The Effect of Bank Competition and Capital on Liquidity Creation: A Case Study of Commercial Banks in the Asia Pacific

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Abstract. The function of commercial banks in generating liquidity is fundamental to financial stability in the Asia Pacific financial system, leading this research to investigate the influence of bank capital and competition on liquidity creation in developed and developing countries, and to assess the impact of the COVID-19 crisis. This study applies the System GMM method to data from 713 commercial banks from 2014 to 2023. Findings show that bank capital has significantly reduced liquidity creation across all groups, supporting the Financial Fragility Crowding Out hypothesis. In Contrast, bank competition exhibits strong variations, significantly supporting and increasing liquidity creation in developing countries, but reduced liquidity creation in developed countries. Furthermore, the COVID-19 crisis contributed to a significant increase in liquidity creation, with banks acting as first lenders, especially in developing countries. The result imply that the effectiveness of macroprudential policy needs to be adapted to the domestic market structure, given the fundamental differences in competition and capital dynamics between developed and developing nations, providing important implications for regulators in balancing financial stability and bank intermediation.

Keywords: Bank Competition, Bank Capital, Liquidity Creation, Commercial Banks, Generalized Method of Moments

1 Introduction

Commercial banks are key players in the financial landscape by generating liquidity, which involves changing short-term, easily accessible liabilities (like deposits) into longer-term, less liquid assets (like loans). This role is vital for fostering genuine economic advancement. Research indicates a positive relationship between the liquidity generated by banks and the economic output, with effects that surpass those of other banking functions [1]. Banks produce liquidity via on-balance sheet operations and off-balance sheet tools such as loan commitments and guarantees [2].

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The significance of bank liquidity generation is particularly vital in the Asia Pacific region due to its reliance on a bank-centered financial infrastructure. As reported by PWC 2023, around 79% of the credit in the Asia Pacific region comes from commercial banks, which is considerably more than Europe (56%) and the United States (33%). This significant presence underscores liquidity creation as a key sign of economic stability in the region. [3] observed that commercial banks across 14 Asia Pacific nations generated liquidity averaging approximately 31% of their total assets from 2005 to 2012. The relevance of liquidity creation by banks in the Asia Pacific is gaining importance due to encouraging forecasts for economic growth in the region. Moody's Analytics anticipates that the economy in the Asia Pacific will grow by 4% by 2025, outpacing the global economy's expected growth rate of 2.6%-2.7%. Similarly, data from the Asian Development Bank (ADB) indicates that economic development in the Asia Pacific is expected to keep improving each year.

The singular nature of the financial system in the Asia Pacific was severely tested when the region became the center of the COVID-19 pandemic. The pandemic, which started in China, spread across the globe and impacted financial markets everywhere [4]. Market fluctuations during this time exceeded those seen during the 2008 global financial crisis [5]. During the crisis, there was an enormous increase in the demand for liquidity. [6] discovered that the demand for bank credit surged fifty-fold weekly towards the end of March 2020. Commercial banks in Asia Pacific served as the primary providers of loans to address cash flow requirements, though the actions of banks varied significantly.

The academic literature highlights two primary structural aspects that influence banks' liquidity creation decisions: competition among banks and their capital levels [7,8]. These factors exhibit intricate and sometimes conflicting effects on liquidity generation, particularly during severe economic disruptions. The influence of competition can be detrimental (as outlined in the Character Value Hypothesis) or beneficial (according to the Innovation and Efficiency Channel). For instance, increasing competition can encourage the easing of collateral requirements and regulatory hurdles, thereby enhancing a bank's capacity to generate liquidity. This beneficial effect is also supported by the notion that competition drives financial innovation and cost efficiency, allowing banks to expand credit safely. Conversely, competition can significantly reduce liquidity creation, another side pro competition policies can reduce liquidity provision. This detrimental effect is often linked to the Character Value Hypothesis, where intense competition erodes profitability, pressuring banks to reduce risky liquidity creation activities to maintain stability. Additionally, there is an ongoing debate regarding the connection between bank capital and liquidity creation, framed by two theoretical viewpoints: Financial Fragility Crowding Out and Risk Absorption. The Crowding Out theory suggests a negative relationship, as increasing capital reduces reliance on deposits and can prompt investors to prefer equity over liquid deposits, thus reducing funds available for liquidity creation, as discussed by [7,9]. The Risk Absorption theory suggests a positive relationship, arguing that higher capital allows banks to absorb more risk, encouraging them to create more liquidity by expanding loan coverage, a view supported by [2].

Despite a wealth of literature on the subject of bank liquidity generation, several significant gaps persist, especially in the context of the Asia Pacific. Firstly, many previous studies focus only on individual countries. Secondly, existing research has not sufficiently compared how competitive and capital mechanisms function differently in developed and developing nations within a single, economically integrated area. Lastly, most studies rely on data from before or just after the 2008 financial crisis, failing to account for the dynamics of liquidity generation during current emergencies like the COVID-19 pandemic. This research seeks to address these issues by examining how competition and bank capital influence liquidity creation in commercial banks within the Asia Pacific from 2014 to 2023, addressing both regular times and the COVID-19 pandemic.

This study makes three significant contributions. **Firstly**, it presents the first regional empirical data evaluating the relationship between competition and capital on liquidity creation in the Asia Pacific, utilizing a sample from 12 countries with varying levels of economic development. **Secondly**, it uncovers differences in mechanisms by performing a cross-group analysis, highlighting the varied roles of competition and capital in both developed and developing nations. **Lastly**, it assesses the effects of the COVID-19 pandemic on liquidity creation and investigates whether the processes of competition and capital underwent significant changes during the crisis when compared to typical periods.

2 Literature Review and Hypothesis

Many studies show that the main reason for bank existence is to create liquidity [10,11]. Commercial banks perform liquidity creation to increase credit flow to the economy [7]. Evidence shows bank liquidity creation is positively related to economic output [1]. Banks create liquidity in two ways: on-balance sheet by using liquid liabilities and illiquid assets [12,13], or through off-balance sheet activities such as loan commitments. Liquidity creation calculation follows [2], using two proxies: cat fat and cat not fat. Cat fat calculation refers to total liquidity creation including on-balance sheet and off-balance sheet elements, while cat not fat includes only on-balance sheet elements.

Two different views exist regarding bank competition's effect on liquidity creation. The first argues that competition causes low liquidity creation due to decreased franchise value or character value of banks (Character Value Hypothesis) [14,15]. Conversely, the second view assumes competition can increase liquidity creation through operational efficiency and financial innovation (The Innovation and Efficiency Channel) [16,17]. *Character Value Hypothesis*: suggest that when competition increases (indicated by decreased Lerner Index), bank franchise value systematically decreases. This erosion occurs due to pressure on net interest margins, increasing customer acquisition costs, and decreasing profitability [14]. The decrease in character value weakens banks' incentives to maintain stability and encourages higher risk-taking behavior, ultimately reducing liquidity creation capacity [15].

The *Innovation and Efficiency Channel***:** views that competition can increase banks' capacity to create liquidity as a fundamental driver of productivity and innovation [17]. The first mechanism is increased operational efficiency. Intense competition forces banks to optimize cost structures, invest in technology, and increase productivity. Increased cost efficiency allows banks to operate with thinner margins while maintaining profitability [16].

Two opposing hypotheses exist regarding bank capital's role in liquidity creation i.e. the: *financial fragility crowding out* and *risk absorption*. *Financial Fragility Crowding Out***:** hypothesis suggests that, optimal bank capital structure is a trade-off between bank capital's effect on distress costs, ability to force debtors to pay, and liquidity creation [7,11]. A fragile capital structure encourages banks' commitment to monitor debtors, allowing banks to provide more credit and create more liquidity.

Moreover, the *risk absorption*: hypothesis states that higher bank capital allows banks to absorb more risk, encouraging banks to create more liquidity by expanding loan coverage to underserved customers. [18] and [19] argue that higher bank capital makes banks prefer riskier asset portfolios because capital makes them risk-tolerant.

The inherent risks and liquidity provision mechanisms discussed above were placed under unprecedented stress during the subsequent global health crisis. The COVID-19 pandemic created unique conditions for bank operations. Research produces different conclusions. [20] explain that pandemic economic effects caused stricter credit standards and market decline for various loan types, indirectly affecting liquidity creation. Conversely, [21] explains that the COVID-19 crisis caused banks to experience rapid loan growth, as companies withdrew funds on large scales to address cash flow and financial disruptions.

Based on the theoretical framework and empirical evidence, this study proposes:
H1: Bank competition has a significant influence on liquidity creation by commercial banks in the Asia Pacific.
H2: Bank capital has a significant influence on liquidity creation by commercial banks in the Asia Pacific.
H3: The COVID-19 crisis has a significant influence on average liquidity creation levels by commercial banks in the Asia Pacific.
H4: There are differences in direction and strength of bank competition's influence on liquidity creation between commercial banks in developed and developing Asia Pacific countries.
H5: There are differences in direction and strength of bank capital's influence on liquidity creation between commercial banks in developed and developing Asia Pacific countries.
H6: There are differences in direction and strength of COVID-19 crisis influence on liquidity creation between commercial banks in developed and developing Asia Pacific countries.

3 Methodology

3.1 Data and Sample

Research data sources include bank financial data from BankFocus database and macroeconomic data from Capital IQ. The data period is 2014-2023, where 2020-2023 represents the COVID-19 health crisis period. Banks used as research objects are commercial banks operating at least since 2014 with accessible financial data through BankFocus. The 12 countries are divided into two groups: developed economies (Taiwan, Hong Kong, Australia, Singapore, New Zealand, Japan) and emerging and developing economies (Indonesia, Malaysia, Philippines, Thailand, India, China). Initial data consisted of 730 banks with 7,300 observations. After data testing, the final dataset consisted of 713 banks with 5,664 observations.

3.2 Variables and Measurements

Table 1. Variable Specification

Variable	Measurement	Reference
Dependent Variable		
Liquidity Creation (Cat Fat)	*Cat Not Fat* = $0.5(IA + \frac{LL+IOB) - 0.5(LA+IL+LOB)}{\text{Gross Total Assets}}$	Berger dan Bouwman (2009), fu et al., (2016)
Liquidity Creation (Cat Not Fat)	*Cat Not Fat* = $0.5(IA + \frac{LL) - 0.5(LA+IL)}{\text{Gross Total Assets}}$	Berger dan Bouwman (2009), fu et al., (2016)
Independent Variable		
Bank Competition	$Lerner_{it} = Price_{i,t} - \frac{MC_{i,t}}{Price_{i,t}}$	Horvath et al., (2014), Berger et al., (2009)
Bank Capital	Rasio Total Modal = Total Modal Tier1 + Total Modal Tier2 / ATMR	Yousaf, Ali, dan Hasan (2019a), Abbas dan Ali (2020), Fu et al., (2016),
Control Variable		
NIE Ratio	NIE = Non Interest Expense / Total Assets	Hsieh dan Lee (2022), Berger et al., (2024)
Bank Profitability	ROA = Net Income / Total Assets	Viverita et al., (2024), Hsieh dan Lee (2021)
GDP Growth	GDP Growth = $\frac{GDPt - GDPt_{-1} \times 100\%}{GDPt_{-1}}$	Ali dan Yousaf (2022)
Unemployment Rate	Unemployment Rate = $\frac{\text{Unemployment} \times 100\%}{\text{Labor Force}}$	Abbas et al., (2021), Ali et al., (2022)
COVID-19 Crisis	COVID-19 Crisis	Viverita et al., (2024), Susamto et al. (2023)

3.3 Estimation Method

This study uses dynamic panel data with System Generalized Method of Moments (GMM) to control endogeneity arising from reciprocal relationships between independent and dependent variables and correlation between explanatory variables. [24] revealed that GMM estimators can account for missing variables and overcome endogeneity bias. Estimation is performed using lagged instruments of the dependent variable in difference and level form, as well as exogenous variables in different forms. The lag used during testing is lag (1 1) , which is a crucial parameter that determines the set of instrument variables for consistent and efficient GMM estimation.

To maintain model validity and prevent instrument overfitting, the collapse technique is applied to the GMM instruments, and the estimation uses a robust two-step approach to obtain standard errors consistent with heteroskedasticity.

3.4 Empirical Model

Model for CatFat:

$$LC_{i,t} = \beta_1 LC_{i,t-1} + \beta_2 COMP_{i,t} + \beta_3 Capital_{i,,t} + \beta_4 NIE_{i,t} + \beta_5 ROA_{i,t} + \beta_6 GDP_{i,t} + \beta_7 Unemploy_{i,t} + \beta_8 Dcrisis_{i,t} + \varepsilon_{i,t}$$

Model for CatNotFat:

$$LNC_{i,t} = \beta_1 LNC_{Ni,t-1} + \beta_2 COMP_{i,t} + \beta_3 Capital_{i,,t} + \beta_4 NIE_{i,t} + \beta_5 ROA_{i,t} + \beta_6 GDP_{i,t} + \beta_7 Unemploy_{i,t} + \beta_8 Dcrisis_{i,t} + \varepsilon_{i,t}$$

The following variables are defined within the dynamic panel data model, where i represents the Bank Index and denotes the Time Index, with β being the Coefficient to be estimated: the dependent variables are LC (Liquidity Creation, proxied by Cat Fat) and LNC (Liquidity Creation, proxied by Cat Not Fat), reflecting the bank's core function . The primary independent variables are COMP for Bank Competition and Capital for Bank Capital . The model includes several control variables: NIE (Non-Interest Expense / Total Assets) and ROA (Return on Assets or Bank Profitability) serve as bank-specific controls ; while GDP (Economic Growth), Unemploy (Unemployment Rate), and Dcrisis (Dummy Crisis Variable) are included as macroeconomic controls to capture external economic conditions and the impact of the COVID-19 crisis .

4 Research Results and Empirical Analysis

4.1 Descriptive Statistics

The data overview in Table 1 covers 7,300 observations and was processed using Winsorization at the 5th and 95th percentiles to mitigate the influence of outliers. Despite three variables having a Standard Deviation (Std. Dev.) greater than the Mean, this is considered a relative scale issue rather than a substantial outlier problem because the Mean is close to zero. Diagnostic analysis confirms data quality: the Kurtosis values (2.5 to 2.7) are near the ideal of 3, indicating that extreme outliers causing leptokurtosis were successfully eliminated. The remaining Skewness of around -0.7 is within acceptable limits for econometric analysis.

Table 2. Descriptive Statistic

Variable	Observasi	Mean	Standard Deviation	Min	Max
Catfat Liquidity	7.300	0.0907235	0.2934496	-0.5182400	0.4769337
Catnotfat Liquidity	7.300	0.0182604	0.2902393	-0.5393457	0.4834387
Learner Index	7.300	0.0259832	0.4021381	-0.8883132	0.5911812
Capital Ratio	7.300	0.2182343	0.135976	0.0892	0.4882
NIE	6,404	0.0201216	0.0130398	0.0064276	0.0536826
ROA	6,319	0.006636	0.0076429	-0.0259457	0.0321246

GDP Growth	7,300	0.0394944	0.0329403	-0.0654	0.0919
Unemployment	7,300	0.0465146	0.016099	0.0084	0.1126
DCrisis	7,300	0.4	0.4899315	0	1

Cat Fat Liquidity Creation shows higher average of 9.07%, while Cat Not Fat shows lower average of 1.83%. This significant difference indicates off-balance sheet liquidity activities play a large role in total liquidity creation by commercial banks in Asia Pacific. Bank Competition Index (Lerner Index) has mean value near zero (0.0260), indicating moderate market power with widespread (Std. Dev=0.4021). Capital Ratio (CAR) shows strong capitalization with average 21.82%, far exceeding regulatory limits.

4.2 Correlation Analysis

Table 2 presents correlation matrix to test linear relationships between independent variables and identify multicollinearity.

Table 3. Correlation Matrix

	LCF	LCNF	Competition	Capital	NIE	ROA	Dcrisis	GDP	Unemployment
Competition	0.0842	0.1261	1	-	-	-	-	-	-
Capital	-0.2369	-0.2497	0.1910	1	-	-	-	-	-
NIE	-0.0237	-0.0616	0.1457	0.3418	1	-	-	-	-
ROA	0.0506	0.0047	0.2991	0.1762	0.1252	1	-	-	-
Dcrisis	-0.0299	-0.0191	0.0040	0.0588	-0.0425	-0.0703	1	-	-
GDP	-0.0905	-0.1530	-0.2359	0.0686	0.1701	0.1940	-0.2244	1	-
Unemployment	-0.1284	-0.2151	-0.3244	0.1386	0.3937	0.1206	0.0362	0.3549	1

Generally, independent variables show low correlation levels, with the highest coefficient among independent variables only reaching 0.394. Since no variable pairs show correlation exceeding the critical threshold of 0.80, the multicollinearity risk is low. Cat Fat and Cat Not Fat Liquidity Creation show moderate negative correlation with Bank Capital (CAR) at -0.237 and -0.250. respectively, consistent with Financial Fragility Crowding Out theory

4.3 GMM Validity Test

All six model estimations meet main GMM diagnostic criteria. Arellano-Bond AR (2) test produces probability values above 0.10 in all tested models, indicating no second-order serial correlation in error terms. Hansen test shows probability values consistently exceeding 0.10 across all models, indicating instruments used in all models are valid. Since both models (CatFat and CatNotFat) consistently pass AR (2) and Hansen tests, all regression estimation results are considered valid and consistent for findings analysis.

4.4 Regression Result

4.4.1 Combined Group Results

Table 4 presents regression results for combined group (developed and developing countries).

Table 4. Combined Group Regression Results

Variable	Liquidity Creation *CatFat*	Variable	Liquidity Creation *CatNotFat*
LC-1	0.4901803***	LC-1	0.4621416***
	0.000		0.001
Bank Competitiom	0.0028054	Bank Competitiom	0.0200074
	0.870		0.240
Bank Capital	-0.4113257***	Bank Capital	-0.4297275 ***
	0.001		0.000
NIE Ratio	2.147109***	NIE Ratio	1.998917***
	0.001		0.001
ROA	2.316131***	ROA	1.430985**
	0.000		0.019
GDP Growth	-0.3851027***	GDP Growth	-0.5145879 **
	0.001		0.010
Unemployment Rate	-1.876852***	Unemployment Rate	-2.308293***
	0.000		0.001
COVID-19 Crisis	0.0144697***	COVID-19 Crisis	0.0155307 ***
	0.001		0.001

Note: *** p<0.01, ** p<0.05, * p<0.10

Bank Competition (Lerner Index) shows an insignificant effect on liquidity creation in both models This insignificance indicates that competition's effect in aggregate Asia Pacific does not produce clear tendencies supporting either the Character Value Hypothesis or the Innovation and Efficiency Channel. Theoretically, this insignificance is most often explained by the cancel out effect, where positive competition effects on efficient banks (Innovation and Efficiency Channel) are canceled by negative effects on vulnerable banks (Character Value Hypothesis) when developed and developing country samples are combined. Therefore, **Hypothesis H1 is rejected** in the combined sample.

Bank Capital (CAR) shows negative and highly significant coefficients at 1% level in both models Negative coefficients strongly support the Financial Fragility Crowding Out hypothesis. This theory states that increased capital (equity) reduces dependence on deposits as funding sources, naturally reducing liquidity transformation activities and liquidity creation.

In Asia Pacific commercial banks' context, results confirm trade-off between stability (increased by capital) and core intermediation function (inhibited by capital). Based on strong results, **Hypothesis H2 is accepted**.

Control variables strengthen the Asia Pacific banking operational context. Profitability (ROA) and NIE Ratio both show positive and significant coefficients in both models, implying that more profitable banks have greater flexibility and internal capital buffers, allowing them to expand credit distribution and liquidity creation safely. Conversely, the Unemployment Rate has negative and highly significant coefficients; high unemployment collectively reduces credit demand because people's purchasing power and business investment plans decline. GDP Growth has negative and significant coefficients in both models, which can be interpreted as a significant non-bank crowding out phenomenon in the Asia Pacific, where companies tend to seek capital market financing rather than banks when economic conditions are strong.

COVID-19 Crisis Dummy shows positive and highly significant coefficients at 1% level in both models. Positive coefficients strengthen the view that banks function as "first lenders" during crisis periods. Overall, Asia Pacific banks collectively increased their liquidity creation capacity during the COVID-19 crisis. This increase reflects banks' proactive actions in meeting increased demand for cash or credit from businesses and individuals, driven by monetary policies facilitating liquidity. Based on significant and consistent results, **Hypothesis H3 is accepted.**

4.4.2 Developing Countries Group Results

Table 5 presents regression results for developing countries group.

Table 5. Developing Countries Group Regression Results

Variable	Liquidity Creation *CatFat*	Variable	Liquidity Creation *CatNotFat*
LC-1	0.5991925***	LC-1	0.6220911***
	0.000		0.000
Bank Competitiom	-0.0729459***	Bank Competitiom	-0.0602298***
	0.001		0.001
Bank Capital	-0.206538***	Bank Capital	-0.1813195***
	0.001		0.002
NIE Ratio	3.010449***	NIE Ratio	2.840164***
	0.000		0.000
ROA	4.422671***	ROA	3.613816**
	0.001		0.010
GDP Growth	-0.2596524**	GDP Growth	-0.3071089***
	0.030		0.007
Unemployment Rate	-1.069777***	Unemployment Rate	-1.311385***
	0.004		0.000
COVID-19 Crisis	0.0270535***	COVID-19 Crisis	0.0312389***
	0.001		0.0001

Note: *** p<0.01, ** p<0.05, * p<0.10

Bank Competition shows negative and highly significant coefficients at 1% level in both models. Negative coefficients indicate that increased competition level (decreased Lerner Index) positively affects liquidity creation. This finding clearly supports the Innovation and Efficiency Channel theory. In developing Asia Pacific countries context, increased competition encourages banks to increase operational efficiency, innovate in credit distribution, and maintain market share by expanding loans.

This aligns with [16] findings showing competition functions as strong encouragement forcing banks to increase operational efficiency and innovate.

Bank Capital shows negative and significant coefficients at 1% and 5% levels in both models. Significant negative coefficients support Financial Fragility Crowding Out hypothesis. This theory argues that increased capital encourages investors to replace liquid deposits with shares, reducing fund availability for maturity transformation and liquidity creation. This aligns with [3] findings in Asia Pacific, also finding negative relationships between capital and liquidity creation.

Specific bank control variables like Profitability (ROA) and NIE Ratio show positive and significant coefficients in both models, indicating financially healthier banks tend to produce more liquidity. In macroeconomic context, Unemployment Rate has negative and highly significant coefficients at 1% level, indicating high unemployment reduces credit demand and encourages bank caution, thus inhibiting liquidity. Conversely, GDP Growth shows negative and significant coefficients, which can be seen as indication of significant non-bank crowding out effect in developing countries.

COVID-19 Crisis Dummy shows positive and highly significant coefficients at 1% level in both models. Positive coefficients with significance support the view that banks function as "first lenders" during economic crisis periods. This proves developing country banks actively increased their liquidity capacity, triggered by credit demand surges and significant monetary and fiscal policy interventions from governments during pandemic.

4.4.3 Advanced Countries Group Results

Table 6 presents regression results for advanced countries group.

Table 6. Advanced Countries Group Regression Results

Variable	Liquidity Creation *CatFat*	Variable	Liquidity Creation *CatNotFat*
LC-1	0.4293403***	LC-1	0.3503761***
	0.000		0.000
Bank Competitiom	0.0689946*	Bank Competitiom	0.0983933***
	0.051		0.006
Bank Capital	-0.4884021***	Bank Capital	-0.5788876***
	0.000		0.001
NIE Ratio	3.362517**	NIE Ratio	3.406859*
	0.049		0.059
ROA	-0.9975438	ROA	-2.722216
	0.570		0.175
GDP Growth	0.9444047***	GDP Growth	0.9150271***
	0.001		0.001
Unemployment Rate	-1.234373	Unemployment Rate	-1.096946
	0.181		0.269
COVID-19 Crisis	0.0126323*	COVID-19 Crisis	0.0098575
	0.064		0.176

Note: *** p<0.01, ** p<0.05, * p<0.10

Bank Competition shows positive and significant coefficients in both models. Positive coefficients indicate that increased competition (decreased Lerner Index) significantly reduces liquidity creation, directly supporting the Character Value Hypothesis. This phenomenon occurs due to mature market structure in advanced Asia Pacific countries: intense competition erodes bank profits, and because these banks are highly affected by regulatory supervision (Basel III) and capital market assessments, profit decrease causes banks to reduce or fear taking risks. Thus these banks respond by reducing liquidity creation activities (loan forwarding) to maintain safe capital ratios and maintain market confidence. This finding aligns with [22] previous research, also showing increased competition leads to decreased liquidity creation, supporting Character Value Hypothesis.

Bank Capital analysis shows highly significant negative results at 1% level in both models. Significant negative coefficients support Financial Fragility Crowding Out theory. The core argument is that increased capital (equity) causes loss of liquid deposit access, ultimately reducing funding sources for liquidity creation. Additionally, increased capital forces banks to reduce liquidity-creating assets (loans) and shift to safer assets (like government securities).

This shift (known as crowding out) directly suppresses LC, as banks no longer aggressively perform maturity transformation. This aligns with [23] findings showing negative association between regulatory capital and on-balance sheet liquidity creation.

For control variables, GDP Growth shows positive and highly significant coefficients in both models. Positive GDP coefficient supports pro-cyclical theory, consistent with expectations in mature markets: banks tend to increase loans and liquidity when economic projections look good. NIE Ratio also shows significant positive results, indicating banks active in efficiency and deposit collection usually can create more liquidity. Conversely, Profitability (ROA) and Unemployment Rate show no significance. This insignificance indicates that in advanced countries, internal capital existence (ROA) and labor market fluctuations (Unemployment) have smaller roles in determining liquidity amounts, due to capital market mechanism and monetary policy dominance.

COVID-19 Crisis Dummy shows positive coefficients but with weak or insignificant. Significant difference from developing countries shows advanced country banks' reactions to COVID-19 crisis tend to be calmer. Economically, because these banks already had better capital and liquidity reserves before crisis occurred, liquidity demand surges during pandemic did not cause significant liquidity creation increases.

4.4.4 Cross-Group Comparison

Heterogeneity in Competition Effects: **Hypothesis H4**, which posits differences in the direction and strength of competition's influence, is **accepted**. In developing countries, competition proved significantly negative (due to the Lerner Index being inversely related to competition), which means it increased liquidity creation (LC). This finding supports the Innovation and Efficiency Channel. Increased competition drives banks to enhance operational efficiency and innovate in credit distribution to maintain market share, aligning with findings by [8] who show competition functions

as a strong encouragement for banks to increase efficiency.

Conversely, in advanced countries, competition was found to be significantly positive, indicating that increased competition reduced liquidity creation. This confirms the Character Value Hypothesis. In mature markets, competitive pressure erodes bank franchise value, leading banks under strict regulation to become cautious, a result consistent with research by [22]. This significant difference demonstrates that the competition's influence mechanism is heterogeneous, exhibiting opposite directional effects across the two country groups.

Heterogeneity in Capital Effects: **Hypothesis H5**, concerning the differences in the strength of bank capital's influence, is **accepted**. While the directional effects are similarly negative across both groups (universally supporting the Financial Fragility Crowding Out hypothesis), the influence strength differs substantially. The coefficients in advanced countries are much larger than those in developing countries. This significant magnitude difference underlines that the capital crowding out impact on deposits and LC is much stronger in advanced countries, primarily due to their more efficient capital markets.

Heterogeneity in COVID-19 Crisis Effects**: Hypothesis H6**, regarding the differences in the COVID-19 crisis's influence, is **accepted**. The highly significant positive coefficient of the crisis dummy across all categories confirms the general role of commercial banks as "first lenders" during the systemic shock, a phenomenon widely explored in literature [6].

However, the response was highly differentiated: in developing countries, the crisis triggered a highly aggressive and significant liquidity creation response. In sharp contrast, the impact in advanced countries was less significant (smaller, often insignificant coefficient). These marked differences confirm that crisis policy effectiveness and liquidity creation mechanisms are highly influenced by domestic market structure and prior capitalization capacity.

5 Conclusion

Based on empirical analysis of 713 commercial banks in 12 Asia Pacific countries during 2014-2023 using System GMM method, this study produces the following conclusions:

First, The study’s analysis of commercial banks in the Asia Pacific (2014-2023) reveals a crucial heterogeneity in the determinants of liquidity creation (LC), particularly concerning market structure. The impact of inter-bank competition is found to be non-uniform . In developing countries, increased competition is significantly negative, supporting the "Innovation and Efficiency Channel" by motivating banks to enhance efficiency and innovate credit products to capture market share . Conversely, in advanced countries, competition is significantly positive, confirming the "Character Value Hypothesis." Here, competitive pressure erodes bank franchise value, leading banks (under strict regulation) to become cautious and reduce risky LC activities . In essence, competition stabilizes LC in developing markets but damages it in advanced markets.

Second, major finding concerns bank capital, which exhibits a consistent and significant negative impact on LC across all country categories (at 1% significance). This universally supports the "Financial Fragility Crowding Out" hypothesis, implying that higher capital reduces the reliance on traditional deposits, thereby inhibiting liquidity transformation . Crucially, the magnitude of this negative effect is substantially larger in advanced countries compared to developing countries. This difference underscores that prudential capital policies, such as Basel III, must carefully navigate the inherent trade-off between financial stability and the bank's intermediation function, especially given the Asia Pacific region's reliance on bank-based finance.

Finally, the COVID-19 crisis revealed a fundamental difference in bank response shaped by economic development. The highly significant positive coefficient of the crisis dummy across all categories confirms the general role of commercial banks as "first lenders" during the systemic shock . However, the response was highly differentiated: in developing countries, the crisis led to a very strong and highly significant LC increase, reflecting high responsiveness to surging credit demand, heavily backed by extensive government monetary and fiscal interventions.

In sharp contrast, the impact in advanced countries was less significant (smaller, insignificant coefficient) , indicating a calmer and more stable response due to banks having stronger pre-crisis capital and liquidity buffers.

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