



Exploring proxies of net interest margin : a comparative analysis of asian developed and emerging banking sector

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ABSTRACT

This study aims to explore the proxies of Net Interest Margin (NIM) across banks in both developed and emerging Asian countries. The research spans from the first quarter of 2012 to the fourth quarter of 2023 and involves countries including Japan, Hong Kong, Singapore (developed) and Indonesia, Malaysia, and the Philippines (emerging). The estimation method is panel data, using fixed effects panel data regression to accommodate variations over time and across entities. The result showed that in developed countries, banks benefit from maintaining a low Cost-to-Income Ratio (CIR) and managing provisions effectively, enhancing operational efficiency and profitability. Challenges such as the negative impact of larger asset sizes and economic shocks like COVID-19 necessitate innovative and adaptive strategies. While in emerging countries, effective management of provisions, along with adapting to GDP growth and inflation impacts, is crucial. The negative effects of COVID-19 and inflation on Net Interest Margin (NIM) highlight the importance of resilient strategies that enhance efficiency and adapt to economic changes. For both regions, prioritizing effective provisions management and adapting to economic fluctuations are key to sustaining profitability.

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INTRODUCTION

The imperative to study operational efficiency and performance across various financial sectors has never been more pronounced in the dynamic and interconnected global financial landscape. As economies worldwide become increasingly integrated, financial institutions face the dual challenge of navigating complex regulatory environments while striving to enhance their operational efficacy and profitability. The research conducted by Almaskati (2022) highlights the crucial impact of operational efficiency on a bank's profitability, revealing varying levels of efficiency among banks. This variation suggests that there is considerable potential for banks to enhance their profitability by focusing on improvements in operational efficiency (Almaskati, 2022).

The importance of net interest margin (NIM) in assessing operational efficiency highlights the capacity of banks to manage the spread between the interest earned on loans and the interest

paid on deposits. Given its role in handling savings and facilitating loans, NIM is a crucial metric for evaluating operational efficiency within the banking sector (Obeid, 2024). Additionally, NIM is recognized as a key indicator of financial stability, regularly monitored by central banks to assess the banking sector's robustness, given its utility in forecasting potential bank failures (Obeid, 2022).

Moreover, the role of early warning systems in predicting bank failures, as discussed in the context of the Arab region, emphasizes the need for robust monitoring mechanisms. By identifying financial indicators, these systems can significantly contribute to forecasting potential bank failures, thereby ensuring financial stability (Obeid, 2022). This approach aligns with the broader analysis of factors influencing operational efficiency, including macroeconomic conditions, regulatory frameworks, and technological innovations, offering a comprehensive view of the financial ecosystem in several countries.

Further analysis reveals that NIM's determinants, including bank size and the cost-income ratio, along with external economic conditions, play a significant role in operational efficiency. These findings suggest that strategic management of both internal and external factors can lead to substantial profitability improvements, as reflected in key metrics such as NIM (Obeid, 2024). Building on the foundational insights offered by Obeid (2024), this study incorporates a multidimensional analysis of operational efficiency within banks in six Asian countries, underpinned by the critical examination of Net Interest Margin (NIM) and its broader implications on financial stability and performance. This approach underscores the predictive power of NIM in anticipating financial distress, suggesting that a similar analytical framework could offer valuable foresight into several countries' banking sector's resilience.

Furthermore, Lotto (2019) highlights the impact of external macroeconomic factors and internal bank policies on operational efficiency, the works provide a comparative perspective, emphasizing how operational efficiency, as measured by NIM, is affected by regulatory changes, technological advancements, and market dynamics (Lotto, 2019). This perspective is instrumental in understanding the cross-country financial sector's operational efficiency, as it suggests that both internal management practices and external environmental factors play crucial roles in shaping NIM and, by extension, overall sectoral performance.

In recent years, the banking sector has witnessed profound changes driven by the need for innovation and improved operational performance. Tanzanian banks are presently experiencing significant shifts in their business models, embracing new technologies and implementing IT systems, which are thought to enhance efficiency (Lotto, 2019). These advancements are expected to streamline operations, reduce costs, and improve service delivery, allowing banks to remain competitive in an increasingly digital financial landscape.

In sum, the exploration of operational efficiency across different financial sectors within developed countries such as Japan, Hong Kong, and Singapore, and Emerging countries such as Indonesia, Malaysia, and the Philippines (Benzerrouk et al., 2021), provides a nuanced understanding of the challenges and strategies for enhancing operational efficiency. This analysis distinguishes between the experiences of developed countries, which often have more robust financial systems and regulatory frameworks, and Emerging countries, where financial markets may be less mature and more vulnerable to economic fluctuations. By considering the impact of macroeconomic conditions, regulatory environments, and technological advancements, this research contributes valuable perspectives on improving financial stability and efficiency across the diverse financial landscape of these regions.

RESEARCH METHOD

The population in this study consists of all companies listed in the stock exchanges of Japan, Hong Kong, Singapore, Indonesia, Malaysia, and the Philippines from the inception of these countries' stock markets. The data collected pertains to companies in the financial sector that are listed on the

Stock Exchange and have published consecutive financial reports from the first quarter of 2012 to the fourth quarter of 2023. The selection of this period was based on the consideration of using quarterly data from the last 10 years up to the most recent quarterly data available at the time the research was initiated. The data is sourced from Capital IQ and Capital IQ Pro. The data is winsorized at 1% to reduce bias (Alexander, 2016)

The estimation model is panel of data. The empirical model adopts a quantitative approach to investigate the impact of several bank-specific and macroeconomic variables on the NIM of financial sector companies listed on the Cross-National Stock Exchange from 2002 to 2023, the model is formulated as follows (Obeid, 2024):

$$NIM_{it} = \beta_0 + \beta_1PROV_{it} + \beta_2CIR_{it} + \beta_3SIZ_{it} + \beta_4ITR_t + \beta_5INF_t + \beta_6GDP_t + \beta_7COVID_t + \varepsilon_{it}$$

Table 1. Variable Description

Variable	Notation	Description	Measure
Dependent	NIM	Net Interest Margin used to measure operational efficiency	$\frac{Net\ Interest\ Income}{Average\ Interest\ Earning\ Assets}$
Independent	PROV	The coverage ratio of the non-performing loans.	$\frac{Total\ provisions}{Total\ Non - performing\ Loans} \times 100\%$
	CIR	Cost-to-Income Ratio	$\frac{Total\ Operating\ Expenses}{Total\ Operating\ Income} \times 100\%$
	SIZ	The logarithm of assets.	Log(Total Assets)
	ITR	The main interest rate of the monetary policy.	
	INF	The inflation rate	
	GDP	Growth rate	$GDP\ Growth = \frac{(GDP2 - GDP1)}{GDP1}$
	COVID	Coronavirus Crisis	

The data for this study was analyzed using panel data regression, examining financial sector companies listed on the stock exchanges of Japan, Hong Kong, Singapore, Indonesia, Malaysia, and the Philippines. This approach allowed for the assessment of both time-series and cross-sectional variations from 2012 to 2023. The panel data models employed included pooled, fixed effects, and random effects, which facilitated a comprehensive analysis of the impact of various bank-specific and macroeconomic variables on Net Interest Margin (NIM). Through this methodological framework, the study effectively captured the dynamic interactions between these variables across different countries and periods. This robust approach to data analysis ensures a nuanced understanding of the factors influencing NIM in the financial sector across Asian markets.

RESULTS AND DISCUSSIONS

Descriptive Statistics

This research utilizes the fixed effects model within a panel data framework to investigate the financial sector across multiple Asian markets. The research variables are analyzed through descriptive statistics to illustrate diverse perspectives based on the economic status of countries – developed and emerging – and differences within the economic indicators. The detailed statistical descriptions according to country classification are presented in the subsequent tables, highlighting the contrasts and similarities in economic indicators across different global contexts.

Table 2. Descriptive Statistic

Variable	Category	Observations	Mean	Standard Deviation	Median	Minimum	Maximum
NIM	All	7,229	2.411	1.992	1.583	0.214	10.593
	Developed	4,222	1.184	0.550	1.061	0.214	5.991
	Emerging	3,007	4.133	2.010	3.833	0.214	10.593

CIR	All	8,529	3.134	7.473	1.973	(28.616)	44.223
	Developed	5,047	3.500	7.227	2.488	(28.616)	44.223
	Emerging	3,482	2.603	7.788	1.472	(28.616)	44.223
Prov	All	6,904	92.380	84.778	57.465	15.181	453.405
	Developed	4,711	85.007	88.445	45.175	15.181	453.405
	Emerging	2,193	108.220	73.877	92.323	15.181	453.405
Size	All	8,586	16.916	2.246	17.175	11.153	22.080
	Developed	5,114	18.068	1.559	17.769	15.004	22.080
	Emerging	3,472	15.220	2.016	15.440	11.153	20.423
INT	All	9,264	2.882	2.923	1.593	(0.223)	8.870
	Developed	5,664	0.768	0.914	0.458	(0.223)	4.217
	Emerging	3,600	6.207	1.608	6.630	2.679	8.870
INF	All	9,264	2.267	1.972	2.276	(0.929)	7.763
	Developed	5,664	1.431	1.544	0.884	(0.929)	7.332
	Emerging	3,600	3.581	1.854	3.303	(0.929)	7.763
GDP	All	9,264	2.416	3.402	2.575	(9.681)	8.210
	Developed	5,664	1.019	2.853	1.340	(9.681)	8.210
	Emerging	3,600	4.615	3.012	5.069	(9.681)	8.210
COVID	All	9,264	0.083	0.276	0.000	0.000	1.000
	Developed	5,664	0.083	0.276	0.000	0.000	1.000
	Emerging	3,600	0.083	0.276	0.000	0.000	1.000

The Net Interest Margin (NIM) illustrates a clear distinction between developed and emerging regions. For all countries, the mean NIM is 2.411 with a standard deviation of 1.992, revealing significant variability in how interest margins are managed across diverse economic settings. The median of 1.583 points to a right-skewed distribution, suggesting that a significant number of entities have lower margins, while a few high values push the mean up. In developed countries, a mean of 1.184 and a low standard deviation of 0.550 show more consistent and lower interest margins, likely due to stringent financial regulations and competitive banking environments. Conversely, emerging countries exhibit a much higher mean of 4.133 with a standard deviation of 2.010, indicative of less uniformity and potentially riskier financial environments where banks might be charging higher interest rates to offset greater perceived risks.

The Cost-to-Income Ratio (CIR) data reflects operational efficiencies across different economic regions. The all countries have a mean CIR of 3.134 with a substantial standard deviation of 7.473, signaling significant heterogeneity in how costs are managed relative to income. The median of 1.973 significantly below the mean indicates a left-skewed distribution, where most entities operate at lower cost ratios, with a few outliers having exceptionally high costs. Developed countries, with a tighter mean of 3.500 and a lower variability standard deviation of 7.227, suggest more uniform and efficient cost management. In emerging countries, though the mean CIR is lower at 2.603, the high standard deviation of 7.788 and similar maximum values as the developed countries indicate that while many entities manage costs effectively, some suffer from extreme inefficiencies.

Provision for loan losses shows significant variances across categories, with a all-country's mean of 92.380 and a very high standard deviation of 84.778, highlighting the diverse risk assessment and management strategies across regions. The extremely high maximum value of 453.405 compared to the median of 57.465 suggests that some countries or entities provision excessively for potential losses, skewing the distribution rightwards. Developed countries show a slightly lower mean of 85.007 but with a high degree of variability standard deviation of 88.445, pointing to differing levels of caution and economic stability. Emerging countries not only have a higher mean of 108.220 but also show a skewed pattern with higher provisions, possibly reflecting higher perceived default risks or differing financial reporting standards.

The analysis of asset size across countries highlights distinct economic scales. The all countries have a mean of 16.916 with a low standard deviation of 2.246, suggesting general uniformity in asset sizes across the sample. However, the slightly higher mean of 18.068 in

developed countries with a narrow standard deviation of 1.559 indicates larger and more homogeneously sized institutions, reflecting more developed financial sectors. Emerging countries have a lower mean asset size (15.220) and a higher standard deviation of 2.016, indicating a broader range of institution sizes, from very small to comparably large, which might reflect a more segmented market or different stages of financial sector development.

Interest rates across the sample are quite varied, with the all countries displaying a mean of 2.882 and a high standard deviation of 2.923, indicating a broad spread of rates influenced by differing economic policies and conditions. In developed countries, the mean interest rate is significantly lower at 0.768, with a standard deviation of 0.914, suggesting a stable economic environment with controlled interest rates. Conversely, emerging countries show a mean of 6.207 with a standard deviation of 1.608, reflecting more dynamic and potentially unstable economic conditions that necessitate higher rates. This right-skewed distribution in emerging regions indicates that while most have higher rates, a few regions with extremely high rates skew the mean upwards.

The inflation rate for the all country's mean of 2.267 with a standard deviation of 1.972, showcasing a diverse impact across regions. Developed countries exhibit a more stable economic scenario with a lower mean inflation rate of 1.431 and a standard deviation of 1.544. Emerging countries, on the other hand, face higher inflation, with a mean of 3.581 and a standard deviation of 1.854, indicative of more volatile economic conditions. The right skew in emerging countries suggests that while inflation is generally higher, it is driven up further by a few regions with exceptionally high inflation rates.

GDP growth rates across the sample illustrate a mean of 2.416 with a high standard deviation of 3.402, reflecting varied economic growth rates. Developed countries experience slower growth with a mean of 1.019 and a higher variability standard deviation of 2.853, typical of mature, stable economies. In contrast, emerging countries report a higher mean growth rate of 4.615 with a standard deviation of 3.063, characteristic of emerging economies that, while growing faster, also face more growth volatility. The right-skewed distribution indicates that some regions are experiencing exceptionally high growth, pushing the overall average up.

The overall minimal impact of COVID-19 across the countries, with a mean of 0.083 and a standard deviation of 0.276, suggests a generally mild effect on the entities studied. Both developed and emerging countries report an identical mean impact rating of 0.083, underscoring a uniformity in the pandemic's minimal economic disruptions as captured in the data. However, the presence of a maximum impact of 1.000 indicates that in specific instances, COVID-19 had a significant effect, although these are outliers within the generally low-impact scenario.

Result and Empirical Interpretation

Table 3 presents a comparative analysis of various financial indicators across three distinct categories: All countries, Developed Countries, and Emerging Countries. This comparative approach is crucial as it enables us to understand how different economic and developmental contexts influence key banking metrics. By analyzing these distinctions, we can identify unique challenges and opportunities within each economic grouping, providing insights that are essential for targeted strategic planning and policy-making.

Table 3. Panel Data Regression All Categories

Independent Variable	All		Developed		Emerging	
	Coef,	P	Coef,	P	Coef,	P
CIR	0.001	0.299	0.001	0.019	0.001	0.705
PROV	0.001	0.045	0.000	0.002	0.001	0.018
SIZE	-0.267	0.001	-0.716	0.000	-0.104	0.379
INT	-0.109	0.001	-0.064	0.044	-0.048	0.292
INF	-0.010	0.600	0.053	0.001	-0.103	0.001
GDP	0.003	0.392	0.003	0.625	0.018	0.004

COVID	-0.195	0.000	-0.062	0.046	-0.363	0.001
F-statistic	18.697		39.312		7.548	
Adj. R-Squared	0.013		0.199		0.028	
Prob > F	0.000		0.000		0.000	

The Prob F for all three models is below 0.05 indicating that the models are valid. It means that at least one variable is significant to the dependent variable. The prob F is 0.000 indicating that the regression model is valid. Therefore, the model as a whole is reliable for understanding the factors affecting NIM across all countries.

When the model is applied to all countries combined, it exhibits a relatively low Adjusted R-squared value of 0.013, indicating that it explains only about 1.3% of the variability in NIM. This suggests that a large proportion of the variability remains unexplained, possibly due to other unmodeled factors or intrinsic differences within the broader and more diverse countries. However, when the data is divided into categories of developed and emerging countries, there is an increase in the model's explanatory power. For developed countries, the Adjusted R-squared value increases to 0.199, showing that the model can explain approximately 19.9% of the variability in NIM, which indicates a good fit in capturing the dynamics of NIM in developed economies. Meanwhile, for emerging countries, the Adjusted R-squared also rises to 0.028. Although this is still relatively low, the increase suggests that the model becomes more effective at explaining the variability in NIM in emerging countries compared to when applied across all countries collectively. Therefore, this division into categories of developed and emerging countries proves to be a better approach in enhancing the explanatory power of the model.

Starting with the Cost-to-Income Ratio (CIR), the finding is when combining all countries in the all categories analysis, the Cost-to-Income Ratio (CIR) exhibits a positive but nonsignificant relationship with Net Interest Margin (NIM). However, when analyzing the data by dividing it into categories of developed and emerging countries, clearer results emerge. In developed countries, CIR shows a positive and significant relationship with NIM, with a P-value of 0.019. This suggests that in developed regions, a lower cost relative to income is associated with higher net interest margins. On the other hand, in emerging countries, the relationship between CIR and NIM remains nonsignificant with a P-value of 0.705.

This differentiation highlights the varying dynamics of financial performance between developed and emerging markets. The results of developed countries and the all countries are in contrast with (Obeid, 2024) which has a positive significant effect on the NIM. A lower CIR indicates higher operational efficiency, as it shows that a bank is able to generate more revenue relative to its operating costs (Saunders & Cornett, 2018). In developed markets, where banking systems are often more mature and competitive, efficient operations can significantly enhance profitability, as reflected in higher NIM. This is because banks in developed countries might have better technology, more streamlined processes, and economies of scale that reduce costs relative to income, enhancing their net margins on financial activities.

For bank management, the findings highlight the crucial role of cost management in developed markets. Strategies may include technological advancements, better risk management, and workforce optimization. In contrast, in emerging markets where CIR's impact on Net Interest Margin (NIM) is less clear, factors like economic conditions, regulatory changes, and market competition require a broader strategy.

The analysis of Provisions (PROV) reveals significant results across all countries with a marginal P-value of 0.045. However, when dissecting the data into developed and emerging countries, the influence of PROV becomes more pronounced. In both developed and emerging countries, PROV shows a significant and positive impact. This finding contrasts with previous studies which have no evidence of a significant relationship between provisions and NIM (Jouni & Obeid, 2021) and (Obeid, 2024). Continuing from this, effective management and operational efficiencies within a company typically lead to better cash flow management (Drucker, 1995). This

principle suggests that a company's ability to manage its provisions efficiently might reflect broader operational strengths that enhance overall financial health and liquidity.

The analysis of Asset Size (SIZE) reveals significant findings across the countries. In the All countries, SIZE is negatively associated with Net Interest Margin (NIM) and is statistically significant. This trend is even more pronounced in Developed Countries where SIZE is negatively significant to NIM. However, in Emerging Countries, the relationship between SIZE and NIM is not statistically significant. The results are inconsistent with the previous studies which have a significant positive relationship between SIZE and NIM (Obeid, 2024) and (Jouni & Obeid, 2021), while another study by (Ullah et al., 2023) show a significant negative relationship between the bank's size and the bank's efficiency.

The implications of these results for bank management are significant. In developed markets, the negative relationship suggests that larger banks might be facing diminishing returns on NIM, potentially due to factors like competitive pricing or diversified but lower-yield asset portfolios. Additionally, when a company's assets are too large, there could be an increase in operational bureaucracy, which in turn can lead to inefficiencies and slow down decision-making and business strategy implementation. For bank management, this indicates a need for strategies that counteract the negative impacts of increased size, perhaps by enhancing operational efficiency or innovating financial products. In emerging markets, the lack of significant findings suggests that SIZE does not directly influence NIM, pointing toward other factors as more critical determinants of profitability in these regions. This can guide management to focus on those other influential factors to optimize performance.

The analysis of Interest Rates (INT) across the countries indicates a consistent negative impact on Net Interest Margin (NIM), aligning with the hypothesis that higher interest rates would compress margins. In the all countries, INT is significant to NIM. But when the countries are categorized as developed and emerging countries, there is a slight difference of significance between the countries. Developed Countries have a negative significant effect on NIM. However, in Emerging Countries, the relationship is not statistically significant.

This implies that changes in interest rates have a measurable negative impact on the Net Interest Margin in the banking sectors of developed countries and when considering all countries together, but not in Emerging countries. The pronounced negative correlation between interest rates and NIM observed in developed countries and across entire countries indicates that higher interest rates might narrow the margin between lending and deposit rates, thereby diminishing bank profitability in these environments. Elevated interest rates tend to prompt more individuals to deposit their funds in banks, which consequently leads to a decrease in the number of people willing to invest or participate in business ventures (Budhidharma et al., 2023). This finding is in line with (Raharjo, 2014) and (Jouni & Obeid, 2021). However, this effect is not observed in Emerging countries, indicating that other factors might influence NIM more strongly in these regions.

For bank management, these findings highlight the importance of managing interest rate risks, particularly in developed markets where the negative impact on NIM is significant. Effective interest rate risk management strategies could include locking in funding costs at lower rates and optimizing the mix of interest-sensitive assets and liabilities to safeguard margins. In emerging markets, where the relationship is not significant, banks might focus on other operational or economic factors that could be more impactful on NIM, tailoring their strategies to local market conditions.

Inflation (INF) analysis shows varying impacts on Net Interest Margin (NIM) across different countries. In the All countries, the relationship between inflation and NIM is not statistically significant. However, in Developed Countries, inflation has an unexpected positive impact on NIM and is statistically significant. Conversely, in Emerging Countries, inflation negatively and significantly impacts NIM.

The significant negative relationship between inflation and NIM in Emerging countries suggests that higher inflation rates may erode the profitability of banks in these regions, possibly due to increased costs and reduced lending margins in an inflationary environment. It is inconsistent with the result of a previous study that showed a significant positive relationship between inflation and the NIM (Raharjo, 2014). Conversely, the positive relationship in developed countries suggests that banks in these regions may be able to manage or even benefit from inflation.

These results suggest that for bank management in developed countries, mild inflation may correlate with slightly higher net interest margins, possibly due to the ability to pass increased costs onto customers. Low and stable inflation is the prerequisite for sustained economic growth that can give benefit society (Budhidharma et al., 2023). Management in these regions might consider leveraging periods of mild inflation to enhance profitability. In emerging markets, where inflation detrimentally affects NIM, banks need to develop strategies to mitigate these effects, such as adjusting loan pricing and improving cost efficiency to preserve margins amidst higher inflation rates.

The analysis of Gross Domestic Product Growth (GDP) across the countries reveals different influences on Net Interest Margin (NIM). In the All and Developed Countries, the relationship between GDP growth and NIM is not statistically significant. However, in Emerging Countries, GDP growth positively and significantly correlates with NIM.

This implies that changes in GDP have a measurable positive impact on the Net Interest Margin in the banking sector of Emerging countries, but not in developed countries or when considering all countries together. The significant positive relationship between GDP and NIM in Emerging countries suggests that economic growth in these countries enhances the profitability of banks, possibly due to increased lending opportunities and improved economic conditions. It's important to note that the relationship between economic growth and interest rate margins remains controversial in previous literature, as some earlier studies have found this relationship to be significantly negative (Angori et al., 2019) and other previous studies did not find any evidence of a significant relationship (Jouni & Obeid, 2021). Obeid and Adeinat (2017) discovered a positive effect since economic expansion creates a favorable climate for launching new ventures or expanding existing ones, putting pressure on loan demand and resulting in an increase in bank interest revenue, resulting in a higher NIM.

For bank management, these findings indicate that economic growth does not uniformly impact bank profitability across all regions. In developed countries, where GDP growth shows no significant effect on NIM, management might need to focus on other factors that could drive profitability, such as innovation or efficiency improvements. Conversely, in emerging markets, where economic growth appears to enhance NIM, banks could benefit from aligning their growth strategies with broader economic expansion, potentially capitalizing on increased banking activities and demand for financial services as the economy grows. This strategic alignment could help maximize profitability in these dynamically growing economies (Piri, 2023).

The impact of COVID-19 (COVID) on Net Interest Margin (NIM) is consistently negative across all countries, reflecting the global disruption caused by the pandemic. In the All countries, COVID-19 significantly reduces NIM, as evidenced by a coefficient of -0.195 and a P-value of 0.000. This negative trend is similarly observed in Developed Countries with a coefficient of -0.062 and a P-value of 0.046. The effect is even more pronounced in Emerging Countries, where the coefficient deepens to -0.363 with a P-value of 0.001.

This implies that the COVID-19 pandemic has a measurable negative impact on the Net Interest Margin in the banking sector of both developed and Emerging countries, with the effect being more pronounced in Emerging countries. The significant negative relationship between COVID-19 and NIM suggests that the pandemic has adversely affected bank profitability, likely due to increased loan defaults, economic disruptions, and reduced lending activity during this

period. This result is consistent with previous studies by (Obeid, 2024). This indicates that the pandemic significantly pressured net interest margins, likely due to economic disruptions and changes in consumer behavior affecting bank revenues and costs. Bank management needs to consider the long-term implications of such global shocks and possibly enhance resilience to sudden economic changes.

For bank management, these results underscore the substantial impact of the pandemic on banking operations and profitability. The significant downturn in NIM due to COVID-19 suggests that banks need robust contingency planning and adaptive strategies to manage such global crises. In developed countries, the focus might be on resilience and recovery strategies to mitigate moderate impacts. In contrast, emerging countries, facing more severe effects, require comprehensive measures to safeguard operations and maintain financial stability (Piri, 2021). This may involve enhancing digital banking services, adjusting credit risk management frameworks, or securing liquidity to withstand prolonged economic disruptions.

In conclusion, based on the findings of this study, for banks in developed countries, the significant relationship between a lower Cost-to-Income Ratio (CIR) and higher Net Interest Margin (NIM) highlights the pivotal role of operational efficiency. This is complemented by the significant positive impact of provisions (PROV), suggesting that effective management of provisions reflects broader operational strengths that contribute to financial health and enhanced profitability. The negative correlation between larger asset sizes and NIM calls for a focus on reducing inefficiencies that come with scale, such as bureaucratic overhead. The mildly positive impact of inflation and the deleterious effect of COVID-19 on NIM further emphasize the need for adaptive financial strategies to manage economic fluctuations and global crises. For practical implementation, banks in developed countries should prioritize technological innovation, effective provisions management, and agile strategies that counteract the negative impacts of larger sizes and economic shocks.

In emerging countries, the analysis reveals that alongside GDP growth and inflation, the management of provisions (PROV) plays a significant role, with a positive correlation indicating that efficient handling of provisions may bolster NIM. This suggests that provisions reflect not just risk management practices but also an institution's ability to maneuver through operational challenges effectively. The significant negative impact of COVID-19 and inflation on NIM underscores the need for strategies that address these macroeconomic and global health challenges by enhancing operational efficiency and adapting pricing strategies to the economic context. Practical recommendations for banks in these regions include focusing on robust provisions management, aligning growth strategies with economic cycles, and developing resilient frameworks to manage risks associated with high inflation and pandemic-related disruptions.

CONCLUSION

This study has presented a comprehensive analysis of the factors influencing Net Interest Margin (NIM) across a diverse set of six Asian countries, split between developed (Japan, Hong Kong, Singapore) and Emerging (Indonesia, Malaysia, Philippines) countries. The findings reveal distinct regional differences in the determinants of Net Interest Margin (NIM). The Cost-to-Income Ratio (CIR) significantly influences Net Interest Margin (NIM) in Developed Countries, showcasing a positive relationship that supports the hypothesis linking operational efficiency to higher profitability. However, this relationship does not hold in the All or Emerging Countries countries, indicating that the impact of CIR on NIM varies with the level of economic development and market maturity. This suggests that while operational efficiency is crucial in developed markets, other factors may predominate in less mature economies.

Contrary to the expected negative impact, Provisions for loan losses positively correlate with NIM across all regions, suggesting that higher provisions, which reflect conservative risk

management, are associated with better financial outcomes. This consistent trend across varied economic conditions underscores the benefits of robust provisioning practices, likely enhancing stakeholder confidence and financial stability. It highlights the importance of prudent financial management in maintaining or even enhancing bank profitability.

The relationship between Asset Size and NIM is negative in Developed Countries and insignificant in Emerging Countries, suggesting that larger banks might struggle to maintain high net interest margins. This negative association might be due to factors like increased competitive pressures or diversified but lower-yield asset portfolios, especially in mature markets. Banks may need to strategically review their growth and operational efficiency to better align their scale with profitability objectives.

Interest rates negatively affect NIM in both the All and Developed Countries countries, confirming that higher rates tend to compress margins by increasing funding costs. This relationship is not significant in Emerging Countries, indicating different market dynamics or varying sensitivities to interest rate changes in these regions. The consistent negative impact in more developed markets underscores the need for effective interest rate risk management strategies to protect profitability.

Inflation impacts NIM differently across regions, with a positive effect in Developed Countries and a negative effect in Emerging Countries. This variation suggests that inflation can either erode or enhance bank profitability depending on local economic conditions and regulatory environments. Managing inflation risks thus requires tailored financial strategies that consider specific regional dynamics.

GDP growth has a significant positive effect on NIM only in Emerging Countries, with no notable impact in the All or Developed Countries countries. This demonstrates that economic growth can boost banking sector profitability in developing regions, likely due to increased demand for financial services amid expanding economic activities. The absence of a significant impact in more developed regions suggests that other factors may be more critical in influencing NIM there.

COVID-19's impact on NIM is significantly negative across all countries, with the most pronounced effects observed in Emerging Countries. This universal negative influence highlights the extensive economic disruptions caused by the pandemic, emphasizing the need for enhanced resilience and adaptability in banking operations. The particularly severe impact in less developed regions calls for urgent and comprehensive measures to secure financial stability and maintain operations during global crises.

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