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Dynamics of Diversification and Risk-Taking: Empirical Evidence from South Asia

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ABSTRACT

This study examines the impact of bank diversification on risk and stability in South Asian countries, focusing on three key types of diversification: income, funding, and asset diversification. Utilizing an unbalanced panel dataset of commercial banks over the period from 2001 to 2023, the analysis employs the system generalized method of moments (GMM) regression technique to explore how different diversification strategies influence bank performance. The findings reveal that income and asset diversification positively affect bank stability, while funding diversification appears to introduce instability. Additionally, the study shows that larger banks benefit more from income and asset diversification compared to smaller banks. The results underscore the complex and context-specific nature of diversification's impact on bank stability and risk, providing valuable insights for policymakers and financial institutions. Based on these findings, the study proposes several policy recommendations, including encouraging strategic income diversification, closely monitoring funding diversification, promoting asset diversification with caution, and tailoring policies to the needs of smaller banks. Moreover, it emphasizes the importance of strengthening regulatory frameworks and fostering financial innovation to enhance the resilience of the South Asian banking sector.

Keywords: Diversification, Stability, Bank Risk, South Asia

Introduction

Banks play a vital role in maintaining financial stability and fostering economic growth in today's evolving financial landscape. However, this role comes with risks that could disrupt their operations and impact the broader economy. Before the global financial crisis, financial deregulation and innovation prompted banks to pursue diversification. Policymakers in many countries eased restrictions on banks, blurring boundaries between commercial banking, investment banking, securities, and insurance (Kim et al., 2020). Banks form the cornerstone of emerging markets, playing a critical role in their economic development. However, the global economic downturn significantly affected financial sectors worldwide. As a result, the establishment of cohesive national economic systems necessitates a financial sector that is diverse, competitive, and secure (Nisar et al., 2018).

Market competition and deregulation have compelled banks to shift away from relying solely on interest-based business as their primary source of revenue (Meslier et al., 2014; Zhou, 2014). The empirical examination of income diversification remains limited in emerging economies like Malaysia, with most findings derived from the European context. Studies by (De Jonghe, 2010; Fiordelisi et al., 2011) highlighted that while, income diversification increases risk for European banks, it also offers certain benefits. Similarly, (Lee et al., 2014; Meslier et al., 2014) tested this theory in the US and Europe, concluding that a shift toward non-interest income enhances risk-adjusted returns and profitability. Banks achieve revenue diversification by engaging in activities such as brokerage, securities trading, investment banking, and other financial services.

To mitigate risks, banks employ diversification strategies, spreading their assets and services across various markets, industries, and regions. The global financial crisis of 2008–2009 has sparked a lot of interest in studying bank instability and risk-taking (Al-Khouri & Arouri, 2016; Brahmana et al., 2018). Major financial institution failures during banking crises are believed to have heightened vulnerability, prompting banks to transition into non-banking financial operations (Hunjra et al., 2021).

The primary objective of the current study is to examine the impact of bank diversification on risk and stability in South Asian banks. The study is motivated by ongoing process of diversification, which has been a critical strategy for banks to

enhance profitability and resilience in an increasingly competitive and volatile environment. However, the relationship between bank diversification, risk, and financial stability remains underexplored in the South Asian context. With the region's unique economic challenges, regulatory frameworks, and rapid financial innovation, understanding this dynamic is essential for policymakers and financial institutions aiming to promote a stable banking sector.

In a competitive business environment, banks have shifted from relying solely on traditional interest income, increasingly depending on non-interest revenue to ensure viability and stability. Over the past two decades, banks have increasingly diversified and expanded their revenue streams (Asif & Akhter, 2019). Moreover, (Zhou, 2014) reported that income diversification is essential for maintaining bank profitability, reducing risk, and enhancing the efficiency of financial system operations. However, the existing research offers conflicting empirical evidence and ambiguous theories regarding the relationship between bank diversification and instability, challenging proponents of income diversification (Alouane et al., 2022; Hunjra et al., 2020; López-Penabad et al., 2021; Wang & Lin, 2021).

The South Asian banking system is a suitable example for exploratory research to fill the knowledge gap on the relationship between bank diversification, risk and stability. This is because the South Asian banks are increasingly looking to increase their non-interest revenue in addition to their traditional revenue in order to achieve strong and long-term growth. Specifically, this research aims to address three questions: How do assets, funding and income diversification impact the stability and risk of banks in south Asian counties? Do the impact of asset, funding and revenue diversification differ based on the size of banks in South Asia?

The financial crisis has also had a significant impact on banks across the Asian region, prompting various consolidation initiatives in several countries. Notably, existing research on Asian banks remains relatively limited. (Lee & Hsieh, 2013) highlighted the banking sector in Asia as a critical and intriguing area for academic exploration. In light of this research gap, the present study focuses on South Asian countries as a pivotal context to examine the influence of asset and income diversification on bank risk and stability within the broader Asian economic framework. According to recent research, a number of researchers have attempted

to investigate the factors that influence bank profitability in Asia with limited emphasis on risk (Githaiga, 2021; Majumder & Uddin, 2017; Moudud-Ul-Huq et al., 2018; Moudud-Ul-Huq et al., 2023; Najam et al., 2022; Sufian & Kamarudin, 2012). To the best of author's knowledge, this study uniquely considers bank diversification as an independent variable and a critical determinant risk and stability in South Asian banking sector. Utilizing an unbalanced panel dataset of commercial banks in South Asia over the period 2000 to 2023. A dynamic panel data model was employed, with the system generalized method of moments (GMM) regression technique serving as the analytical framework. The findings of this empirical investigation reveal the positive role of income diversity and asset diversity in enhancing bank stability. Asset diversity significantly increases credit risk, suggesting a potential trade-off between diversification and risk. Moreover, the study highlights the potential downside of funding diversity, providing insights into managing funding sources in South Asia.

The study contributes to the literature by exploring in the following ways (i) how different forms of diversification affect bank risk-taking and provisioning, (ii) the use of dynamic GMM addresses endogeneity issues, ensuring robust results (iii) confirms the positive role of income diversity and asset diversity in enhancing bank stability (iv) reinforces the importance of equity ratios and profitability as traditional measures of bank stability.

The structure of this study is organized as follows: Section 2 presents a review of the relevant literature, while Section 3 outlines the methodology employed in the study. Section 4 details the findings, and Section 5 concludes with a discussion of the implications for policy.

Literature Review and Hypotheses Development

Income Diversification, Bank Stability, and Risk

Diversification is a prominent topic in finance literature, widely recognized as a strategic approach for banks. Theoretically, income diversification is considered an effective strategy for enhancing risk management and operational efficiency. To enhance performance and mitigate risk, banks often diversify their credit portfolios. The literature extensively explores the relationship between diversification and bank performance. One of the dangers that banks encounter is insolvency risk. The first strategy used by bankers to reduce risks is diversification, though there are many

others. Nonetheless, there is still disagreement in the research and theories regarding the benefits of bank diversity. Conventional wisdom states that diversifying the revenue sources of the financial sector could greatly lower the risk (Wang & Lin, 2021). With technical innovation and management talents, bankers should contemplate increasing new ways of revenue that ultimately boost stability. It may also raise revenues while lowering the cost of noninterest operations (Paltrinieri et al., 2021).

Acharya et al. (2002) conducted a seminal study on diversification in bank loan portfolios, analyzing Italian banks and finding that sectoral and industrial diversification led to riskier loans and lower profitability. Similarly, (Hayden et al., 2007) in their research on German banks, observed that diversification generally correlated with reduced returns, even after accounting for risk. Positive correlations between diversification and returns were statistically significant only in specific contexts, such as high-risk banks and industry diversification. But in South Asian context the picture is to somewhat different like (Nisar et al., 2018) examine the impact of revenue diversification on the profitability of banks across eight South Asian countries and conclude that non-interest income (NII) positively influences profitability. On the other hand (Moudud-Ul-Huq et al., 2018) examines the growing economies of the Association of Southeast Asian Nations (ASEAN) and concludes that diverse banks perform better and pose less risks. (Githaiga, 2021) conducted a study on 53 African banks found that human capital and income diversification significantly affect the bank's profitability. Building upon the insights from the reviewed literature, this study seeks to empirically investigate the outlined relationships, forming the basis for the development of the following hypotheses.

Hypothesis 1: *If all other factors remain unchanged, income diversification significantly influences the risk and stability of South Asian banks as measured by z-score, NPL, and LLP.*

Hypothesis 2: *Given similar conditions, larger banks in South Asia benefit more from income diversification than smaller banks in terms of their stability and risk as measured by z-score, NPL, and LLP.*

Funding Diversification, Stability and Bank Risk

One of the most persuasive arguments for the positive impact of diversification on bank performance is its role in fostering economies of scope. Unlike firms in many other industries, banks typically maintain long-term contractual relationships with their clients (Elsas et al., 2010). Furthermore, (Iskandar-Datta & McLaughlin, 2007) argue that the application of managerial expertise and capabilities across a range of products and markets can provide significant benefits to diversified banks.

A successful banking system may mobilize and distribute funds to promote savings and investments, as well as offer low-cost monetary payments. The governments of emerging nations have drastically liberalized financial markets and changed financial sectors in order to accomplish such objectives. To achieve sustained economic growth, nations—especially emerging nations—need a strong banking system. According to one perspective, diversification enables banks to achieve economies of scope by distributing fixed costs across multiple products (Laeven & Levine, 2007), leveraging management skills and expertise across diverse products and markets (Iskandar-Datta & McLaughlin, 2007), reducing the risk of bankruptcy (Berger et al., 2010), and enhancing their capacity to make informed business decisions in new domains in advance (Elsas et al., 2010). Moving forward on the basis of above discussion the study forms the following hypotheses.

Hypothesis 3: *If all other factors remain unchanged, funding diversification significantly influences the risk and stability of banks as measured by z-score, NPL, and LLP.*

Hypothesis 4: *Given similar conditions, larger banks benefit more from funding diversification than smaller banks in terms of their stability and risk as measured by z-score, NPL, and LLP.*

Asset Diversification, Stability and Bank Risk

Conventional banks primarily function as financial intermediaries, facilitating the transfer of funds from depositors to borrowers. By providing lending and borrowing services, these banks enable both parties to minimize costs associated with search, transaction execution, liquidity risk assessment, and ongoing monitoring. The primary source of income for traditional banks arises from the net interest margin—the difference between the interest rates charged on loans and those paid on

deposits—supplemented by fees for ancillary financial services such as account management and letters of credit (Chen et al., 2018). Studies investigating bank failures during the global financial crisis have drawn similar conclusions. They identified substantial investments in advanced financial instruments, such as commercial real estate loans, as the primary contributors to bank collapses during that period. Notably, these assets were assigned low-risk weights prior to the onset of the crisis (Berger et al., 2016; Cole & White, 2012).

According to evidence presented by (Hassan et al., 2011), the shift from conventional to non-traditional banking activities increased both the risk profile of banks and their likelihood of failure during the crisis. Prior studies have also demonstrated that traditional banks in regions such as Europe, the United States, Italy, and various developing countries experience a diversification discount. Using a sample of U.S. banks, (Saunders et al., 2014) observed that institutions diversifying from interest-based revenue to non-interest income activities exhibit lower bankruptcy risk and enhanced profitability compared to their counterparts. Recent study conducted by (Edirisuriya et al., 2019) in South Asian region reveal that among income diversification activities, securities trading revenue has been found to have a significant positive impact on bank risk, whereas other categories of income diversification do not exhibit any effect. In terms of asset diversification, non-interest-bearing assets and government loans were shown to notably reduce bank risk, while mortgage loans and non-classified loans had the opposite effect. On the other hand (Sarwar et al., 2020) reported that the key bank-specific factors predicting bank profitability include funding costs, credit risk, market share, management effectiveness, and operational costs. Additionally, both net non-interest income and asset diversification are identified as significant factors influencing profitability within the context of diversification. Based on the existing literature, the following hypotheses are formulated to examine the relationship between asset diversification and bank performance

Hypothesis 5: *If all other factors remain unchanged, asset diversification significantly influences the risk and stability of banks as measured by z-score, NPL, and LLP.*

Hypothesis 6: *Given similar conditions, larger banks benefit more from asset diversification than smaller banks in terms of their stability and risk as measured by z-score, NPL, and LLP.*

Methodology

This study employed a GMM approach to analyze the effects of income, funding, and asset diversification on the risk and stability of South Asian banks. The researcher prefers the GMM technique due to its robustness against common endogeneity issues typically encountered in panel analyses, where explanatory variables may correlate with error terms. The dataset comprises secondary data, including bank-specific financial statements, regional economic reports, and databases such as the World Bank Indicators and Bloomberg, collected from 2000 to 2023. The authors develop a model to assess bank risk and stability by employing an approach that quantifies key financial indicators, including Z-score, NPLGL, and LLPTA. Independent variables encompass diversification metrics, including the Herfindahl-Hirschman Index (HHI) for income, funding, and asset distribution. The dynamic panel data model is formulated as follows:

$$\boldsymbol{Bank\ risk_{i,j,t}} = \boldsymbol{\gamma_0 + \gamma_1 Bank\ risk_{i,j,t-1} + \omega_2 diversification_{j,t}} + \boldsymbol{\lambda m \sum_{m=1}^{n} X_{i,j,t} + \tau k \sum_{k=1}^{n} Z_{j,t}} + \varepsilon_{i,j,t} \quad \boldsymbol{Eq\ (1)}$$

$$\boldsymbol{Bank\ stability_{i,j,t}} = \boldsymbol{\gamma_0 + \gamma_1 Bank\ stability_{i,j,t-1} + \omega_2 diversification_{j,t}} + \boldsymbol{\lambda m \sum_{m=1}^{n} X_{i,j,t} + \tau k \sum_{k=1}^{n} Z_{j,t}} + \varepsilon_{i,j,t} \quad \boldsymbol{Eq\ (2)}$$

This methodology aligns with prior research (e.g., (Arellano & Bover, 1995; Blundell & Bond, 1998) and recent studies (Abbas et al., 2024; Abbas & Ali, 2022) and also (e.g., (Vo & Tran, 2024), ensuring accurate and context-relevant insights into South Asia's banking sector. Table 1 contains the following details about the proxies:

Table-1: Measurements of Variables

Variables	Variable's Description
Z-score	ROA plus Equity ratio divided by standard deviation of ROA
NPLGL	Non-performing loans to gross loans
LLPTA	Loan loss provision divided by total assets
Asset diversification	$1 - \left(\frac{customer\ loans}{earnings\ assets}\right)^2 + \left(\frac{Interbank\ loans}{earnings\ assets}\right)^2 + \left(\frac{Ssecurities\ loans}{earnings\ assets}\right)^2 + \left(\frac{Other\ assets}{earnings\ assets}\right)^2$

Funding diversification	$1-\left(\frac{Equity}{Total\ funding}\right)^2+\left(\frac{Sub-ordincate\ debt}{Total\ funding}\right)^2+\left(\frac{Deposits}{Total\ funding}\right)^2+\left(\frac{Short-term\ funds}{Total\ funding}\right)^2$
Income diversification	$1-\left(\frac{Interest\ income}{Total\ income}\right)^2+\left(\frac{Non-interest\ income}{Total\ income}\right)^2$
Equity ratio	Equity divided by assets
Profitability	Net income divided by total assets
Bank Size	Log of total assets
Economic growth	Yearly growth in gross domestic product
Inflation rate	Yearly consumer price index

Results and Discussion

Descriptive statistics elucidate fundamental characteristics of diverse variables. The Z-score exhibits considerable variability, with a mean of 6.447 and a standard deviation of 5.051. It exhibits significant skewness and kurtosis, indicating an asymmetric and leptokurtic distribution. NPLGP and LLPTA exhibit low means yet demonstrate skewed and spiking distributions, suggesting the existence of probable outliers. Asset and fund diversification demonstrate high averages of 0.803 and 0.804, accompanied by mild negative skewness; however, income diversification reveals larger variability, significant negative skewness, and substantial kurtosis. Equity and profitability demonstrate moderate skewness and symmetrical distributions. Macroeconomic variables, including inflation and economic growth, demonstrate moderate variability and simple distributions. The size of banks demonstrates considerable skewness and a concentrated distribution. The data indicates considerable variance among financial and economic indices.

Table-2: Descriptive Statistics

	Mean	**SD**	**Skewness**	**Kurtosis**	**p5**	**p25**	**p75**	**p90**
Z-score	6.447	5.051	2.973	3.809	4.45	5.14	5.07	8.43
NPLGP	.054	.076	0.860	4.158	.007	.02	.062	.1
LLPTA	.027	.041	0.264	5.845	.004	.009	.029	.056

Asset Diversification	.803	.158	-0.810	2.316	.499	.689	.934	.957
Fund Diversification	.804	.122	-0.517	5.054	.536	.753	.888	.913
Inc Diversification	.095	.461	-0.959	1.155	-.434	-.022	.312	.54
Equity	.072	.047	0.159	0.567	.033	.047	.086	.121
Profitability	.005	.011	0.556	2.952	-.004	.001	.007	.014
Bank size	16.845	2.814	0.981	3.177	10.461	14.926	16.701	19.896
Inflation rate	2.141	3.587	0.218	2.530	-.728	-.025	2.796	7.418
Economic growth	1.93	3.544	0.690	1.128	-4.823	.296	4.098	6.805

Pairwise correlations indicate significant relationships between the variables. The Z-score has a negative correlation with NPLGL (-0.227*) and LLPTA (-0.136*), suggesting that increased credit risks and loan loss provisions are affecting financial stability. Conversely, it shows strong positive correlations with profitability (0.985*) and equity (0.367*). NPLGL has a strong correlation with LLPTA (0.701*) and a positive correlation with inflation (0.207*), indicating a link between credit performance and macroeconomic factors. Diversification metrics show diverse correlations: Financing diversification has a negative correlation with equity (-0.600*) and inflation (-0.517*), while income diversification has a positive correlation with profitability (0.329*) and economic growth (0.134*). The equity ratio correlates positively with profitability (0.366*) and inflation (0.367*). In contrast, profitability shows a strong positive correlation with Z-score and equity, while it shows a negative correlation with NPLGL (-0.160*). Bank size shows weak but significant negative correlations with funding diversification (-0.304*) and NPLGL (-0.291*). Inflation and economic growth have a moderate positive correlation (0.404*), indicating macroeconomic relationships. The relationships illustrate the interaction between financial stability, risk factors, diversification and macroeconomic conditions.

Table 3: Pairwise Correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Z-score	1.000										
NPLGL	-0.227*	1.000									
LLPTA	-0.136*	0.701*	1.000								
Asset diversification	-0.085*	0.031*	-0.063*	1.000							
Funding diversification	-0.338*	-0.073*	-0.237*	0.148*	1.000						
Income diversification	0.335*	-0.239*	-0.197*	-0.195*	-0.154*	1.000					
Equity ratio	0.367*	0.165*	0.238*	-0.033*	-0.600*	0.049*	1.000				
Profitability	0.985*	-0.160*	-0.133*	-0.082*	-0.335*	0.329*	0.366*	1.000			
Bank size	0.034*	-0.291*	-0.218*	-0.304*	-0.067*	0.294	-0.121*	0.017*	1.000		
Inflation rate	0.272*	0.207*	0.327*	-0.150*	-0.517*	0.027*	0.367*	0.273*	-0.080	1.000	

				0*	7*				4*		
Economic growth	0.328*	-0.007	0.084*	-0.145*	-0.301*	0.134*	0.240*	0.315*	0.025*	0.404*	1.000

*** p<0.01, ** p<0.05, * p<0.1

GMM Estimation Results and Discussion

The results from the GMM analysis indicate varying impacts of diversification on bank stability and risk, highlighting nuanced relationships between these factors. Table 4 shows that asset diversity positively influences bank stability (Z-score) significantly, while funding diversity has a negative impact, suggesting that greater reliance on diversified funding sources might introduce instability. Income diversity, on the other hand, improves stability. Additionally, profitability, equity ratio, and economic growth consistently show positive associations with bank stability across different models. The results indicate that asset, funding, and income diversification have differing impacts on bank stability. Specifically, asset diversity shows a positive and significant relationship with stability, with a coefficient of 0.217, suggesting that banks with a more diversified asset portfolio are better able to manage risk. This finding aligns with (Buch & Goldberg, 2020), who argue that asset diversification helps mitigate risks by spreading exposure across various asset types. Conversely, the negative coefficient for funding diversity (-0.571) points to a detrimental effect on stability, contradicting the view that diversified funding sources generally reduce risk. This result challenges recent studies like Acharya et al. (2019), which emphasize the stabilizing role of diversified funding strategies.

Finally, income diversity demonstrates a highly significant positive effect (0.717) on bank stability, supporting the argument of (Atellu, 2021) that banks with diversified income streams are more resilient to financial shocks. These findings highlight the varying roles of different types of diversification in influencing bank stability. Table 5 reveals a complex relationship with bank risk (measured by NPLGL and LLPTA), with asset and income diversity affecting risk differently across large and small banks. For large banks, income diversity reduces risk, while funding diversity increases it. The findings align with prior literature suggesting that diversification can act as a stabilizing force, particularly in income diversification (Beck et al., 2022;

DeYoung & Torna, 2013) However, the negative relationship between funding diversity and stability contrasts with studies like those of (Allen & Gale, 2004) who found diversification in funding sources to generally enhance stability. Thus, while the results largely support diversification's stabilizing role, they also underscore the complexity and context-specific nature of its impact on risk and stability.

Table-4: Full Sample Results Impact of Diversification on Bank Stability

	(1)	(2)	(3)
VARIABLES	**Z-Score**	**Z-Score**	**Z-Score**
Lagged risk	0.102***	0.121***	0.226***
	(0.008)	(0.007)	(0.007)
Asset diversity	0.328***		
	(0.060)		
Funding diversity		-0.460***	
		(0.008)	
Income diversity			0.626***
			(0.006)
Equity ratio	0.478***	0.487***	0.476***
	(0.000)	(0.011)	(0.010)
Profitability	0.301***	0.306***	0.353***
	(0.003)	(0.002)	(0.008)
Bank Size	0.017**	0.012**	0.001
	(0.007)	(0.007)	(0.006)
Economic growth	0.051***	0.071***	0.092***
	(0.005)	(0.004)	(0.003)
Inflation rate	0.011***	0.002	0.012***
	(0.004)	(0.004)	(0.003)
Constant	0.547***	0.203	-0.233
	(0.101)	(0.100)	(0.140)
Observations	31,246	31,456	29,882
AR(2)	0.248	0.222	0.380
Hansen	0.942	0.931	0.963

Table 4 presents an estimation of the relationship between diversification and the stability of bank measures, expressed as a ROA plus Equity divided by standard deviation of ROA (Z-score). Parentheses report robust standard errors. 1% significance sign is *** p<0.01. 5% significance sign is **p < 0.05, and 10% significance is *p < 0.1.

Table-5: Full Sample Results Impact of Diversification on Bank Risk

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	**NPLGL**	**NPLGL**	**NPLGL**	**LLPTA**	**LLPTA**	**LLPTA**
Lagged risk	0.439***	0.667**	0.687**	0.007	0.001	0.007
	(0.110)	(0.244)	(0.201)	(0.001)	(0.050)	(0.009)
Asset diversity	0.156**			0.004		
	(0.072)			(0.003)		
Funding diversity		0.020*			0.003	
		(0.007)			(0.006)	
Income diversity			-0.012***			-0.003**
			(0.003)			(0.002)
Equity ratio	-0.003***	0.001**	0.001**	0.004	0.003*	0.003*
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Profitability	-0.003**	-0.002*	-0.002*	-0.006***	-0.006***	-0.006***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
Bank Size	0.001	-0.003*	-0.003	-0.001***	-0.001***	-0.001**
	(0.002)	(0.002)	(0.002)	(0.000)	(0.000)	(0.000)
Economic growth	0.005**	-0.001***	-0.001***	0.000	0.000	0.000
	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inflation rate	0.001	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Constant	1.300***	0.044	0.061	0.010*	0.011***	0.013***
	(0.496)	(0.028)	(0.040)	(0.006)	(0.003)	(0.005)
AR(2)	0.458	0.672	0.739	0.577	0.586	0.538
Hansen	0.0683	0.440	0.465	0.724	0.728	0.705

Table 5 presents an estimation of the relationship between diversification and the risk of bank measures, expressed as a non-performing loan to gross loans (NPLGL), and loan loss provisions to total assets (LLPTA). Parentheses report robust standard errors. 1% significance sign is *** p<0.01. 5% significance sign is **p < 0.05, and 10% significance is *p < 0.1.

Table-6: Large Banks Results For The Impact Of Diversification On Stability And Risk

VARIABLES	**(1) Z-Score**	**(2) Z-Score**	**(3) Z-Score**	**(4) NPLGL**	**(5) NPLGL**	**(6) NPLGL**	**(7) LLPTA**	**(8) LLPTA**	**(9) LLPTA**
Lagged risk	0.009***	0.002***	0.041***	0.771***	0.788***	0.767***	0.811***	0.821***	0.002***
	(0.019)	(0.028)	(0.019)	(0.084)	(0.022)	(0.052)	(0.211)	(0.290)	(0.170)
Asset diversity	0.022			0.003			-0.000		
	(0.015)			(0.005)			(0.001)		
Funding diversity		-0.105			0.008**			-0.001	
		(0.031)			(0.003)			(0.002)	
Income diversity			0.036**			-0.008***			-0.003***
			(0.013)			(0.001)			(0.001)
Equity	0.300*	0.360*	0.393*	0.007	0.006*	0.001	0.001*	0.003*	0.003*

ratio	**	**	**		**		*	*	
	(0.011)	(0.010)	(0.008)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Profitability	0.580***	0.540***	0.196***	-0.004***	-0.005***	-0.004***	-0.001**	-0.001**	-0.001
	(0.055)	(0.054)	(0.035)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Bank Size	-0.001	0.001	-0.001	-0.002***	-0.001***	-0.001***	-0.001**	-0.001**	-0.001
	(0.002)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Economic growth	0.008**	0.008***	0.005**	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001**
	(0.003)	(0.003)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inflation rate	0.001	0.001	0.001	0.001**	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.002)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-0.014	0.016	0.022	0.050***	0.027***	0.022***	0.004***	0.005**	0.001
	(0.039)	(0.056)	(0.029)	(0.011)	(0.004)	(0.007)	(0.001)	(0.002)	(0.001)
AR(2)	0.642	0.591	0.226	0.698	0.611	0.575	0.562	0.566	0.717
Hansen	0.571	0.626	0.568	0.415	0.707	0.321	0.943	0.942	0.887

Table 6 presents an estimation of the relationship between diversification stability and the risk of bank measures, expressed as a ROA plus Equity divided by standard deviation of ROA (Z-score), non-performing loan to gross loans (NPLGL), and loan loss provisions to total assets (LLPTA). Parentheses report robust standard errors. 1%

significance sign is *** p<0.01. 5% significance sign is **p < 0.05, and 10% significance is *p < 0.1.

Table-7: Small Banks Results for the Impact of Diversification on Stability and Risk

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	**Z-Score**	**Z-Score**	**Z-Score**	**NPLGL**	**NPLGL**	**NPLGL**	**LLPTA**	**LLPTA**	**LLPTA**
Lagged risk	0.106***	0.097***	0.106***	0.881***	0.881***	0.883***	0.060	0.067	0.053
	(0.034)	(0.033)	(0.035)	(0.052)	(0.052)	(0.054)	(0.112)	(0.111)	(0.114)
Asset diversity	0.433***						0.012***		
	(0.151)						(0.003)		
Funding diversity		-0.554***		0.025**	0.025**			0.006	
		(0.201)		(0.010)	(0.010)			(0.006)	
Income diversity			0.888***			-0.009***			-0.001
			(0.076)			(0.003)			(0.002)
Equity ratio	0.389***	0.392***	0.388***	0.001***	0.001***	0.001***	0.000***	0.000***	0.000***
	(0.013)	(0.013)	(0.013)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Profitability	0.282***	0.284***	0.294***	-0.004***	-0.004***	-0.004***	-0.008***	-0.008***	-0.008***

	(0.037)	(0.036)	(0.044)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Bank Size	0.008	0.010	-0.003	-0.001*	-0.001*	-0.001	-0.000	-0.000	-0.000
	(0.008)	(0.008)	(0.007)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Economic growth	0.059***	0.056***	0.041***	-0.001**	-0.001**	-0.001**	0.000***	0.000***	0.000***
	(0.008)	(0.008)	(0.006)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inflation rate	0.004	0.001	0.009	0.002***	0.002***	0.001***	0.001***	0.001***	0.001***
	(0.006)	(0.006)	(0.006)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-0.468**	0.269	-0.075	-0.004	-0.004	0.012	-0.001	0.002	0.007*
	(0.189)	(0.196)	(0.154)	(0.012)	(0.012)	(0.010)	(0.004)	(0.006)	(0.004)
AR(2)	0.277	0.185	0.205	0.354	0.354	0.302	0.278	0.240	0.193
Hansen	0.907	0.923	0.628	0.689	0.689	0.555	0.665	0.476	0.613

Table 7 presents an estimation of the relationship between diversification stability and the risk of bank measures, expressed as a ROA plus Equity divided by standard deviation of ROA (Z-score), non-performing loan to gross loans (NPLGL), and loan loss provisions to total assets (LLPTA). Parentheses report robust standard errors. 1% significance sign is *** $p<0.01$. 5% significance sign is **$p < 0.05$, and 10% significance is *$p < 0.1$.

Conclusion and Policy Recommendations

This study explored the impact of bank diversification on risk and stability in South Asian countries, focusing on asset, income, and funding diversification. The findings indicate that different forms of diversification have distinct effects on bank stability

and risk. Asset diversification was found to enhance stability significantly, while income diversification also contributed positively to bank resilience. However, funding diversification appeared to have a negative impact on stability, which challenges the conventional wisdom that diversified funding sources mitigate risk. The results also suggest that the effects of diversification on risk and stability vary depending on the size of the bank. Larger banks tend to benefit more from income diversification, as it helps them reduce risk, while smaller banks may not experience the same level of benefit. Furthermore, the study highlights the complexity of diversification's impact, emphasizing that its effect on stability and risk is not uniform and depends on the specific characteristics of each bank, such as its size and the type of diversification pursued.

Overall, this research underscores the importance of considering the unique context of South Asian banks when evaluating diversification strategies. The findings contribute to the growing literature on bank diversification by providing insights into how asset, income, and funding diversification influence bank risk and stability in this particular region. Policymakers should encourage income diversification in banks, particularly larger ones, to enhance stability and resilience against financial shocks. While funding diversification is often seen as a risk-reducing strategy, its potential to destabilize banks highlights the need for regulatory oversight to ensure a balanced funding structure. Banks should also be cautious when diversifying assets, ensuring that risk management practices are in place to avoid overexposure to credit or market risks. Given that smaller banks benefit less from diversification, tailored support mechanisms should be designed to meet their unique needs. Strengthening regulatory frameworks, including capital adequacy requirements and stress-testing, is crucial to maintaining bank stability. Finally, promoting financial innovation, particularly digital banking, can help banks diversify income sources and improve risk management, contributing to overall financial sector resilience in South Asia.

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