacts are discovered (refer to Table 29). Table 30 summarizes the main hypotheses and how sub-hypotheses support the main hypotheses. This study has several hypotheses in three levels: level one H_1 , level two H_{1a} , and level three H_{1a1} . Level three hypotheses are accepted or rejected if associated p-values are less than 0.1. Meanwhile, the second-level hypothesis is a composite form of third-level hypotheses, partially supported if at least one of the third-level hypotheses is supported under each second-level hypothesis. At the same time, the first level (main) hypothesis is considered partially supported if one of the third level hypotheses under the respective first level hypothesis is supported by p-value.

To conclude the first- and second-level hypotheses, this study follows the steps of Tran et al. (2023). Tran et al. (2023) concluded that country governance has an overall impact on bank financial stability based on the individual effect of each country's governance indicator. If any of the six-country governance indicators significantly affect profitability or financial stability indicators, it is considered that the country governance has an effect on the same. Likewise, Eldomiaty et al. (2023), Kamarudin et al. (2022), and Khan et al. (2023) also highlighted the effect of country governance based on the individual impact of each governance indicator.

Table 30: Summary of hypotheses testing for direct and moderating effect

No. of hypothesis	Hypotheses	Supporting sub-hypotheses
<i>H₁</i>	Country governance indicators significantly affect the profitability of commercial banks.	H _{1a2} , H _{1a3} , H _{1b2} , H _{1b3} , H _{1b6} , H _{1c5} , H _{1c6}
<i>H_{1a}</i>	Country governance indicators significantly affect ROA.	H _{1a2} , H _{1a3}
<i>H_{1b}</i>	Country governance indicators significantly affect ROE.	H _{1b2} , H _{1b3} , H _{1b6}
<i>H_{1c}</i>	Country governance indicators significantly affect NIM.	H _{1c5} , H _{1c6}
<i>H₂</i>	Country governance indicators significantly affect the financial stability of commercial banks.	H _{2a1} , H _{2a3} , H _{2a4} , H _{2a5} , H _{2b3} , H _{2b5}
<i>H_{2a}</i>	Country governance indicators significantly affect NPL.	H _{2a1} , H _{2a3} , H _{2a4} , H _{2a5}
<i>H_{2b}</i>	Country governance indicators significantly affect Z Score.	H _{2b3} , H _{2b5}
<i>H₃</i>	A country's income level significantly moderates the relationship between country governance indicators and the profitability of commercial banks.	H _{3a1} to H _{3a4} , H _{3b1} , H _{3b2} , H _{3b6} , H _{3c1} , H _{3c2} , H _{3d1} , H _{3d2} , H _{3d3} , H _{3d5} , H _{3d6} , H _{3e1} , H _{3e2} , H _{3e4} , H _{3e5} , H _{3e6} , H _{3f2} , H _{3f3} , H _{3g2} to H _{3g6} , H _{3h1} to H _{3h6} , H _{3i1} to H _{3i4}
<i>H_{3a}</i>	A country's HI significantly moderates the relationship between country governance indicators and ROA.	H _{3a1} to H _{3a4}
<i>H_{3b}</i>	A country's UMI significantly moderates the relationship between country governance indicators and ROA.	H _{3b1} , H _{3b2} , H _{3b6}
<i>H_{3c}</i>	A country's LMI significantly moderates the relationship between country governance indicators and ROA.	H _{3c1} , H _{3c2}
<i>H_{3d}</i>	A country's HI significantly moderates the relationship between country governance indicators and ROE.	H _{3d1} , H _{3d2} , H _{3d3} , H _{3d5} , H _{3d6}
<i>H_{3e}</i>	A country's UMI significantly moderates the relationship between country governance indicators and ROE.	H _{3e1} , H _{3e2} , H _{3e4} , H _{3e5} , H _{3e6}
<i>H_{3f}</i>	A country's LMI significantly moderates the relationship between country governance indicators and ROE.	H _{3f2} , H _{3f3}
<i>H_{3g}</i>	A country's HI significantly moderates the relationship between country governance indicators and NIM.	H _{3g2} to H _{3g6}
<i>H_{3h}</i>	A country's UMI significantly moderates the relationship between country governance indicators and NIM.	H _{3h1} to H _{3h6}
<i>H_{3i}</i>	A country's LMI significantly moderates the relationship between country governance indicators and NIM.	H _{3i1} to H _{3i4}
<i>H₄</i>	A country's income level moderates the relationship between the country's governance indicators and the financial stability of commercial banks.	H _{4a1} to H _{4a4} , H _{4c1} to H _{4e4} , H _{4d2} , H _{4d3} , H _{4d6} , H _{4e1} to H _{4e5} , H _{4f1} , H _{4f3} , H _{4f4} , H _{4f6}
<i>H_{4a}</i>	A country's HI significantly moderates the relationship between country governance indicators and NPL.	H _{4a1} to H _{4a4}
<i>H_{4b}</i>	A country's UMI significantly moderates the relationship between country governance indicators and NPL.	Not supported
<i>H_{4c}</i>	A country's LMI significantly moderates the relationship between country governance indicators and NPL.	H _{4c1} to H _{4c4}
<i>H_{4d}</i>	A country's HI significantly moderates the relationship between country governance indicators and Z Score.	H _{4d2} , H _{4d3} , H _{4d6}
<i>H_{4e}</i>	A country's UMI significantly moderates the relationship between country governance indicators and Z Score.	H _{4e1} to H _{4e5}
<i>H_{4f}</i>	A country's LMI significantly moderates the relationship between country governance indicators and Z Score.	H _{4f1} , H _{4f3} , H _{4f4} , H _{4f6}

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter includes the overall findings of this study and its theoretical and practical contributions, implications of the findings, limitations of this study, and direction for the researchers to conduct further studies.

5.2 Summary of the findings

This study is designed to measure how country governance indicators affect the overall profitability and financial stability of banks at the national level, as well as how a Country's Income Level (CIL) (High-Income (HI), Upper-Middle-Income (UMI), and Lower-Middle-Income (LMI)) moderates the association between country governance indicators and the profitability and financial stability of commercial banks. From the regression analysis of six country governance indicators, only the Natural Log of Government Effectiveness Index (lnGEI) and Natural Log of Regulatory Quality Index (lnRQI) have a significant negative association with Return on Assets (ROA). However, the Natural Log of Voice and Accountability Index (lnVAI) has an insignificant positive association with the same. Similarly, lnGEI and lnRQI have a statistically significant negative association with Return on Equity (ROE), while lnVAI has a statistically significant positive association.

Similarly, improvements in the Natural Log of Control of Corruption Index (lnCCI), lnGEI, lnRQI, and Natural Log of Rule of Law Index (lnRLI) significantly reduce the Net Interest Margin (NIM) of commercial banks. Meanwhile, the Natural Log of Political Stability and Violence/Terrorism Index (lnPSAVTI) has a significant negative association with NIM, while lnVAI has a significant positive association with NIM. Of the six-country governance indicators, lnCCI, lnGEI, lnRQI, and lnRLI have significant and insignificant negative associations with three profitability indicators of commercial banks. In particular, the impacts of lnPSAVTI on profitability indicators are varied. That is, only lnVAI has a significant and insignificant positive association with the same. Eventually, according to research objective one, this study discovers that the effect of country governance indicators on the profitability of commercial banks is mixed. This suggests a negative association of most country governance indicators with profitability indicators.

This study notes that lnCCI, lnRQI, lnRLI, and lnPSAVTI have statistically significant negative relationships with NPL, while lnGEI and lnVAI have statistically insignificant relationships with the same. That is, progress in CCI, RQI, RLI, and PSAVTI significantly reduces the NPL of commercial banks. This study also highlights that only lnRQI has a marginally significant positive relationship with Z_Score. In contrast, lnCCI, lnGEI, and lnVAI have insignificant positive associations with Z_Score, while lnRLI and lnPSAVTI have insignificant negative associations. That is, four-country governance indicators have a positive impact, and two have a negative effect on financial stability. According to research objective two, the overall impact of country governance on the financial stability of commercial banks is mixed, although mostly statistically insignificant. Hence, country governance plays a

significant role in controlling the NPL of commercial banks, except for lnVAI. Moreover, although lnPSAVTI reduces NPL (favorable for financial stability), it reduces Z_Score as well (unfavorable for financial stability). In summary, the impacts of country governance indicators on profitability (mostly negative) and financial stability (mostly positive) are mixed.

The impact of the country's HI on ROA is negative and statistically significant. However, the same significantly weakens or reverses the negative relationship between lnGEI and ROA, lnRQI and ROA, and lnRLI and ROA, as well as strengthens the positive relationship between lnCCI and ROA, indicating significant positive moderating effects. The impact of the country's UMI on ROA is statistically insignificant. Still, the same significantly weakens or reverses the negative relationship between lnCCI and ROA, as well as lnGEI and ROA. Nevertheless, the country's UMI strengthens (marginally significant) an insignificant positive association between lnVAI and ROA. On the other hand, although the country's LMI has a significant positive impact on ROA, it significantly weakens the positive relationship between lnCCI and ROA and strengthens the negative relationship between lnGEI and ROA.

This study also reports that the country's HI significantly reduces ROE. However, it significantly strengthens the positive relationship between lnCCI and ROE and weakens or reverses the negative relationship between lnGEI and ROE, as well as lnRQI and ROE. On the other hand, the same significantly weakens or reverses the positive relationship between lnPSAVTI and ROE and lnVAI and ROE. The country's UMI has an insignificant negative impact on ROE. Nevertheless, it significantly weakens or reverses the negative relationship between lnCCI and ROE, lnGEI and

ROE, and $\ln RLI$ and ROE. On the contrary, the same significantly strengthens the positive relationship between $\ln PSAVTI$ and ROE and $\ln VAI$ and ROE. In contrast to the HI and UMI, the country's LMI significantly increases ROE. However, the same significantly strengthens the negative relationship between $\ln GEI$ and ROE and $\ln RQI$ and ROE.

The country's HI significantly reduces NIM and strengthens the negative relationship between $\ln GEI$ and NIM, $\ln RQI$ and NIM, and $\ln RLI$ and NIM. However, the country's HI significantly weakens the positive relationship between $\ln PSAVTI$ and NIM and $\ln VAI$ and NIM. On the other hand, the country's UMI has a significant positive impact on NIM and significantly weakens or reverses the negative relationship between $\ln CCI$ and NIM, $\ln GEI$ and NIM, $\ln RQI$ and NIM, as well as $\ln RLI$ and NIM. Moreover, it significantly strengthens the positive relationship between $\ln PSAVTI$ and NIM and $\ln VAI$ and NIM. Similarly, the country's LMI has a significant positive impact on NIM and significantly weakens or reverses the negative relationship between $\ln CCI$ and NIM, $\ln GEI$ and NIM, $\ln RQI$, and NIM, as well as $\ln RLI$ and NIM at a reduced significance level than those of UMI countries. According to objective three, the moderating effects of the country's HI, UMI, and LMI are mixed. In moderating effect analysis, this study discovers that with the increases in the CIL, the negative effects of the country's governance indicators on ROA and ROE are weakened, or the positive impacts of the same are strengthened in most cases. However, reverse situations have been reported for NIM.

This study adds that the country's HI significantly reduces NPL and significantly strengthens the significant negative relationship between $\ln CCI$ and NPL, $\ln GEI$ and

NPL, lnRQI and NPL, lnRLI and NPL, and lnPSAVTI and NPL. However, the impact of UML on NPL is statistically insignificant, and this study does not observe any significant moderating effect on the relationship between country governance indicators and the NPL of commercial banks. On the other hand, the country's LMI significantly increases NPL and significantly weakens or reverses the significant negative relationship between lnCCI and NPL, lnGEI and NPL, lnRQI and NPL, as well as lnRLI and NPL. Accordingly, the moderating effects of LMI on the relationship between lnPSAVTI and NPL and lnVAI and NPL are statistically insignificant.

This study also notes a significant positive impact of the country's HI on the financial stability of commercial banks, and the same significantly strengthens the positive relationship between lnCCI and Z_Score as well as lnRQI and Z_Score. However, it significantly weakens the negative relationship between lnGEI and Z_Score and the positive association between lnVAI and Z_Score. The country's UMI has an insignificant positive impact on the financial stability of commercial banks but significantly weakens or reverses the positive association between lnCCI and Z_Score, lnGEI and Z_Score, lnRQI and Z_Score. Moreover, it significantly strengthens the negative relationship between lnRLI and Z_Score and lnPSAVTI and Z_Score. The impact of LMI on Z_Score is statistically insignificant but significantly strengthens the positive relationship between lnCCI and Z_Score, lnRQI and Z_Score, and lnRLI and Z_Score. Despite that, it significantly weakens the negative relationship between lnVAI and Z_Score. According to research objective four, the country's HI, UMI, and LMI demonstrate significant and insignificant mixed moderating effects on the relationship between country governance and financial stability indicators. If the CIL

drops, the favorable impact of country governance indicators on controlling NPL will be reduced and vice versa. A similar trend is observed for Z_Score in HI and UMI countries; however, the moderating effect of LMI is favorable for commercial banks' financial stability in LMI countries.

To summarize, this study concludes that improvement in country governance is highly effective in controlling the NPL of commercial banks. Country governance indicators have significant mixed effects on profitability indicators. On the other hand, only RQI has a marginally significant positive impact on the financial stability of banks. However, most governance indicators have an insignificant positive association with the financial stability of banks. This study also adds that the significant or insignificant positive or negative relationship between country governance indicators and commercial banks' profitability and financial stability are moderated positively or negatively due to a CIL significantly and insignificantly. That is, a CIL changes the nature of the relationship between the same. Therefore, to ensure sustainable growth of commercial banks, regulators and policymakers in HI, UMI, and LMI countries must revise the regulatory framework, policies, and rules that affect the whole banking sector.

5.3 Contribution of this study

The findings of this study will contribute to the existing theories and practice of governance in the banking sector. The theoretical contribution is that, unlike past studies, which suffer from the limited scope and geographical contexts generalizing the impact of country governance on the profitability and financial stability of

commercial banks, this study tries to overcome those limitations and generalize the impacts of country governance indicators on profitability and financial stability based on the available data of all the countries from the World Bank. This study indicates that improvement in some country governance indicators reduces commercial banks' profitability or revenue generation, and some increase the same. However, improvement in country governance is favorable for financial stability. Moreover, this study also contributes to the existing theory by demonstrating the moderating effect of the CIL on the relationship between country governance indicators and the profitability and financial stability of commercial banks. Although this study reveals that the country's higher income reduces commercial bank's profitability, it increases financial stability. In most cases, the country's higher income weakens the negative effect of better country governance on the profitability and financial stability of commercial banks and vice versa.

In addition to the theoretical contribution, the findings of this study have a practical contribution. This study suggests that most of the country's governance indicators have a favorable impact on financial stability but are unfavorable to the profitability of commercial banks. This study also highlights that the impacts of country governance indicators on profitability and financial stability are moderated by the country's HI, UMI, and LMI. That is, applying country governance tools will not be fruitful equally for the sustainable growth of commercial banks in those groups of countries. For example, emphasis on improving regulatory quality can be effective for financial stability in LMI countries; however, it reduces its favorable marginal impact in UMI countries. In line with this, these diversified findings will help regulators and policymakers in HI, UMI, and LMI countries formulate and implement various

effective macroeconomic and regulatory policies and rules to ensure the sustainable and balanced development of the banking sector. Furthermore, the findings of this study will also drive higher bank officials to negotiate with regulators and policymakers to upgrade macroeconomic and financial policies. This aims to reduce the negative impact of various country governance indicators on the profitability of commercial banks.

5.4 Implication of the findings

Going beyond macroeconomic and bank-specific factors-based investigation on the profitability and financial stability of commercial banks, this study notes that progress in country governance indicators plays an effective role in controlling overall NPL, increasing the financial stability of commercial banks. In contrast, the impact of the same on profitability is mixed, although the nature of the relationship becomes stronger or weaker and even reverses based on a CIL. This study proves that improving country governance does not equally affect commercial banks' profitability and financial stability in HI, UMI, and LMI countries. Instead, their impacts vary based on a particular context. Moreover, the theoretical implication of these findings is that they will guide and motivate researchers to conduct further studies exploring the effects of country governance indicators on the profitability and financial stability of commercial banks in various contexts, such as private and public commercial banks, Islamic and conventional banks, and geographical areas, to name a few.

In addition to theoretical implications, the findings of this study have practical implications. The study reveals that the impacts of most of the country's governance

indicators are unfavorable for profitability indicators but favorable for NPL and financial stability. However, steady profitability is also crucial for the financial stability of commercial banks in the long run. Moreover, this study also expresses that the CILs moderate the impacts of improving country governance on profitability and financial stability. Since the impact of country governance indicators on profitability and financial stability is diverse, the government and its various regulatory and policymaking bodies can utilize these findings to critically identify which elements under each country governance indicator are harmful to the steady profitability and financial stability of commercial banks. They can also formulate and implement various better financial and regulatory frameworks, rules, and policies to tradeoffs between favorable and unfavorable impacts for the sustainable development of this banking sector.

Likewise, some international organizations, e.g., the World Bank, International Monetary Fund (IMF), and Asian Development Bank (ADB), can benefit from these findings to provide policy guidance to the governments in HI, UMI, and LMI countries. This can help enhance the financial strength of this sector and stimulate the country's overall financial development. Furthermore, the government formulates policies and regulations for the betterment of all stakeholders. However, some policies, rules, and regulations can seriously weaken the financial strength of commercial banks. Thus, the findings of this study will guide higher bank officials in those groups of countries to find out those unfavorable policies, rules, and regulations to negotiate with the governments and their regulatory bodies.

5.5 Limitations of the study and future research direction

This study uses country-level data from the World Bank, not bank-level data on the profitability and financial stability indicators, to measure the impact of a country's governance indicators on the same. Notably, most countries have several types of banks, such as state-owned and private commercial banks, investment banks, conventional and Islamic banks, and domestic and foreign banks, amongst others. Correspondingly, this study measures the overall impact of country governance on the commercial bank industry without controlling its nature or types of banks. That is, the effect of country governance indicators on conventional banks might differ from that of Islamic banks. Similarly, the impact of the same on government commercial banks might vary from that of private commercial banks.

Although the findings from this study are significant for macroeconomic and regulatory policy formulation and implementation, they still suffer from not controlling all those contextual issues. In the future, researchers can extend this study or part of this study to demonstrate the impact of country governance indicators on the financial performance indicators of banks by controlling the above-mentioned contextual issues. Furthermore, future studies may be conducted to illustrate how those contextual issues, based on country-specific contextual importance, moderate the relationship between country governance indicators and the financial performance of banks.

5.6 Chapter summary

This chapter briefly details that country governance indicators have a mixed impact on the various financial performance indicators of banks, and this nature of relationship strengthens, weakens, or reverses due to a CIL. Accordingly, the study's findings have theoretical and practical contributions to the banking sector's governance. Simultaneously, the theoretical and practical implications of the findings are explained for the banking sector's betterment. Moreover, this chapter explains the limitations of this study and mentions some relevant contexts in which future studies can be conducted.

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APPENDICES

Appendix A

The list of countries included in the sample

High-income countries		
Australia	Hungary	Poland
Austria	Iceland	Portugal
Bahrain	Ireland	Saudi Arabia
Barbados	Israel	Seychelles
Belgium	Italy	Singapore
Canada	Japan	Slovak Republic
Chile	Korea, Rep.	Slovenia
Cyprus	Kuwait	Spain
Czech Republic	Latvia	Sweden
Denmark	Lithuania	Switzerland
Estonia	Luxembourg	Trinidad and Tobago
Finland	Macao SAR, China	United Arab Emirates
France	Malta	United Kingdom
Germany	Netherlands	United States
Greece	New Zealand	Uruguay
Hong Kong SAR, China	Norway	
Upper-middle-income countries		
Albania	Fiji	North Macedonia
Argentina	Gabon	Panama
Armenia	Georgia	Paraguay
Azerbaijan	Guatemala	Peru
Belarus	Iraq	Romania
Bosnia and Herzegovina	Jordan	Russian Federation
Botswana	Kazakhstan	South Africa
Brazil	Lebanon	Thailand
Bulgaria	Malaysia	Turkiye
China	Maldives	
Colombia	Mauritius	
Costa Rica	Mexico	
Dominican Republic	Moldova	
Ecuador	Montenegro	
Equatorial Guinea	Namibia	
Lower-middle-income countries		
Algeria	Eswatini	Nigeria
Angola	Ghana	Pakistan
Bangladesh	Honduras	Philippines
Bhutan	India	Sri Lanka
Bolivia	Indonesia	Tajikistan
Cambodia	Kenya	Tanzania
Cameroon	Kyrgyz Republic	Tunisia
Djibouti	Lesotho	Ukraine
Egypt, Arab Rep.	Nepal	Uzbekistan
El Salvador	Nicaragua	Vietnam

Appendix B

OLS estimation for VIF test for each DV

Table B1: Outputs of OLS estimation for VIF test

Variables	(1) NPL	(2) ROA	(3) ROE	(4) NIM	(5) Z SCORE
lnCCI	-1.604*** (0.001)	0.277*** (0.000)	1.953** (0.002)	0.266* (0.039)	3.399*** (0.000)
lnGEI	-1.456** (0.003)	-0.342*** (0.000)	-2.514*** (0.000)	-0.870*** (0.000)	-4.015*** (0.000)
lnRQI	-0.947* (0.039)	-0.0682 (0.365)	-1.120 (0.061)	0.214 (0.097)	2.026* (0.022)
lnRLI	1.336* (0.011)	-0.00546 (0.949)	0.945 (0.162)	-1.467*** (0.000)	-1.723 (0.087)
lnPSAVT	-1.959*** (0.000)	0.0538 (0.462)	0.975 (0.091)	0.350** (0.001)	0.705 (0.406)
lnVAI	1.250*** (0.000)	0.0989 (0.060)	0.953* (0.021)	0.587*** (0.000)	-1.307* (0.032)
BCTA	0.104** (0.007)	0.0540*** (0.000)	-0.379*** (0.000)	0.155*** (0.000)	-0.405*** (0.000)
BCIR	-0.00494 (0.617)	-0.0378*** (0.000)	-0.335*** (0.000)	-0.0326*** (0.000)	-0.0598** (0.003)
BOCTA	-0.0446 (0.303)	0.237*** (0.000)	2.002*** (0.000)	0.600*** (0.000)	-0.0730 (0.382)
GDPG	-0.128*** (0.000)	0.0394*** (0.000)	0.322*** (0.000)	0.00487 (0.440)	0.127* (0.014)
IR	0.0389 (0.051)	-0.00690* (0.034)	0.0293 (0.406)	0.0120 (0.067)	-0.0646 (0.084)
C_19D2	-1.080*** (0.001)	-0.0276 (0.598)	-0.658 (0.112)	-0.223** (0.003)	0.158 (0.799)
CONS	6.923*** (0.000)	1.888*** (0.000)	25.06*** (0.000)	2.528*** (0.000)	23.42*** (0.000)
N	1252	1287	1279	1242	1256
R-sq	0.202	0.508	0.441	0.801	0.062

Note (s): P-values in parentheses. ***, ** and * represent correlation coefficients are significant at 1%, 5% and 10% level of significance.

Appendix C

Augmented component-plus-residual plot on the relationship between country governance indicators and dependent variables.

Appendix C1: Outputs of augmented component-plus-residual plots to show whether the relationship between ROA and country governance indicators is linear or nonlinear

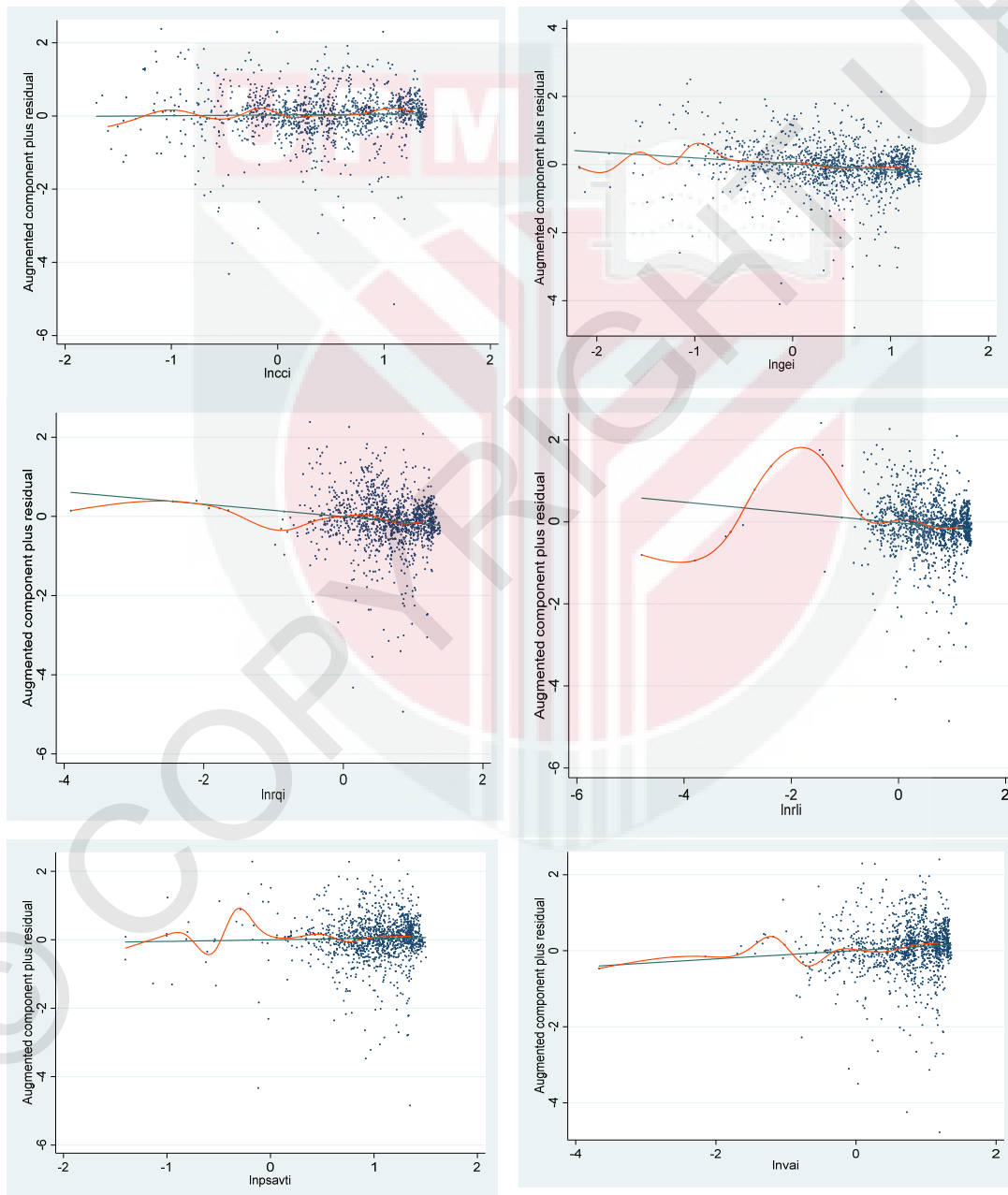


Figure 10: Augmented component-plus-residual plots for ROA

Appendix C2: Outputs of augmented component-plus-residual plots to show whether the relationship between ROE and country governance indicators is linear or nonlinear

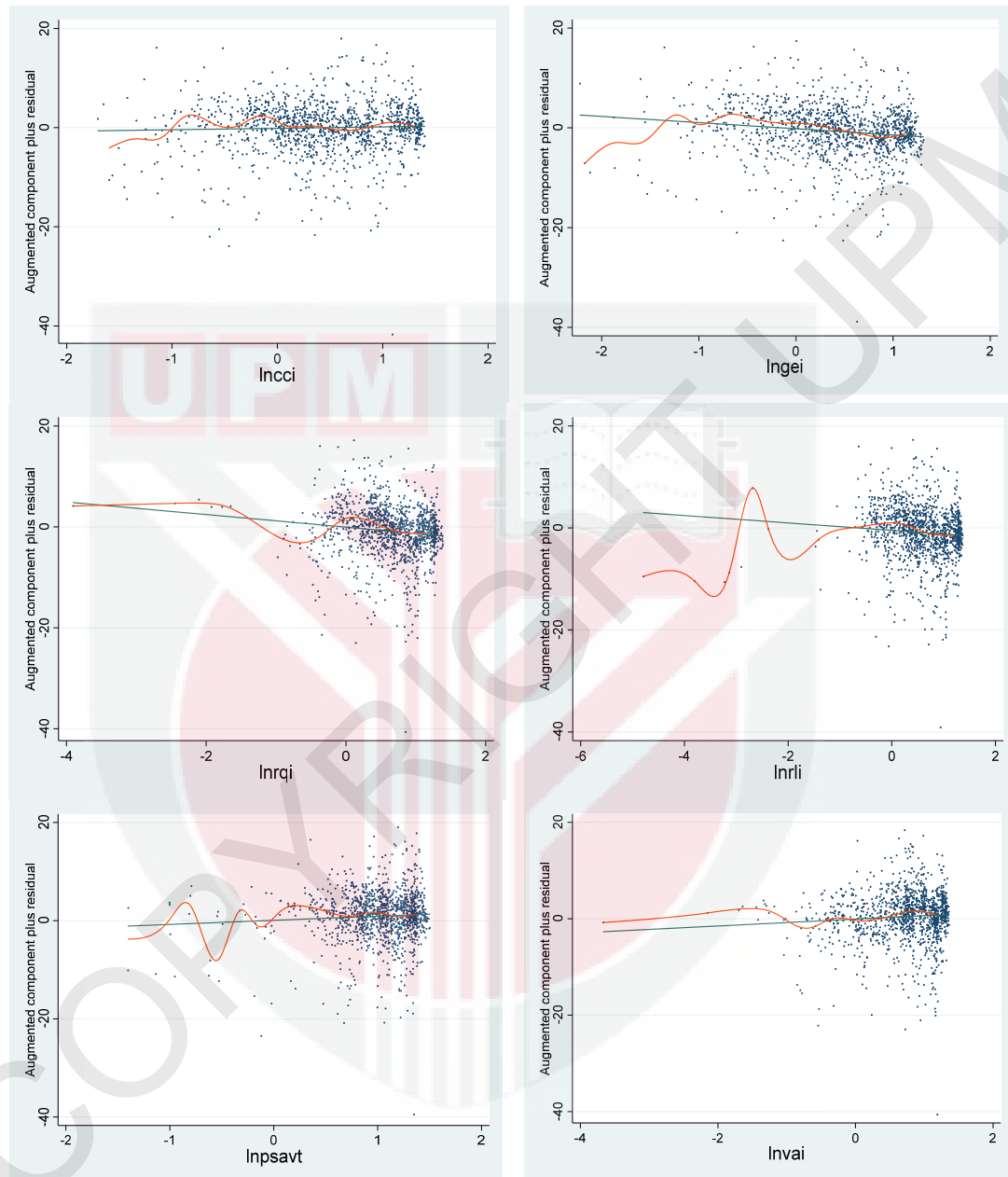


Figure 11: Augmented component-plus-residual plots for ROE

Appendix C3: Outputs of augmented component-plus-residual plots to show whether the relationship between NIM and country governance indicators is linear or nonlinear

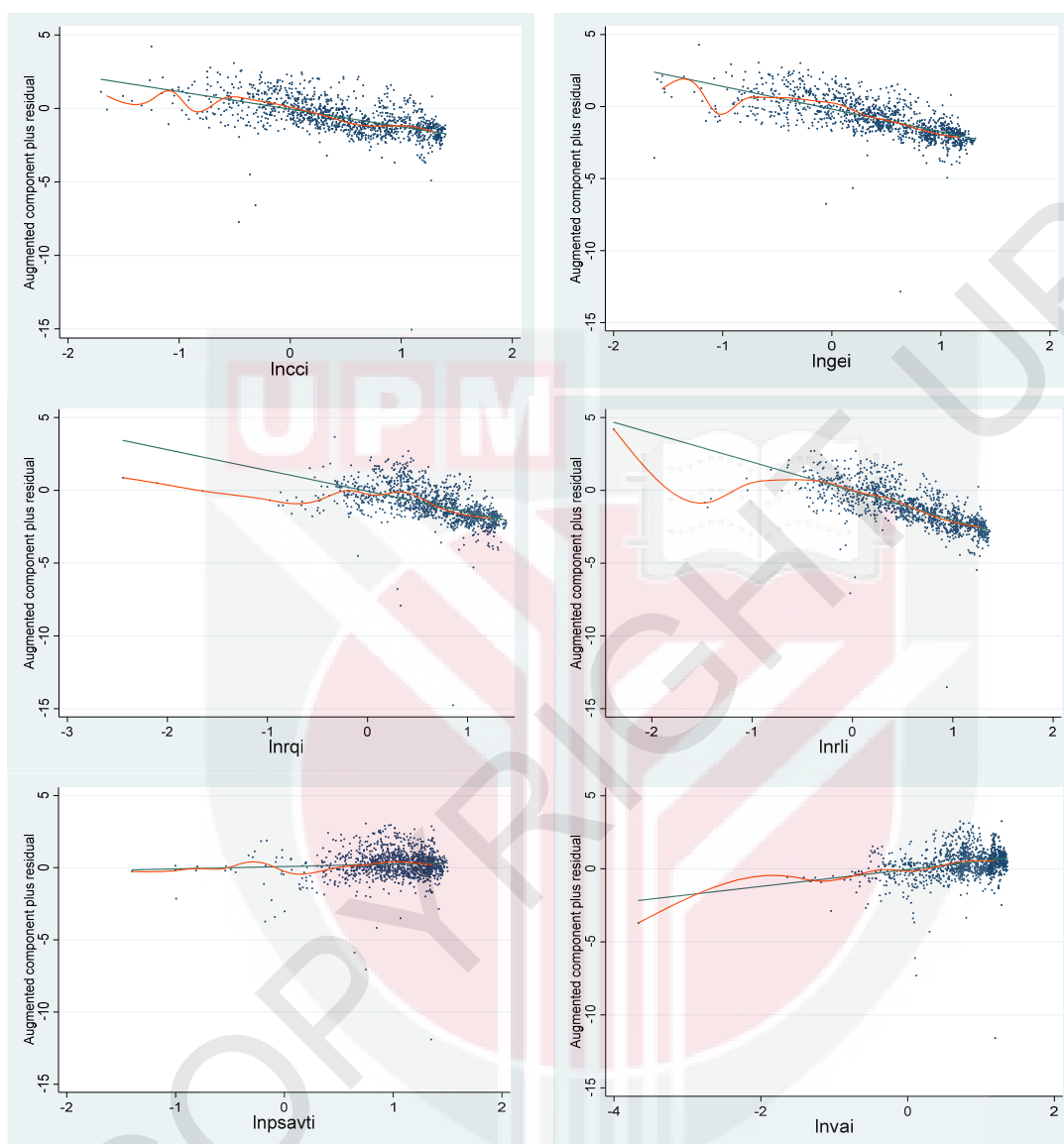


Figure 12: Augmented component-plus-residual plots for NIM.

Appendix C4: Outputs of augmented component-plus-residual plots to show whether the relationship between NPL and country governance indicators is linear or nonlinear

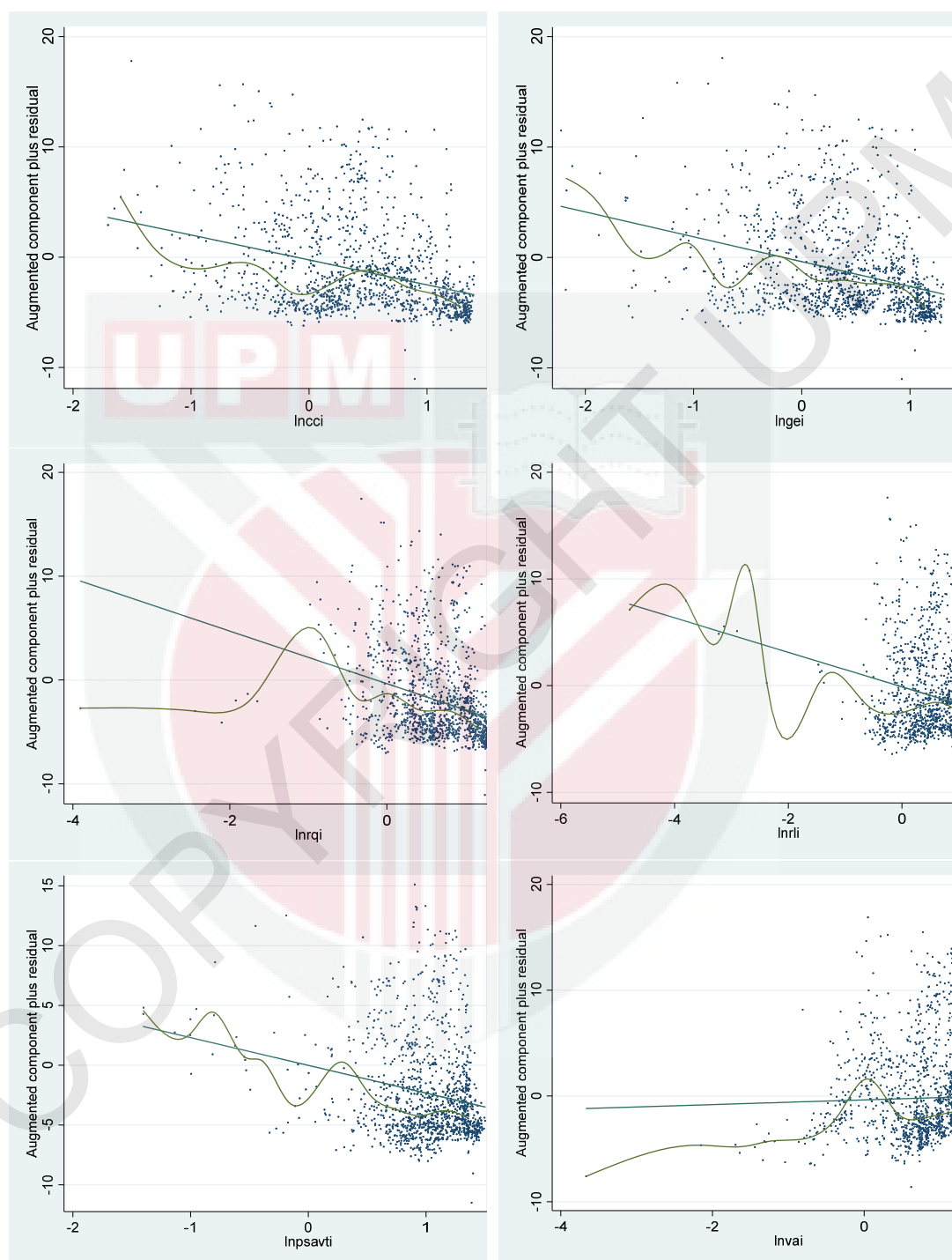


Figure 13: Augmented component-plus-residual plots for NPL

Appendix C5: Outputs of augmented component-plus-residual plots to show whether the relationship between Z_Score and country governance indicators is linear or nonlinear

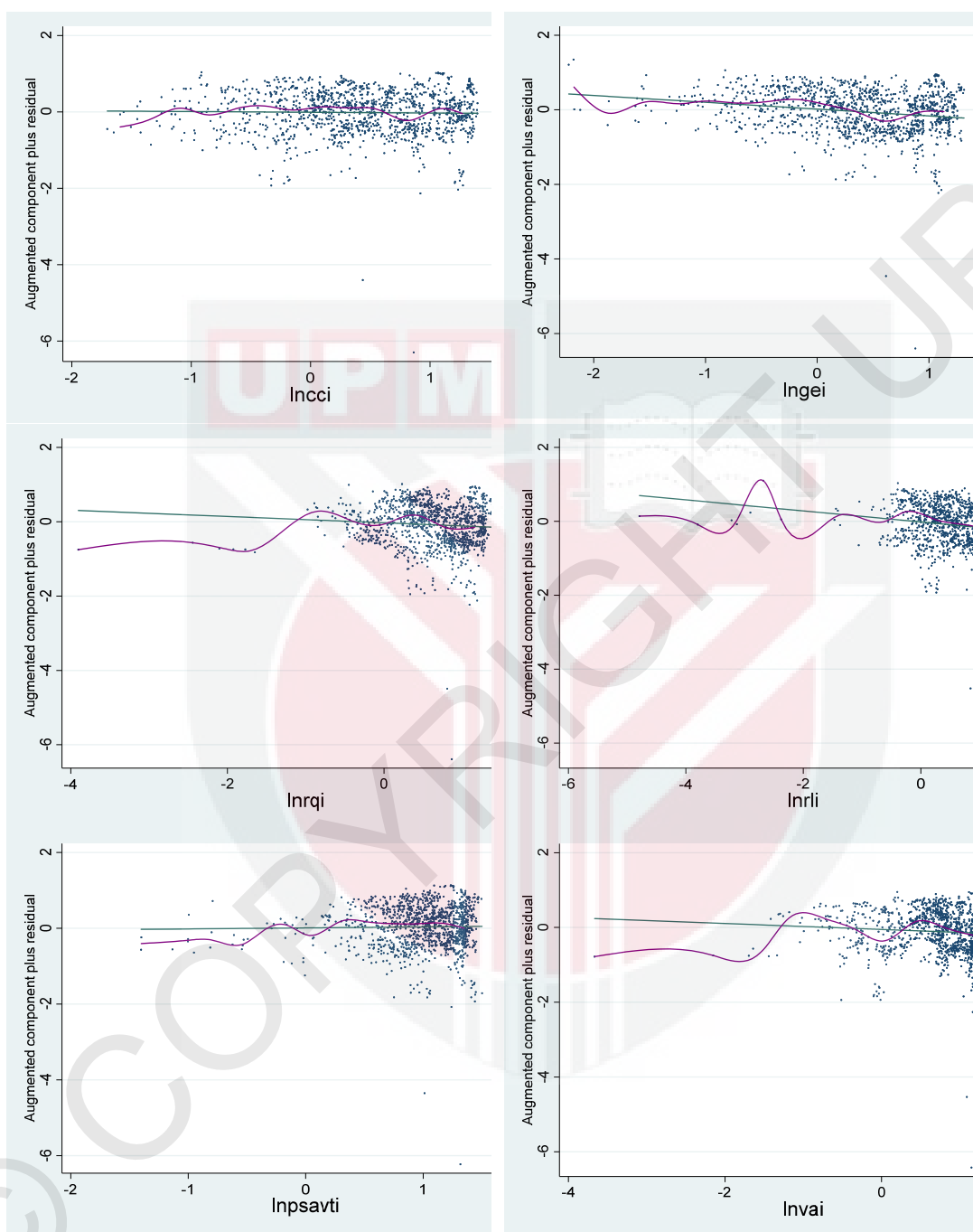


Figure 14: Augmented component-plus-residual plots for Z_Score.

BIODATA OF STUDENT

Protap Kumar Ghosh is doing his Ph.D. at the School of Business and Economics, University Putra Malaysia. Before that, he did his Bachelor of Business Administration and Master of Business Administration in Accounting and Information Systems from the University of Rajshahi, Bangladesh. After that, he earned his Postgraduate Diploma in Research Methods and Skills from the Maastricht School of Management in the Netherlands. He has some research publications in peer-reviewed journals. Mr. Ghosh has been working as a full-time faculty member at Business Administration Discipline, Khulna University, Bangladesh, since November 2009.

LIST OF PUBLICATIONS

Published

Ghosh, P. K., Kharuddin, S. B., & Kamarudin, F. B. (2024). Country governance nexus with the financial stability of banks: The moderating effect of country's income level. *Eurasian Journal of Business and Economics*, 17(34), 141-165. (SCOPUS indexed)

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Submitted

Ghosh, P. K., Kamarudin, F. B., & Kharuddin, S. B. (2024). Country Governance Nexus with Non-Performing Loans: Higher vs. Lower Quality Country Governance. *Journal of Economic and Administrative Sciences*. (JCR and SCOPUS indexed)

Ghosh, P. K., Kamarudin, F. B., & Kharuddin, S. B. (2024). Impacts of Country's Regulatory System on Non-Performing Loans of Commercial Banks: Moderating Effect of Country's Income. *Economics and Business Review*. (JCR and SCOPUS indexed)