Theoretical and Practical Research in Economic Fields

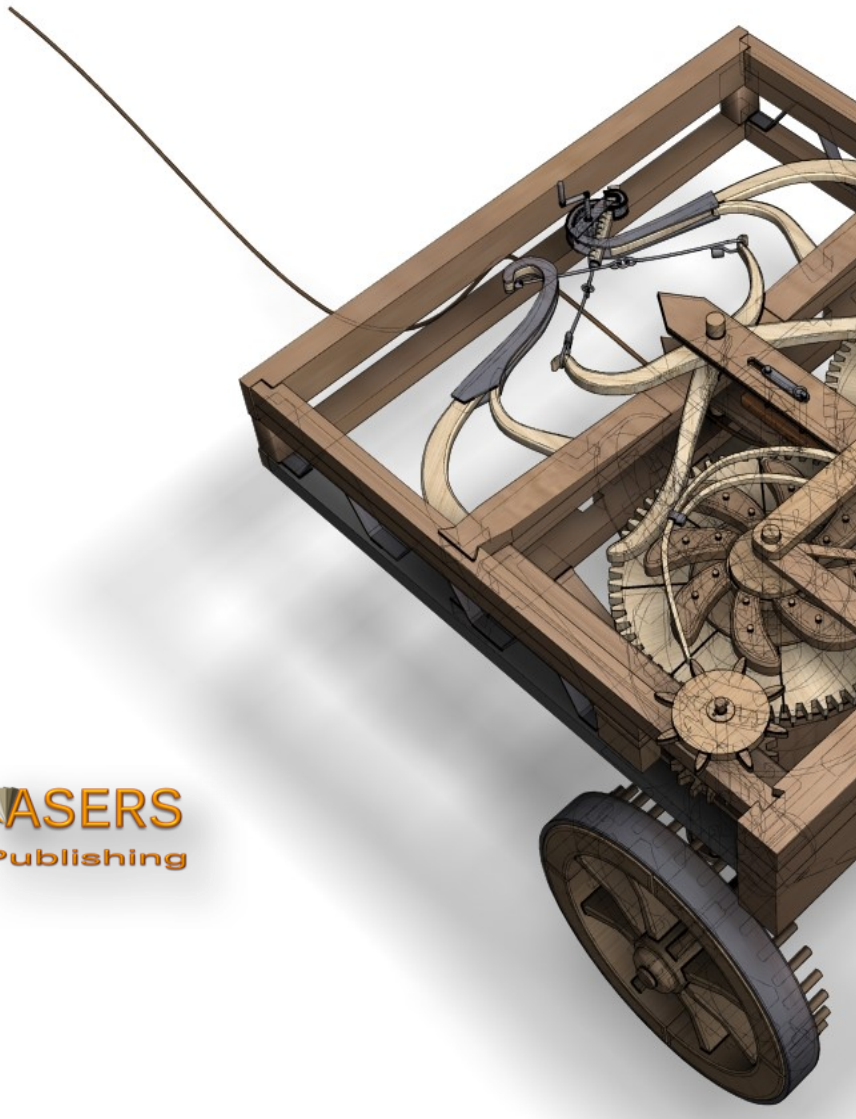

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Table of Contents

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Study on the Liability Structure and Profitability of the Banking Industry in the Asia-Pacific Region

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Abstract: *This study investigates the relationship between the profitability and liability structure of commercial banks within six Asia-Pacific countries (China, India, Australia, Japan, South Korea, and Singapore), by analyzing annual data from BankFocus for 691 banks from 2013 to 2022. The central focus of this research is to explore the impact of banks' liability structure - highlighting passive liabilities, interbank borrowing, and bond issuance - on critical profitability indicators, specifically Return on Equity (ROE) and Tier 1 Ratio (T1R). This research employs panel data analysis alongside Hausman-tested. Our findings discover the roles that passive liabilities and bond issuance play in strengthening banks' core capital and enhancing profitability. Additionally, the impact of bank deposit and borrowing services on profitability and capital across developed and developing nations within the Asia-Pacific region. The study offers practical suggestions for the banking sector, emphasizing the need for improved liability management to boost profitability. These recommendations, backed by thorough empirical research and robustness checks, provide a solid foundation for strategic policy and planning in the sector.*

Keywords: liability structure; commercial bank profitability; return on equity; tier 1 capital ratio; heterogeneity analys.

JEL Classification: G21; G28; G32; R11.

Introduction

In the dynamic financial landscape characterized by fluctuating interest rates and economic downturns, commercial banks, particularly in the Asia-Pacific region, play a pivotal role as essential financial intermediaries with sophisticated credit mediation capabilities (Ahanaf, Saima, Zobayer, Sipahi, and Kalam 2023). The development and critical characteristics of the banking sector are crucial to understanding the substantial

economic growth of the Asia-Pacific region in the global economy (Antao and Karnik 2022). This region showcases economic diversification, with developed economies like Japan, South Korea, Singapore, and Australia on one end and emerging economies with controlled banking systems like China and India on the other. Commercial banks in the Asia-Pacific economic sphere face challenges, particularly in their asset-liability structure, which influences business management, risk management, and profitability. The structure of liabilities, fundamental to the operation of commercial banks, indicates the banks' funding sources and stability, thus significantly impacting their profits (Vo and Nguyen 2021). These institutions have encountered unprecedented risks due to international economic fluctuations, affecting their development and asset and liability structures. Consequently, a sensible capital structure is pivotal for improving commercial banks' operational conditions and profitability.

Historically, scholarly research acknowledges the influence of banks' passive liabilities, interbank borrowing, and bond issuance structure on their profitability and capital structure. For instance, Brock and Rojas-Suarez (2015) analyzed five Latin American countries in the 1990s using empirical techniques, highlighting how capital/assets, operational expenses/assets, and liquidity of short-term assets/total deposits play into bank interest income and impact profitability through the asset-liability structure. Similarly, Berger and Bouwman (2013) underscored the necessity of capital for small and medium-sized commercial banks to survive crises and recover swiftly. Altunbaş, Thornton, and Uymaz (2018) revealed that commercial banks with larger debt-to-asset ratios hold more value, even when their capital originates from deposits. This notion was further supported by Uchida and Satake (2009), who found that a higher proportion of deposit liabilities in the debt structure enhances cost efficiency for Japanese commercial banks.

Despite the valuable insights from existing research on bank liability structures, gaps remain. Limited studies address how liability arrangements influence banks in specific Asia-Pacific countries like Central Japan, South Korea, India, Singapore, and Australia and how factors beyond liquidity affect bank profitability and capital structure. Examining the effects of active and passive liabilities on the capital structure and profitability of the banking sector in two Asia-Pacific economies, this study seeks to fill these voids. It also investigates the moderating effect of bank liquidity on this relationship, answering the following research questions: (1) The influence of passive liabilities on capital structure and profitability; (2) The impact of interbank borrowing levels; (3) The influence of bond issuance structure; and (4) The moderating effect of bank liquidity on the variables above' effects.

This study substantially adds to the literature by investigating the causes and effects of active and passive liabilities on the APAC banking sector. It employs theoretical and empirical research from the financial markets to determine the impact of active and passive liabilities on bank capital structure and profitability. Commercial banks' risk management and operational decision-making can significantly benefit from the insights obtained. Furthermore, this study aids academics and practitioners in comprehending the relationship between bank liquidity and liability structure and elucidates how bank liquidity modulates profitability and capital adequacy. Specifically, this research addresses a critical gap in understanding how different liability management strategies impact the financial stability and performance of banks in the APAC region, a topic that has received limited attention despite its significant implications for the banking industry's resilience against financial crises and its ability to support regional economic growth.

1. Literature Review

In the Asia-Pacific's dynamic and diverse economic landscape, the banking sector's robust development is pivotal (Naiwei Chen, Hsin-Yu Liang and Min-Teh Yu, 2018). Understanding the issues that affect regional bank profitability and capital formation is essential for sound banking development. To explore the intricate relationship between commercial banks' liability structure and profitability, we analyse their liability structure and profitability indicators and constructs models to provide comprehensive insights. The liability framework of state-controlled commercial banks has traditionally been heavily reliant on deposits, with customer contributions driving passive liabilities. The cost of debt for these institutions, dependent on their liability structure, directly influences profitability (Han, 2023). Interest expenses in the liability cost structure are variable, contrasting with more static operational costs. Deposit growth is known to reduce operational costs, and some analysts believe banks with a higher deposit-fund ratio have better capital flow, enabling them to weather tough times effectively.

Significant literature demonstrates the impact of liability structures on the stability and profitability of commercial banks. Ratnoski and Huang (2009) observed that Canadian banks boast a high deposit assimilation rate and do not rely heavily on non-deposit routes, emphasizing that maintaining a reasonable deposit level benefits commercial banks' stability and liquidity. This notion is echoed in findings that banks with a reputation for

deposit reliance are more resilient during financial turmoil, with their stock values recovering rapidly, as Raddatz (2010) noted. On the other hand, Lopez-Espinosa *et al.* (2012) warned that balancing short-term financial instruments can lead to fund asset misalignment, potentially reducing bank profitability if the liability structure is not effectively controlled.

In the context of Asia-Pacific economies, the heavy reliance on deposits makes banks particularly vulnerable after economic shocks, lacking significant risk mitigation capabilities. However, Dagher and Kazimov (2012) observed that commercial banks focusing on non-deposit operations, due to their less stable resource base and higher risks, are worse prepared to weather a crisis. The research community generally agrees that passive liabilities, interbank borrowing, and bond issuance structure affect banks' profitability and capital structure. For instance, Berger and Bouwman (2013) stressed the necessity of capital for small and medium-sized commercial banks to survive crises and recover rapidly, a sentiment supported by Lepetit *et al.* (2008) who found that light-asset initiatives increase operational risks.

Empirical analysis and techniques have been employed to study the liability structure and its impact on profitability. Brock and Rojas-Suarez (2015) analyzed Latin American countries in the 1990s, focusing on how capital/assets, operational expenses/assets, and liquidity of short-term assets/total deposits impact bank interest income and the asset-liability structure's influence on profitability. Wang Hongli (2011) examined the effect of asset-liability structure on profitability among commercial banks, highlighting the direct impact of the asset-liability ratio, loan-to-deposit ratio, and asset magnitude on profitability. Han Bing (2014) delved into commercial banks' asset and liability management, focusing on the net interest margin and observing that commercial banks have a homogenized asset and liability structure, with state-owned organizations exhibiting a high deposit-to-loan ratio.

Asia-Pacific nations' various financial systems and phases of economic development highlight the region's economic diversity. Developed economies such as Japan, South Korea, Singapore, and Australia differ from emerging economies such as China and India, which have controlled financial systems. The divergent effects of liability structures on commercial banks in these nations are an indication of this diversity. Li and Zhu (2007) study divided liabilities into three groups: inactive, active, and settlement. They found that interbank loans, deposits, central bank loans, repurchase agreements, and certificates of deposit were the most common types of active liabilities.

Notwithstanding the significant contributions made by prior studies regarding bank liability structures, certain knowledge voids persist, specifically regarding the impact of liability arrangements on banks in Asia-Pacific nations such as Australia, Central Japan, South Korea, India, and Singapore. Also, we need to learn more about how things other than liquidity affect a bank's ability to make money and keep its capital. This study intends to fill these gaps by investigating the effects of active and passive liabilities on the profitability and capital structure of the banking sector in two economies in the Asia-Pacific region, as well as the role that bank liquidity plays in mediating this relationship.

Consumer deposits, which are the primary passive liabilities of banks, are frequently mentioned in the literature. State-owned commercial banks have a significant ability to absorb deposits, according to Hu Chaoxia and Chen Langnan (2004), whereas Uchida and Satake (2009) discovered that more deposit absorption enhances cost control. These data provide evidence in favor of Hypothesis 1.1, which states that passive liabilities, such as deposits from customers, contribute to an increase in the profitability of banks. According to research by Zhang and Zeng (2014), joint-stock commercial banks in the Asia-Pacific area have a more varied liability business and a stronger emphasis on funding sources than state-owned big banks. These commercial banks also have a sizable passive liability portfolio.

On the contrary, Dagher and Kazimov (2012) observed that commercial banks specializing in non-deposit operations were less equipped to withstand a crisis, owing to their less stable resource base and increased risks. As a result, we are more equipped to grasp the complexities of commercial banks' liability structures and how they affect profitability and capital sufficiency.

There is widespread agreement among academics that the structures of bond issuance, interbank borrowings, and passive liabilities have a major impact on the capital structure and profitability of banks. Berger and Bouwman (2013) analyzed commercial banks for 25 years and found that capital helps them weather crises and recover quickly. The findings of Lepetit *et al.* (2008) from an analysis of European commercial banks further accentuate the risk factors, indicating that light-asset initiatives elevate operational risks.

Commercial banks have also been shown to value debt structures with a higher proportion of deposit liabilities, as Uchida and Satake (2009) found that this structure enhances cost efficiency in Japanese commercial banks. Mendes (2001) examined profitability factors in commercial banks across several European

countries, finding a substantial link between bank net asset return rates and a set of financial and market indicators.

Based on the literature review mentioned earlier, we establish the following hypotheses:

Hypothesis 1: Within the Asia-Pacific economic area, the development of the banking sector will be influenced to different extents by the composition of liabilities, affecting both profitability and capital structure of the banks.

Hypothesis 1.1: The level of passive liabilities in banks will positively impact profitability and strengthen the institutions' core capital.

Hypothesis 1.2: The level of interbank borrowing of banks have a detrimental effect on profitability, but will not significantly alter the banks' fundamental capital.

Hypothesis 1.3: The structure of bond issuance by banks will positively impact on profitability and will also improve the banks' capital structure.

Additionally, it delves into the moderating effect of bank liquidity on this correlation, raising inquiries regarding the effects of passive liabilities, levels of interbank borrowing, the structure of bond issuance, and the function of bank liquidity within the liability structure as it relates to the profitability and capital adequacy metrics.

Deposit liabilities and non-deposit liabilities make up most of a bank's liabilities. Deposit liabilities, especially core accounts, don't have a big effect on the bank's cash flow, even though they are very stable (Li 2023). In this way, how banks handle their liquidity is a key part of changing their risk structure and making sure they keep their profits and capital levels (Zhang 2022). By enhancing the efficiency of liquidity management, banks are able to maintain a stable cost of liabilities and a reasonable liability maturity structure when experiencing deposit withdrawal pressure, mitigating the potential negative impact of deposit liabilities on profitability and capital adequacy.

Banks utilize the interbank lending market as a crucial instrument for the management of short-term liquidity (Chen 2022). However, excessive dependence on interbank lending could potentially impair banks' profitability, particularly during market tightness periods. By reducing their dependence on high-cost interbank borrowing and enhancing their ability to manage maturity pressures on short-term liabilities, banks can sustain profitability with the assistance of a substantial level of liquidity. Enhanced liquidity serves to both diminish dependence on interbank borrowing and improve the efficiency of bank bond issuance.

Firstly, Liang (2015) and Liu (2017) emphasise that by enhancing liquidity, banks are able to manage their liability structure more effectively, thereby improving not only profitability but also capital adequacy. In addition, Brock & Rojas-Suarez (2015) further confirmed that increasing the ratio of liquid short-term assets can effectively mitigate the potential negative impact of asset-liability structure on profitability by analysing key indicators such as capital/assets, operating expenses/assets, and liquid short-term assets/total deposits.

Meanwhile, Chen (2014) points out that although a reduction in the deposit financing ratio may have a negative impact on banks' profitability and risk, banks can effectively mitigate these negative impacts through enhanced liquidity management and consequently improve profitability and risk management capabilities. Further, Chen, Yihong (2016) reminds us that although non-deposit liabilities are more volatile and vulnerable to negative information compared to deposit liabilities, banks can significantly reduce this volatility and mitigate liquidity risk triggered by short-term wholesale capital flight through enhanced liquidity management, thereby improving profitability and capital structure.

In addition, Yang and Ou (2007) point out that commercial banks can achieve higher liquidity levels through effective management of interbank lending, which not only helps to mitigate liquidity volatility caused by liability fluctuations, but also alleviates, to some extent, pressures on profitability and capital adequacy induced by inappropriate liability structures. Meanwhile, Miao and Yin (2017) emphasise that although an increase in the share of interbank liabilities may bring about maturity mismatches and liquidity risks, these risks can be effectively controlled by increasing bank liquidity, thus optimising banks' asset-liability structure and meeting interbank liquidity needs. Ratnoski and Huang (2009) also argue that although insufficient liquidity reserves can jeopardise the safety of banks, maintaining a certain level of liquidity can mitigate the negative impact of interbank lending and further enhance the stability and liquidity of banks. Research by Ouyang (2007) and Lian (2013) underscored the impact of liability structure on bank liquidity and the critical importance of liquidity to banking operations. Although these studies do not directly address the moderating role of liquidity on the relationship between liability structure and profitability/capital adequacy, they provide a backdrop for the role of liquidity in bank liability structures, lending support to Hypothesis 2. Studies by Rajan (2006), Ratnoski and Huang (2009), and Ivashina and Scharfstein (2010) indicate that the composition of liabilities, particularly the

reliance on non-deposit liabilities which are considered less liquid, can significantly affect a bank's liquidity, thereby impacting its profitability and capital adequacy.

Finally, Peng and Tong (2013) observe that the interbank lending market may lead to the proliferation of liquidity risk when faced with large fluctuations, but banks can effectively mitigate the proliferation of such risk by enhancing their liquidity management and reserves, maintaining the stability of their trading volume, and mitigating the negative impact of liquidity risk on profitability and capital structure. In a similar vein, Xu, Li, and Yang (2013) stress that banks can lessen the negative effects of liquidity risk on capital structure and profitability by implementing effective risk control and management strategies, even though concentration and interbank business operations can make banks more vulnerable to this risk. Liu (2017) and Liang (2015) found a strong correlation between liquidity risk and interbank liabilities, showing that liquidity can really mitigate the effect of liability structure on capital adequacy and profitability. This literature provides strong evidence that banks' liquidity is important for their stability and efficiency, and that banks can regulate their liability structure, increase profitability, and optimize capital adequacy through better liquidity management.

Improving a bank's liquidity has far-reaching effects on its obligation structure, particularly with regard to passive liabilities (Chen, 2022). Given banks' inability to control the quantity and terms of customer deposits, the instability of deposit liabilities can lead to liquidity stress (Zhang 2022). Nonetheless, the increase in the proportion of core deposits, being a stable source of funds, can relatively reduce liquidity risks, thereby strengthening the bank's profitability and stabilizing its capital structure. Moreover, non-deposit liabilities, such as bond issuances, interbank liabilities, and other financial liabilities, offer more flexible responses to market conditions and enhance banks' liquidity management. However, this also means that an over-reliance on non-deposit liabilities may increase liquidity pressure in adverse market conditions, negatively impacting the bank's profitability and capital structure.

Drawing upon the aforementioned literature review, we proceed to develop the hypothesis 2.

Hypothesis 2: The liquidity of banks can modulate the impact of liability structure on profitability and capital adequacy.

This review underscores the significance of a nuanced understanding of liability structures, liquidity management, and their interplay in shaping the profitability and capital adequacy of commercial banks in the Asia-Pacific region. It sets the stage for further empirical analysis and robustness testing, aiming to provide insights that can inform industry regulation reforms. The literature, however, acknowledges gaps in understanding how liability structures impact banks, particularly in Central Japan, South Korea, India, Singapore, and Australia, and how factors beyond liquidity influence bank profitability and capital structure.

This study aims to bridge these gaps by scrutinizing how active and passive liabilities affect the banking sector's profitability and capital structure in two Asia-Pacific economies. It also explores the moderating role of bank liquidity in this relationship, posing research questions about the impact of passive liabilities, interbank borrowing levels, bond issuance structure, and the role of bank liquidity in the liability structure's influence on profitability and capital adequacy.

2. Methodology

Focusing on the impact of banks' liability structure on their profitability and core capital adequacy, this study concentrates on the components of bank liabilities, categorized into passive liabilities, interbank borrowing, and bond issuance (Bian 2015). The ratio of active liabilities (interbank borrowing), bond issuance, and passive liabilities is chosen as the key explanatory variable. For profitability metrics, this study adopts Net Asset Return (ROE) and core capital adequacy (T1R) as the primary indicators. The dynamics of liability structure, including the relationship between passive liabilities, and bond issuance ratios, are thoroughly examined to understand their impact on commercial bank profitability and the bank's core capital within developed countries (Australia, Japan, South Korea, Singapore) and developing countries (China, India) in the Asia-Pacific region.

Independent Variables

This study mainly studies the impact of the bank's liability structure on profitability, focusing on the composition of bank liabilities in the balance sheet. Therefore, this study selects three items based on the data from the bank's financial statements in bankfocus database: "Personal and Corporate Deposits," "Bank Deposits," and "Issued Bonds and Reverse Repos" reflecting a comprehensive approach to analyzing bank liabilities. Passive Liability Ratio (depor) represents the ratio of personal and corporate deposits to total liabilities. Personal and corporate deposits are a fundamental aspect of a bank's funding, reflecting the bank's ability to attract and retain customer deposits. Interbank Borrowing Rate is indicative of the bank's reliance on interbank markets for short-term

funding, which can have implications for liquidity management and risk exposure. The Bond Issuance Ratio (dbondr) captures the proportion of funding derived from issued bonds and reverse repos to total liabilities. Furthermore, the proportion of these three items—passive liability ratio, interbank borrowing rate, and bond issuance ratio—to the total liabilities is utilized as proxy variables, a method supported by Ratnoski & Huang (2009) and further substantiated by recent research from Feng (2022). The selection of these variables is predicated on the hypothesis that the composition and cost of liabilities are crucial to a bank's financial health and operational efficiency, thereby influencing its profitability. This hypothesis is corroborated by the empirical findings of Feng (2022), which echo the significance of these liability components in determining banking profitability.

Dependent Variables

The selection of dependent variables mainly takes into account the profitability and capital structure of banks. The main variables selected here are the return on equity (ROE) to measure profitability and the Tier 1 capital ratio (T1R) to measure capital structure. It is noteworthy that in terms of measuring profitability, this study does not consider the use of non-interest income rate or other related indicators of earnings quality that are typical in banking measures but adopts the more traditional net asset return rate. The ability of various liabilities of commercial banks, represented by deposits, to generate revenue should not be overlooked, so ROE performs better in reflecting bank profitability. Therefore, following the research ideas of Han (2023), this study also selects ROE as the indicator for measuring bank profitability.

Moderating Variables

In the selection of moderating variables, this study uses the loan-to-deposit ratio as the moderating variable. The nature of this indicator is, in fact, similar to the current ratio of general enterprises. Since the primary indicators for measuring the liquidity of banks are based on the short-term match between the bank's operational liabilities and assets, the loan-to-deposit ratio is often used to measure the level of liquidity risk of banks. Consistent with this approach, Demirgüç-Kunt and Huizinga (2010) demonstrate that loan-to-deposit ratios is a critical determinant of banks' risk-bearing capacity and profitability. Similarly, Berger and Bouwman (2013) highlight the importance of the loan-to-deposit ratio in bank liquidity creation and its impact on bank stability and economic resilience. These studies underscore the loan-to-deposit ratio's relevance as a moderating variable, affirming its utility in evaluating the liquidity risk and operational stability of banks within the financial sector.

Control Variables

Regarding the selection of control variables, since the data collected in the subsequent model design mainly comes from micro-level data of listed and unlisted banks. Hence, unlike some existing research based on listed banks that extract macro data as control variables and conduct analyses with methods like GMM, to avoid the impact of multicollinearity on fixed effects, this study mainly bases its control variables on micro-level data of the banking industry. control variables include: Leverage Ratio (lev), Non-Interest Income Proportion (niir),Fixed Asset Ratio (ol),Liquidity Ratio (liqui),Growth Rate (growth),Loan Loss Provision Rate (llr).

Moreover, due to the significant differences in the number and scale of banks among countries, as well as substantial variations in the structure, types, and their impact on the domestic economy, different approaches are needed. For example, in domestic banks in China, state-owned banks and joint-stock banks usually have larger scales but are very few in number, a situation also seen in countries like India and Australia. In addition, given the difference in the number of banks among countries but considering the capital scale of banks as an important aspect in the weight of model regression, this study uses the average total asset size in the survey year as a weighted variable to rationally plan the regression results of the model.

For specific variable definitions, please refer to Table 1.

Furthermore, this study filters and collects data from domestic banks that are currently in operation through the Bank Focus platform. It has obtained financial data of the domestic banking industry from 2013 to 2022 and has constructed the dataset required for the empirical model. The specific operations are as follows: On the BankFocus platform, banks labeled as "active" or "unknown" and located in "China," "Japan," "South Korea," "Singapore," "Australia," and "India" were searched, and their financial data from 2013 to 2022 was collected. After obtaining the relevant data, descriptive statistics were performed on the financial data, and samples with excessive skewness, kurtosis, and numerous outliers were trimmed by 1% from both tails.

Table 1. Variables and Definitions

	Variable Name	Symbol	Measurement Proxies
Dependent Variable	Return on Equity (ROE)	Roe	Return on Equity
	Capital Adequacy Ratio	t1r	t1r=Tier 1 Capita / Risk-Weighted Assets
Independent Variables	Passive Liability Ratio	depor	The ratio of personal and corporate deposits to total liabilities.
	Interbank Borrowing Rate	dbankr	The proportion of funds a bank borrows from other banks relative to its total liabilities.
	Bond Issuance Ratio	dbondr	The proportion of funding that comes from issued bonds and reverse repos to total liabilities.
Control Variables	Leverage Ratio	lev	Lev= total Assets /total Liabilities
	Asset Growth Rate	Growth	Growth = the average total asset size
	Non-Interest Income Ratio	niir	Niir=Non-Interest Income/Total Income
	Fixed Asset Ratio	ol	Ol=Total Assets/ Fixed Assets
	Loan Loss Reserves (LLR)	llr	llr=Loan Loss Reserve / total loan
	Liquidity Ratio	liqui	Liqui= Current assets / Current liabilities
Moderating Variable	Loan-to-deposit ratio Ratio	liqui	dlr= Total Deposits/Total Loans

Source: Authors' computations based on data from BankFocus

On the basis of the above processing, observation samples with incomplete variable parts were excluded to obtain the final dataset for the empirical model. In summary, this study obtained 4,469 observational samples from 691 banking enterprises across six countries. The descriptive statistics are specifically presented in Table 2 as follows:

Table 2. Descriptive Analysis

Variable	Obs.	Mean	Std. dev.	Min	Max	Skewness	Kurtosis
roe	4469	5.917	6.53	-67.648	37.561	-1.505	17.746
t1r	4469	13.632	8.428	6.55	136	8.748	113.804
depor	4469	.838	.3	0	1.328	-1.604	5.098
dbankr	4469	.076	.118	0	.99	1.846	7.008
dbondr	4469	.016	.031	0	.274	2.825	13.44
dlr	4469	1.494	12.05	.034	233.992	18.117	343.925
ol	4469	.009	.008	0	.105	2.775	20.157
lev	4469	92.501	4.299	12.987	98.012	-6.794	89.77
llr	4469	2.175	2.728	0	59.13	9.267	154.694
liqui	4469	25.208	13.409	.098	82.686	.734	3.606
niir	4469	.186	.254	-.134	1	2.189	7.357
growth	4469	.078	.19	-.618	9.1	28.915	1260.853
roe	4469	5.917	6.53	-67.648	37.561	-1.505	17.746

Source: Authors' computations based on data from BankFocus

From the results obtained, we gain valuable insights into banks' characteristics and risk profiles in different countries. These insights are critical for understanding the relationship between internal governance and risk levels in banks.

Banks generally exhibit high leverage ratios due to the nature of their primary business operations, which are primarily centered around deposits and loans. The debt side of their balance sheets, comprising deposits, interbank borrowing, bond issuance, and other adequate financial liabilities, forms the crux of their profit-generating activities. The mean value of the non-interest income ratio (niir) is observed to be 0.186, indicating that, on average, non-interest income accounts for approximately 18.6% of the total income across all bank samples. The result indicates a significant reliance of certain banks on non-traditional banking services for revenue generation.The significant skewness and kurtosis of the distribution suggest approximately 50% of the bank's total assets are risk-weighted, with some banks bearing considerably higher risks. This result reflects the varying degrees of risk exposure across different banks. Banks tend to have a relatively low proportion of fixed assets. This is likely due to their primary focus on service-oriented operations, which require less infrastructure

than other business types. The average loan-to-deposit ratio is about 1.49 times, illustrating the relationship between the banks' liabilities (deposits) and their assets (loans). The average level of LLR is around 2.17%, indicative of the banks' preparedness for potential loan losses. The non-performing loan rate is at an average, which indicates the level of loan recovery risk the banks face. The capital adequacy average ratio is 13%, demonstrating the banks' capacity to withstand financial risks. The average ROE lies between 5% and 6%, showing the profitability level of these banks.

The study includes bank samples from six countries: Australia (AU), China (CN), India (IN), Japan (JP), South Korea (KR), and Singapore (SG) to conduct a more detailed analysis and comparison of the risk and governance characteristics of banks in different countries. The specific distribution of samples for various banks can be referred to in the following Table 3:

Table 3. Sample Distribution

Year/Sample Size	Country						
	Australia	China	India	Japan	South Korea	Singapore	Total
2013	13	68	21	119	16	4	241
2014	14	98	31	146	17	4	310
2015	16	112	30	183	17	4	362
2016	21	135	42	216	19	5	438
2017	36	146	50	246	19	6	503
2018	46	158	51	281	22	6	564
2019	44	164	52	293	23	6	582
2020	42	165	53	302	25	5	592
2021	41	168	60	300	25	5	599
2022	41	170	35	1	25	6	278
N	314	1384	425	2087	208	51	4469
No. of Entities	56	212	71	320	25	7	161

Source: Authors' computations based on data from BankFocus

These small-scale banks have become the primary financial entities in these countries. However, in subsequent model regressions, it is necessary to pay attention to the issue that the results may be biased towards private small banks due to the over-representation of small-scale bank samples. Therefore, size will be used as a weighting factor for adjustment in subsequent analyses.

Before the empirical model analysis, this study first conducted Hausman test and fixed effect F-test based on the model selection, and the specific results are as follows in Table 4A and Table 4B.

Table 4A. Hausmen Test for ROA

Variable	Hausman Test	F-test	P-value
depor	773.62	17.55	0.0000
dbankr	551.29	15.19	0.0000
dbondr	515.68	15.34	0.0000

Source: Authors' computations based on data from BankFocus

Table 4B. Hausmen Test for T1R

Variable	Hausman Test	F-test	P-value
depor	426.67	12.60	0.0000
dbankr	380.55	12.56	0.0000
dbondr	402.18	14.34	0.0000

Source: Authors' computations based on data from BankFocus

In light of the significant findings from our Hausman and F-tests, indicating a preference for the fixed effects model, we integrate the Heckman second-step model to further refine our analysis. This critical step corrects for selection bias inherent in our dataset by utilizing a lambda correction factor derived from the first-step selection model. By doing so, we ensure that our estimates, whether related to ROA or T1R, are not merely a reflection of sample selection biases but are instead robust representations of the true underlying relationships between bank performance indicators and their determinants. This methodological enhancement is pivotal for drawing more accurate and generalizable conclusions from our empirical investigation. From the results, it can be observed that both the Hausman test and the F-test are significant, hence a fixed-effect model is adopted. Based on the above results, the following fixed-effect model formula can be derived.

Equation1：

$$Roe_{it} = \beta_0 + \beta_1 dratio_{it} + \sum control_{it} + u_i + \mu_t + \varepsilon_{it} \quad (1)$$

Equation 2：

$$t1r_{it} = \beta_0 + \beta_1 dratio_{it} + \sum control_{it} + u_i + \mu_t + \varepsilon_{it} \quad (2)$$

3. Research Results

I. **Regression Analysis**

Regression analysis is conducted for Model (1), Model (2), to test the research hypotheses. In this section of the study, we present the main empirical findings derived from the fixed effects model and offer a detailed interpretation and analysis of these results. The empirical model results for Hypothesis 1 are detailed in Table 5.

Table 5. Hypothesis 1

	(1) roe	(2) t1r	(3) roe	(4) t1r	(5) roe	(6) t1r
main						
depor	0.856***	1.428***				
	(2.43)	(3.06)				
dbankr			-2.406**	7.921***		
			(-2.02)	(8.76)		
dbondr					11.74***	8.140***
					(3.91)	(3.53)
ol	-32.10***	-133.0***	-37.72***	-130.2***	-33.05***	-137.0***
	(-3.05)	(-15.95)	(-3.64)	(-16.01)	(-3.22)	(-16.80)
lev	0.202***	-1.590***	0.197***	-1.587***	0.191***	-1.600***
	(8.39)	(-83.01)	(8.20)	(-83.71)	(7.93)	(-83.47)
llr	0.00982	0.780***	-0.00170	0.803***	0.00994	0.777***
	(0.29)	(28.94)	(-0.05)	(29.88)	(0.30)	(28.96)
liqui	-0.0449***	0.0636***	-0.0409***	0.0573***	-0.0484***	0.0628***
	(-6.56)	(11.70)	(-5.94)	(10.60)	(-7.04)	(11.55)
niir	1.611**	2.578***	1.911***	2.456***	1.212*	2.488***
	(2.53)	(5.15)	(3.04)	(5.04)	(1.89)	(4.95)
growth	3.092***	1.320**	3.311***	0.992	2.882***	1.222*
	(3.67)	(1.99)	(3.93)	(1.50)	(3.42)	(1.83)
_cons	-10.61***	160.5***	-10.48***	160.1***	-9.203***	161.4***
	(-4.51)	(85.60)	(-4.45)	(86.22)	(-3.87)	(85.25)
N	4469	4469	4469	4469	4469	4469
chi2	1271.4	11587.3	1279.8	11879.9	1285.8	11638.9
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LR-rho	143.30***	316.77***	149.49***	320.58***	145.35***	317.72***

Note: T-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1. roe: Return on Equity; t1r: Tier 1 Capital Ratio, calculated as Tier 1 Capital / Risk-Weighted Assets; depor: The ratio of personal and corporate deposits to total liabilities; dbankr: The proportion of funds a bank borrows from other banks relative to its total liabilities; dbondr: The proportion of funding that comes from issued bonds and reverse repos to total liabilities; ol: Leverage, calculated as Total Assets / Fixed Assets; lev: Leverage ratio, calculated as Total Assets / Total Liabilities; llr: Loan Loss Reserve / Total Loan; Liqui= Current assets / Current liabilities; niir: Non-Interest Income Ratio, calculated as Non-Interest Income / Total Income; growth: The average total asset growth rate.

Source: Authors' computations based on data from BankFocus

From the results of the Heckman second-step model, the verification of hypothesis 1.1 is still significantly observable. In contrast, for the verification of hypothesis 1.2, it is found that interbank borrowing actually improves the structure of core assets. This result is reasonably justified from the perspective of the bank's business development—as bank borrowing is inherently based on business-oriented capital flows, which can reduce the cost of business operations to a certain extent, thereby more effectively aggregating capital. In terms of verifying hypothesis 1.3, it is firstly observable that issuing bonds effectively enhances the bank's core capital accumulation and also positively impacts the bank's profitability. Therefore, hypothesis 1.3 is also validated. Supporting these findings, the study conducted by Feng (2022) on 19 listed commercial banks in China from 2011 to 2020 demonstrates a positive correlation between passive debt structure and commercial bank profitability, with no significant relationship observed between active debt structure and profitability. This aligns with our conclusion that bond issuance significantly strengthens banks' core capital accumulation and positively

affects their profitability, highlighting the beneficial role of passive debt structure in enhancing commercial bank profitability. Similarly, research by Zemenu A. A., and David M. (2021) within the context of private banks in Ethiopia found that passive liabilities, including bond issuance, positively influence profitability, corroborating the significance of passive debt structure in boosting bank profitability. Furthermore, Rastogi *et al.* (2022) provide a systematic literature review on banking regulation, profitability, and risk, proposing a model that guides the optimal mix of these variables. Their model suggests that a well-structured bond issuance strategy not only positively impacts bank profitability but also contributes to strengthening the bank's capital structure. This finding echoes our conclusion, underscoring the critical role of bond issuance in both enhancing bank profitability and core capital accumulation. These corroborative studies from the literature offer additional validation to our analysis, emphasizing the crucial impact of debt structure, particularly passive liabilities and bond issuance, on the profitability and capital accumulation strategies of commercial banks.

The results for the testing of Hypothesis 2 are presented in Table 6.

Table 6. Hypothesis 2

	(1) roe	(2) t1r	(3) roe	(4) t1r	(5) roe	(6) t1r
dlr	-0.0389**	-0.00422	-0.0137	0.00873	-0.0184	0.00338
	(-1.98)	(-0.55)	(-0.65)	(1.05)	(-0.90)	(0.42)
depor	11.30***	6.371***				
	(13.25)	(19.17)				
depor*dlr	-16.20***	-5.818***				
	(-16.68)	(-15.38)				
dbankr			-11.20***	0.0744		
			(-9.49)	(0.16)		
dbank*dlr			-0.0589	-0.225***		
			(-0.44)	(-4.20)		
dbondr					-4.674	8.872***
					(-0.99)	(4.80)
dbond*dlr					0.824	-12.12***
					(0.16)	(-5.87)
ol	-5.790	-42.52***	-17.71	-34.51***	-6.690	-35.93***
	(-0.36)	(-6.76)	(-1.07)	(-5.24)	(-0.40)	(-5.48)
lev	0.715***	-0.948***	1.163***	-0.794***	1.134***	-0.811***
	(10.88)	(-37.04)	(18.65)	(-31.98)	(17.90)	(-32.58)
llr	-1.687***	-0.186***	-1.713***	-0.208***	-1.693***	-0.209***
	(-22.31)	(-6.31)	(-22.08)	(-6.72)	(-21.55)	(-6.76)
liqui	-0.0526***	0.0187***	0.0201**	0.0460***	0.0305***	0.0410***
	(-4.85)	(4.44)	(2.01)	(11.55)	(2.90)	(9.90)
niir	8.524***	-1.895***	7.925***	-2.245***	8.590***	-2.220***
	(9.27)	(-5.29)	(8.42)	(-5.99)	(9.02)	(-5.94)
growth	2.618***	0.562***	2.588***	0.255	2.376***	0.212
	(5.91)	(3.26)	(5.70)	(1.41)	(5.16)	(1.17)
_cons	-52.83***	100.1***	-95.83***	86.46***	-95.10***	88.12***
	(-8.45)	(41.09)	(-16.70)	(37.82)	(-16.25)	(38.35)
N	4429	4429	4429	4429	4429	4429
adj. R2	0.838	0.893	0.829	0.882	0.824	0.882
F	183.4	176.9	151.6	120.8	138.0	123.1
p	2.43e-289	1.88e-280	3.95e-245	6.51e-200	1.65e-225	1.80e-203

Note: T-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1.roe: Return on Equity; t1r: Tier 1 Capital Ratio, calculated as Tier 1 Capital / Risk-Weighted Assets; depor: The ratio of personal and corporate deposits to total liabilities; dbankr: The proportion of funds a bank borrows from other banks relative to its total liabilities; dbondr: The proportion of funding that comes from issued bonds and reverse repos to total liabilities; ol: Leverage, calculated as Total Assets / Fixed Assets; lev: Leverage ratio, calculated as Total Assets / Total Liabilities; llr: Loan Loss Reserve / Total Loan; Liqui= Current assets / Current liabilities; niir: Non-Interest Income Ratio, calculated as Non-Interest Income / Total Income; growth: The average total asset growth rate; dlr: Total Deposits/Total Loans.

Source: Authors' computations based on data from BankFocus

Firstly, in terms of the impact of deposit operations on the profitability and capital accumulation of banks, it is evident that the loan-to-deposit ratio has a negative moderating effect. In other words, the higher the

proportion of loans relative to deposits in banks, resulting in lower liquidity, the smaller the positive effect of bank deposits on profitability and capital accumulation. This aligns with Li (2023) and the corresponding hypothesis posited in this study. Li's research sheds light on the broader implications of liquidity on a bank's operational decisions and risk profile. Li's research highlights that as banks operate with a higher proportion of loans relative to deposits, their liquidity reserves are strained, forcing them to navigate a tighter liquidity situation. This increased reliance on loans can lead to higher profitability in the short term due to the interest income generated but also exposes banks to greater liquidity and operational risks.

However, concerning the influence of interbank borrowing and bond issuance on banks, we can only observe the negative moderating effect of liquidity on their impact on bank capital accumulation. In other words, liquidity is more concentrated in the capital accumulation aspect of banks engaged in non-deposit operations, while it does not substantially affect the mechanism that impacts profitability.

Therefore, Hypothesis 2 is only partially validated, which is consistent with the studies of Zhang (2022) on the role of internal governance in Chinese banks.

II. Heterogeneity analysis

This study conducts a country-specific heterogeneity analysis, corresponding to developed Countries such as Japan, South Korea, Singapore, and Australia, and developing countries like China and India, leading to the following results in Table 7A and Table 7B.

Table 7A. Analysis of Banking Systems in China and India

	(1) roe	(2) t1r	(3) roe	(4) t1r	(5) roe	(6) t1r
depor	0.735	-0.573				
	(0.48)	(-1.29)				
dbankr			-11.38***	0.977**		
			(-7.45)	(2.18)		
dbondr					-8.026*	2.623**
					(-1.85)	(2.10)
ol	-92.58**	-61.18***	-122.1***	-59.89***	-94.78**	-61.27***
	(-2.32)	(-5.31)	(-3.11)	(-5.20)	(-2.38)	(-5.34)
lev	0.761***	-0.970***	0.837***	-0.968***	0.748***	-0.960***
	(6.73)	(-29.81)	(7.69)	(-30.39)	(6.80)	(-30.32)
llr	-1.439***	-0.0470	-1.460***	-0.0492*	-1.440***	-0.0493*
	(-14.24)	(-1.61)	(-14.82)	(-1.70)	(-14.36)	(-1.71)
liqui	0.0138	0.0294***	0.0107	0.0297***	0.0205	0.0272***
	(0.91)	(6.67)	(0.71)	(6.75)	(1.31)	(6.02)
niir	16.77***	-1.986***	15.53***	-1.829***	16.47***	-1.854***
	(9.51)	(-3.91)	(8.96)	(-3.60)	(9.36)	(-3.66)
growth	3.938***	0.925***	3.910***	0.956***	3.927***	0.948***
	(5.84)	(4.76)	(5.95)	(4.97)	(5.87)	(4.92)
_cons	-55.90***	102.0***	-59.86***	101.1***	-54.07***	100.6***
	(-5.17)	(32.75)	(-5.94)	(34.27)	(-5.29)	(34.18)
N	1784	1784	1784	1784	1784	1784
adj. R2	0.792	0.915	0.799	0.916	0.792	0.916
F	52.14	140.7	61.95	141.4	52.70	141.4
p	8.43e-67	1.04e-159	1.88e-78	2.22e-160	1.75e-67	2.66e-160

Note: T-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1.roe: Return on Equity; t1r: Tier 1 Capital Ratio, calculated as Tier 1 Capital / Risk-Weighted Assets; depor: The ratio of personal and corporate deposits to total liabilities; dbankr: The proportion of funds a bank borrows from other banks relative to its total liabilities; dbondr: The proportion of funding that comes from issued bonds and reverse repos to total liabilities; ol: Leverage, calculated as Total Assets / Fixed Assets; lev: Leverage ratio, calculated as Total Assets / Total Liabilities; llr: Loan Loss Reserve / Total Loan; Liqui= Current assets / Current liabilities; niir: Non-Interest Income Ratio, calculated as Non-Interest Income / Total Income; growth: The average total asset growth rate.

Source: Authors' computations based on data from BankFocus

Table 7B. Analysis of Banking Systems in Japan, Korea, Singapore, and Australia

	(1) roe	(2) t1r	(3) roe	(4) t1r	(5) roe	(6) t1r
depor	4.705***	6.560***				
	(4.13)	(10.64)				
dbankr			14.75***	-7.461***		
			(6.04)	(-5.51)		
dbondr					7.245**	-4.331***
					(2.39)	(-2.58)
ol	-20.87	-42.18***	-16.69	-43.74***	-18.70	-42.98***
	(-1.47)	(-5.50)	(-1.18)	(-5.59)	(-1.31)	(-5.46)
lev	0.504***	-0.865***	0.543***	-0.902***	0.535***	-0.899***
	(5.30)	(-16.80)	(5.75)	(-17.23)	(5.62)	(-17.07)
llr	-1.200***	-0.939***	-0.932***	-1.134***	-1.058***	-1.078***
	(-4.46)	(-6.44)	(-3.46)	(-7.59)	(-3.90)	(-7.18)
liqui	-0.172***	0.0742***	-0.159***	0.0545***	-0.158***	0.0540***
	(-10.93)	(8.70)	(-10.41)	(6.44)	(-10.27)	(6.35)
niir	1.901*	-1.300**	2.096**	-1.223**	1.912*	-1.149**
	(1.93)	(-2.43)	(2.13)	(-2.25)	(1.93)	(-2.10)
growth	0.708	-1.123***	0.253	-1.023***	0.748	-1.263***
	(1.19)	(-3.49)	(0.42)	(-3.08)	(1.25)	(-3.83)
_cons	-30.60***	89.31***	-39.37***	98.81***	-37.91***	98.22***
	(-3.44)	(18.52)	(-4.49)	(20.33)	(-4.29)	(20.08)
N	2645	2645	2645	2645	2645	2645
adj. R2	0.717	0.830	0.719	0.823	0.715	0.822
F	24.73	67.75	27.69	54.12	22.99	50.21
p	1.13e-32	6.52e-89	1.01e-36	1.03e-71	2.75e-30	1.14e-66

Note: T-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1. roe: Return on Equity; t1r: Tier 1 Capital Ratio, calculated as Tier 1 Capital / Risk-Weighted Assets; depor: The ratio of personal and corporate deposits to total liabilities; dbankr: The proportion of funds a bank borrows from other banks relative to its total liabilities; dbondr: The proportion of funding that comes from issued bonds and reverse repos to total liabilities; ol: Leverage, calculated as Total Assets / Fixed Assets; lev: Leverage ratio, calculated as Total Assets / Total Liabilities; llr: Loan Loss Reserve / Total Loan; Liqui= Current assets / Current liabilities; niir: Non-Interest Income Ratio, calculated as Non-Interest Income / Total Income; growth: The average total asset growth rate.

Source: Authors' computations based on data from BankFocus

This result implies that the incremental deposit business of developing countries does not lead to an improvement in profitability and capital levels, but bank lending and bond issuance can effectively improve capital levels. The reason for this result is that the banking business in developing countries has stronger policy regulation, which makes them rely on deposits as their core business. Therefore, customer deposits will remain within a relatively stable range, thereby not affecting profitability and capital. At the same time, capital supplementation is more focused on lending and bond issuance. However, due to the relatively stagnant capital circulation, lending and bond issuance business would, in fact, affect the profitability of banks.

In Developed countries, it can be observed that the enhancement of deposit business can effectively improve the bank's profitability and capital accumulation. At the same time, the primary function of bond issuance and lending is to improve the bank's profitability, but at the same time, it has a negative impact on its capital. This is because the capital circulation in Developed countries is relatively smooth, which allows businesses that supplement capital to play their profit-making role in business operations. However, this profit-making improvement is affected by the country's monetary policy, which is relatively dependent on world currencies such as the dollar, leading to a certain degree of capital outflow.

III. Robustness test

The specific approach to robustness testing primarily involved using an alternative approach by varying the dependent variables. Instead of using net asset return rates and core capital adequacy as dependent variables, we substituted them with the return on assets (ROA) and total capital adequacy ratios. Robustness Result are presented in Table 8.

Table 8. Robustness test

	(1) roa	(2) tcr	(3) roa	(4) tcr	(5) roa	(6) tcr
depor	0.270***	3.353***				
	(5.04)	(9.46)				
dbankr			-0.734***	-0.457		
			(-8.98)	(-0.83)		
dbondr					-0.479**	-3.199**
					(-2.53)	(-2.53)
ol	0.417	-61.66***	0.316	-52.83***	0.952	-53.75***
	(0.36)	(-7.94)	(0.27)	(-6.76)	(0.81)	(-6.89)
lev	-0.00657	-0.941***	-0.00505	-0.941***	-0.00712	-0.945***
	(-1.49)	(-32.24)	(-1.15)	(-31.83)	(-1.61)	(-31.99)
llr	-0.121***	0.0368	-0.125***	0.0110	-0.124***	0.00737
	(-22.01)	(1.01)	(-22.86)	(0.30)	(-22.47)	(0.20)
liqui	0.00123*	0.0248***	0.000692	0.0240***	0.00145**	0.0260***
	(1.75)	(5.33)	(0.99)	(5.07)	(2.03)	(5.46)
niir	0.525***	-3.180***	0.437***	-3.685***	0.474***	-3.738***
	(7.86)	(-7.19)	(6.62)	(-8.26)	(7.11)	(-8.39)
growth	0.249***	1.341***	0.248***	1.124***	0.236***	1.146***
	(7.73)	(6.29)	(7.80)	(5.23)	(7.33)	(5.34)
_cons	1.183***	100.5***	1.380***	103.2***	1.457***	103.6***
	(2.90)	(37.17)	(3.42)	(37.91)	(3.57)	(38.03)
N	4429	4429	4429	4429	4429	4429
adj. R2	0.854	0.850	0.856	0.846	0.854	0.846
F	89.89	187.1	99.02	170.4	86.73	171.5
p	1.66e-121	1.50e-238	3.14e-133	1.41e-219	2.01e-117	8.22e-221

Note: T-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1. roe: Return on Equity; t1r: Tier 1 Capital Ratio, calculated as Tier 1 Capital / Risk-Weighted Assets; depor: The ratio of personal and corporate deposits to total liabilities; dbankr: The proportion of funds a bank borrows from other banks relative to its total liabilities; dbondr: The proportion of funding that comes from issued bonds and reverse repos to total liabilities; ol: Leverage, calculated as Total Assets / Fixed Assets; lev: Total Assets / Total Liabilities; llr: Loan Loss Reserve / Total Loan; Liqui= Current assets / Current liabilities; niir: Non-Interest Income Ratio, calculated as Non-Interest Income / Total Income; growth: The average total asset growth rate.

Source: Authors' computations based on data from BankFocus

The results observed in Table 8 are consistent with the findings of the full-sample test and subsequent heterogeneity analysis conducted in this study. Therefore, the model used in this study demonstrates sufficient robustness.

4. Discussions

We examined the debt structure of Asia-Pacific banks and its effects on profitability and capital structure in this study. We found: Debt structure greatly impacts bank profitability and capital structure. Passive liabilities and bond issuance structure boost banks' core capital and profitability, while interbank lending reduces operating expenses and improves capital aggregation. Debt structure impacts bank performance due to country-specific banking operations. Deposit operations have little impact on profitability and capital levels in emerging nations due to regulatory rules and capital flow limits. Deposit operations boost banks' profitability and capital accumulation in developed countries due to capital market liquidity. To understand how debt structure affects bank profitability and capital adequacy, liquidity regulation is essential. Liquidity affects capital accumulation more in non-deposit businesses.

This study shows that banking regulatory policies and risk management techniques must account for debt structure complexity and variability. However, data availability and regional distinctiveness may limit our findings. Given the comprehensiveness of the sample size, the selected indicators may not fully cover the comprehensive profitability of commercial banks. Commercial banks face a diverse range of profitability indicators in their daily operations and management, and there are numerous indicators to measure profitability. However, this study attempts to select the most representative indicators.

The economic and financial environment is constantly changing, being frequent and complex. The optimization of the asset and liability structure of commercial banks and the improvement of their operational

performance will always be issues of practical significance, necessitating ongoing research. Future research will be conducted in the following areas: Further refinement in the evaluation methods and selection of indicators for operational performance. This study's measurements of risk and corporate governance are not comprehensive enough, and future research will focus on constructing a more comprehensive system of evaluation indicators. It's still uncertain whether there is an optimal and reasonable range for the asset and liability structure, which needs to be addressed with a more rational and scientific empirical model. The mechanism by which the asset and liability structure affects different aspects of commercial bank operational performance is not clear enough. Future research could use multi-model classification studies to improve the accuracy of the research. Future research could also examine the role of regulatory frameworks and market conditions in shaping the impact of liability structure on bank performance.

Conclusions and Further Research

This study examines the intricate relationship between the liability structure of commercial banks and their profitability and capital accumulation, focusing on the variances between developed (Australia, Japan, South Korea, Singapore) and developing countries (China, India). Utilizing a panel data model with individual fixed effects and considering bank size as a control variable, our findings reveal that passive liabilities positively correlate with commercial banks' profitability and aid in replenishing core capital. A significant insight is the regulatory role of liquidity, demonstrating that higher loans-to-deposits ratios reduce liquidity, negatively impacting profitability and capital accumulation. Moreover, our heterogeneity analysis differentiates the effects in developed versus developing countries, showing the effectiveness of bank deposit services in enhancing profitability and capital in the former, whereas in the latter, bond issuance and borrowing services boost profitability but at a cost to capital.

Implications: Our findings underscore the importance of a balanced and diversified liability structure for banks to sustain profitability and capital adequacy. Banks are encouraged to diversify deposit liability sources and avoid price competition by enhancing service and product quality. The development of non-deposit liabilities emerges as crucial for banks, especially for those facing challenges in attracting deposits. The study advocates for active liability management, emphasizing risk control and the maturity matching of interbank lending to mitigate liquidity risk.

Limitations: The study is constrained by its reliance on available data from selected countries, which may limit the generalizability of the findings across different regulatory and economic contexts. Additionally, the focus on passive liabilities and bond issuance may overlook other crucial aspects of banks' liability structures that could impact profitability and capital adequacy.

Scope for Further Work: Future research could expand by incorporating a broader range of countries to enhance the generalizability of the findings. Investigations into additional elements of banks' liability structures and their impacts on financial performance are also warranted. Furthermore, exploring the dynamic interplay between regulatory changes and banks' liability management strategies could provide deeper insights into optimal banking practices in varying economic climates.

By refining our understanding of how different aspects of liability structures impact bank performance across diverse economic contexts, this study contributes to the literature on banking efficiency and risk management. However, the evolving nature of global finance necessitates continuous research to adapt to changing market conditions and regulatory landscapes.

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Credit Authorship Contribution Statement

Jing Wang: Conceptualization, Investigation, Data curation, Validation, Formal analysis, Writing – original draft.
Aslam Izah Selamat: Supervision, Writing – review and editing.
Zariyawati binti Mohd Ashhari: Supervision and conceptual framework.
Mohamed Hisham Dato Hj Yahya: Supervision and conceptual framework.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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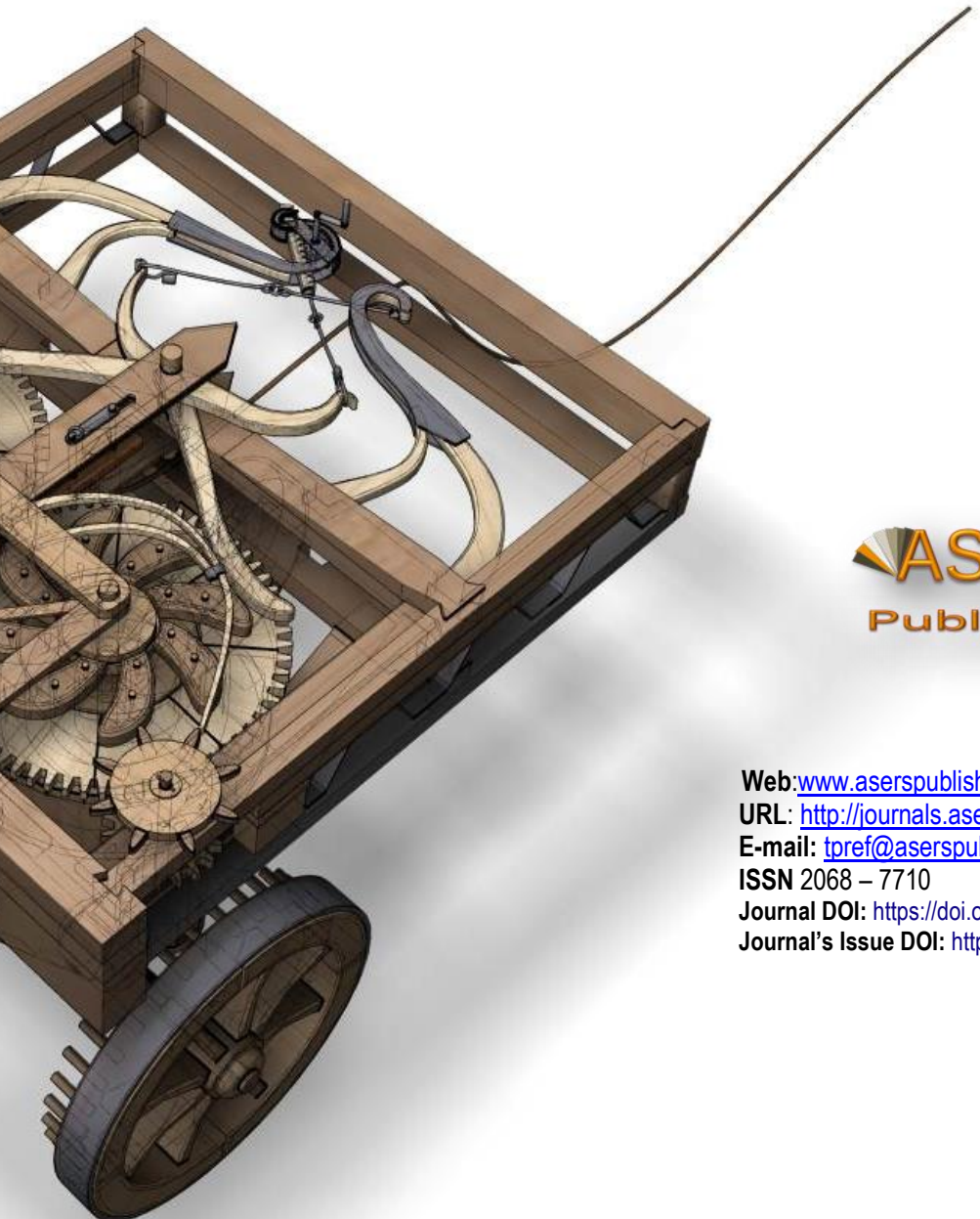

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