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Income Distribution and Factors Affecting the Bank's Stability

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Abstract

Purpose: Research on banking sustainability plays an important role in helping banks understand the level of risk in different types of companies. Therefore, this study was conducted to determine the factors affecting the sustainability of Joint Stock Commercial Banks in Vietnam. **Research design, data and methodology:** The following theories, the factors affecting the bank's sustainability include: Business model diversification (income diversification), bank size, loan ratio, and net interest margin. Data was collected from Joint Stock Commercial banks in Vietnam from 2015 to 2019. With GLS model on panel data with banks listed on Vietnam stock exchange. **Results:** The analysis results show that net interest income has a positive impact on the sustainable business results of banks through the rate of return on total assets (ROA). The non-interest income hasn't impact on bank stability. From this result, there aren't positive signs of income diversification in banks. At the same time, with the obtained results, the study also provides a policy implication for banks. **Conclusions:** The study also provides some policy implications to improve the bank stability. Diversifying income in banks is necessary, but how to make it influential banks has not yet been done. Therefore, the adjustments in non-interest business activities need to be carefully considered by banks.

Keywords : Bank Stability, Income Distribution, Business Model Diversification, Income Diversification.

JEL Classification Code: B26, C33, G40

1. Introduction

Commercial banks play an important role in running a country's economy. As a financial intermediary, individuals and organizations can perform transactions related to raising capital and depositing savings (Heffernan, 2005). An important role in the economy leads to increased competition among banks (Nguyen et al., 2020). Banks compete in the country and have to compete with foreign enterprises in the period of international economic integration (Nguyen et al., 2020). In addition to the sources of interest income in traditional banking operations, banks have also begun to shift and expand into new business types in recent years (Hersugondo et al., 2021; Usman, 2016). Other forms of income for banks such as services, gold, or foreign currency trading are also beginning to increase. Furthermore, these activities will help banks operate more efficiently as income sources are more diversified (Mergaerts, 2016; Trivedi, 2015).

In Vietnam, banking activities are especially active, with 49 domestic and foreign banks. There are 27 domestic and commercial joint-stock banks listed on the Vietnam stock exchange. Banks' inefficient operations leading to shut down or merger and acquisition (M&A) happened a few years ago in Vietnam (Oceanbank, PG Bank, or Mekong bank...). Therefore, the banking market is very potential and has a very high level of competition. From the above facts, the issue of research on the sustainability of banks has become urgent for banks and financial researchers.

There have been many studies on the sustainability of

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banks in the world and Vietnam. Several studies show that the sustainability of banks depends on income diversification through interest and non-interest income sources (He & Feng, 2019; Köhler, 2015; Mergaerts, 2016; Nguyen et al., 2021; Růžičková & Teplý, 2018). Some banks are riskier when conducting diversification (Köhler, 2015; Nguyen et al., 2021). In contrast, retail-oriented banks would be significantly less stable if they increased their share of non-deposit financing, while investment banks would be significantly more stable. Some studies have focused on the size, efficiency, and leverage in banks that can affect the sustainability of banks (Albaity et al., 2019). The credit risk and liquidity risk both affect bank stability separately, and their interactions contribute to bank instability (Imran & Nishat, 2013; Ghenimi et al., 2017). In Vietnam, studies mainly focus on business results in banks. Research on bank sustainability is limited. Therefore, this study is conducted to assess the impact of factors affecting the sustainability of listed commercial joint-stock banks in Vietnam.

2. Literature Review

2.1. The Studies about Bank Stability

Study by Ghenimi et al. (2017) on the impact of credit risk and liquidity risk on bank viability. Using a dataset of 49 banks operating in Middle East and North Africa (MENA) nations between 2006 and 2013, this research explores the impact of liquidity risk and credit risk on bank stability. Furthermore, the authors discover that credit risk and liquidity risk do not have a contemporaneous or economically significant time lag relationship, and that both types of risk have a negative influence on banking activity. The combination of the two categories of hazards has a major impact on bank stability, according to the authors. As a result, the estimated results highlight the importance of credit and liquidity risk in determining bank stability in the MENA.

Studies on bank size, funding risk, and bank stability by Adusei (2015). The data in this study comes from Ghana's rural banking business. When credit risk, liquidity risk, business model diversification, profitability, inflation, financial structure, and gross domestic product are all taken into account, the results demonstrate that expanding the bank's size in rural areas will strengthen the bank's stability. Funding risk has a beneficial impact on bank stability, according to the findings. The positive association between bank size and stability has significant implications for the present debate over whether or not to restrict bank size in order to protect the financial system from future crises. The present discussion on retail bank financing is also influenced by the beneficial association between funding risk and bank stability.

Nguyen et al. (2021) investigated the effect of business model selection on bank stability in ASEAN countries. The authors find a negative and significant impact of the diversification model, in which banks transition to operating operations, interest-free and fee-based activities, using GMM and other efficient econometric approaches on a sample of 99 joint-stock commercial banks. The consequences also vary between the two sets of countries, according to the authors. Diversification has negative consequences on stability in Vietnam, Indonesia, and the Philippines, but good effects in Thailand and Malaysia. The authors draw policy recommendations for more sustainable development in the ASEAN banking sector based on their findings.

Hsieh et al. (2013) use bank-level data for 22 Asian nations from 1995 to 2009 to investigate the impact of bank diversity on stability. Asia's banking stability This study analyzes a variety of characteristics as proxies for bank stability and depends on two measures of bank diversification: asset and revenue diversification. The study used dynamic panel data approaches and produced results that differed from those seen in the United States and Europe. The first findings indicate that asset diversification is insufficient to strengthen bank stability in Asia. A plan of income diversification, on the other hand, can improve the bank's stability. Second, increased globalization affects bank stability by reducing income diversification, but promotes stability by increasing asset diversification. Third, a country with a greater level of corporate governance has fewer agency difficulties, which adds to the stability of the country. Finally, a country with a higher level of economic development will encourage asset diversification, which will allow banks to earn higher returns while taking on less risks.

2.2. Factors Affecting the Bank Stability

2.2.1. Income Distribution and Bank Stability

Income distribution or income diversification is the practice of banks carrying out many business forms to bring profits to the bank. Income diversification is represented by net interest income and non-interest income. The spread between lending and deposit rates is a major source of income for banks and is expected to generate positive effects on the stability of banks (Köhler, 2015). Additionally, net non-interest and operating income are trusts for fee-based and non-traditional sources of income. Non-interest income can enhance bank sustainability for commercial-oriented banks (Köhler, 2015). Banks would be significantly more stable and profitable if they increased their share of non-interest income, suggesting that significant benefits would be derived from income diversification. These benefits are particularly large for savings and cooperative banks (Köhler, 2015).

H1: Net interest income has a positive impact on bank stability

H2: Non- interest income has a positive impact on bank stability

2.2.2. Bank Size and Bank Stability

The total assets of banks represent bank size (SIZE). In the model calculation, the scale variable will be taken loga nepe to include in the regression analysis. The firm size variable is measured through the logarithm of total assets. This is a way to data transformation to the ratio when many studies use regression analysis. Therefore, the authors use this data transformation in data analysis. The bank's increase in scale aims to expand its business activities to increase revenue from banking activities (Adusei, 2015). The opening of additional branches or further development of services will increase the bank's revenue sources and increase the bank's sustainability (Köhler, 2015).

H3: Size has a positive effect on bank stability

2.2.3. Loans and Bank Stability

Loans to customers (LOANS) represent the amount of money the bank takes away to lend to customers. This indicator is calculated for individual customers as well as businesses. The higher the loan ratio, the higher the level of interest income is likely to be if it were not for high NPLs (Köhler, 2015). However, if not controlled, excessive lending will lead to high bad debt and affect the bank's business results and the bank’s sustainability. Therefore, banks always want to promote lending because it is the main source of income for the bank (Köhler, 2015; Mergaerts, 2016; Nguyen et al., 2021).

H4: Lending to customers has a positive effect on bank stability

2.2.4. Net Interest Margin and Bank Stability

Net Interest Margin (NIM) is the percentage difference between the interest income generated by a bank's earning assets (loans and investments) and essential expenses - interest paid to depositors - Efficiency. The net ratio between interest earned and interest paid to customers is crucial for a bank's profitability. Therefore, the larger the NIM, the higher sustainability (Köhler, 2015). The larger the NIM, the more efficient the use of mobilized capital in banks (Adusei, 2015). In other words, the bank's business activities based on interest are effective and help banking activities become more sustainable.

H5: Net interest margin has a positive effect on bank stability

3. Research Methods and Materials

3.1. Research Method

From the theoretical basis and previous studies, the study proposes a model to study the factors affecting the sustainability of a bank as follows:

$$\begin{aligned} Bank\ \ stability_{it} &= \alpha_i + \beta_1 * Diversification_{it} + \beta_2 * LOANs_{it} \\ &\quad + \beta_3 * NIM_{it} + \beta_4 * SIZE_{it} + \varepsilon_{it} \end{aligned}$$

Where the variables are described in Table 1.

Table 1: The Variables

Variables	Desctiption	Expected	References
Dependent variable			
ROA	Return on total assets		Goetz (2018)
Independent variables			
NII	Net interest incom to operate income	(+)	Köhler (2015)
NNII	Non-net interest income to operate income	(+)	Köhler (2015)
LOAN	Ratio of loans to total assets	(+)	Köhler (2015); Mergaerts (2016)
NIM	Net interest margin	(+)	Adusei (2015)
SIZE	Loga nepe of total assests	(+)	Adusei (2015)

3.2. Data Analysis

Data was collected from banks listed on the Vietnam stock exchange from 2015 to 2019. Data is taken from financial statements of banks that have been audited and listed on information disclosure sites such as CafeF and vietstock.com. The raw data will be collected and put into STATA software for encoding before data analysis.

Panel data are used in this study, with two primary models commonly used: the fixed effects model (FEM) and the random-effects model (REM). Hausman test is used to select the appropriate model with the research data. The phenomenon of autocorrelation and heteroskedasticity, if it occurs, will be corrected through the GLS model. The study also evaluates the influence of the ratio of state ownership, foreign ownership, and other ownership on the bank's sustainability.

4. Results and Discussion

The collected variables will be entered into STATA software for analysis. Initially, descriptive statistics will be performed to overview the research variables. The descriptive results show that the mean of ROA is 0.0098, corresponding to 0.98%, of which the largest is 0.021, and the smallest is 0.0005. The mean of NNII is 0.183, the maximum is 0.38, and the smallest is 0.00279. The mean of NII is 0.2131, the maximum is 0.56, and the smallest is -0.0551. The mean of loan ratio (LOANS) was 0.5524, the largest was 0.7091, and the smallest was 0.3481. The mean of NIM was 0.0333, the largest was 0.0553, and the smallest was 0.0182. The detail in Table 2.

Table 2: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	160	0.0098	0.0058	0.0005	0.0214
NNII	160	0.1832	0.0962	0.0279	0.3843
NII	160	0.2131	0.1577	-0.0551	0.5615
LOANS	160	0.5524	0.1131	0.3481	0.7091
SIZE	160	32.7203	1.0168	30.7444	34.5735
NIM	160	0.0333	0.0100	0.0182	0.0553

4.2. Regression

The regression analysis results of the FEM and REM models show that the FEM model is more suitable for the data (p-value of Hausman test = 0.000). However, the tests of autocorrelation and variance of variance show that the model has autocorrelation and heteroskedasticity (the p-value of both tests is less than 0.05). Therefore, the GLS model was used to analyze the final results. The results show that NNI, SIZE và NIM have a positive impact on bank stability (p-value<0.05). Thus, the hypotheses H1, H3, H5 are accepted. NNII has not impact on bank stability (p-value >0.05). Therefore, the H2 is rejected. Loans has negative impact on bank stability (p-value <0.05). Therefore, the H4 is accepted a part. The detail in Table 3.

Table 3: The Result of Regression

	(1)	(2)	(3)	(4)
VARIABLES	OLS	FEM	REM	GLS
NNII	0.000299	0.00489	0.000427	0.000299
	(0.00758)	(0.00659)	(0.00666)	(0.00739)
NII	0.0125***	0.0150***	0.0154***	0.0125***
	(0.00456)	(0.00393)	(0.00400)	(0.00445)
SIZE	0.00121***	0.00345***	0.00196***	0.00121***
	(0.000364)	(0.000694)	(0.000504)	(0.000354)
LOANS	-0.00947***	-0.0161***	-0.0118***	-0.00947***
	(0.00319)	(0.00347)	(0.00325)	(0.00311)
NIM	0.456***	0.601***	0.541***	0.456***
	(0.0310)	(0.0363)	(0.0339)	(0.0302)
Constant	-0.0427***	-0.119***	-0.0695***	-0.0427***
	(0.0110)	(0.0221)	(0.0158)	(0.0108)
Observations	140	140	140	140
R-squared	0.652	0.717		
Number of banks		16	16	16

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results of the GLS regression analysis show that interest income has a positive impact on ROA. This result shows that interest income is still an important factor in promoting business activities and increasing the sustainability of banks (Nguyen et al., 2021). This can be considered the bank's core income, and it is still an important source of income for the bank. Therefore, credit activities to improve interest income help banks have better business results. This study once again confirms that it is always important to focus on banking development based on interest income. With the scale of the economy expanding, the demand for loans of individuals as well as organizations is always increasing. Therefore, focusing on developing lending activities is always right for banks in both the present and the future. This also shows the important role of financial intermediaries in the movement and development of the country. Especially in a developing country like Vietnam.

In addition, the non-interest income also has not effect on bank stability. This result shows that the diversification of income in banks is not bringing about a positive effect. The increased banking services (payments, insurance) has not brought meaningful revenue for banks. Investing resources for activities other than mobilizing capital and lending based on available resources has brought good profits for banks. It can be seen that the expansion of non-interest income business forms is a good sign to improve the service quality of the bank. However, the business of non-interest income activities has not yet brought financial efficiency to banks. The reason comes from the unreasonable distribution of resources compared to the income from non-interest business activities.

SIZE has a positive effect on bank stability. The results show that banks that expand their bank size are meaningfully profitable. With investment in facilities, opening more branches has been bringing positive profits. Expanding branches or transaction offices helps to promote the bank's brand as well as stronger compete. Easier access to banks has helped banks gain more customers. With a management plan that has been in operation for many years, the management of a new branch with new customers has positive results for the bank. The research results are similar to previous research, which both pointed out that banks increase their size to expand business activities to increase revenue (Adusei, 2015; Köhler, 2015).

LOANS have a negative effect on bank stability. This result indicates a negative sign of lending in banks. Elsewhere, an increasing loan yields a decreasing return on assets. Therefore, the bad debt factor can be the factor that makes the profit margin of banks reduce and incur additional fees. However, the loan portfolio's profit is not as effective as expected. Therefore, the quality of loans is helping the bank to develop in a more sustainable way. The number of loan contracts is not a determining factor in the sustainability of the bank because there is still a certain ratio of non-performance loans in the bank.

NIM has a positive effect on bank stability. It can be seen that the profit from loans is important to the profit margin of banks. This result further confirms the important role of credit activities. More effective credit management will help reduce bad debts and increase the bank's profit margin. This study's results are similar to Adusei (2015), when both show that the larger the NIM, the more efficient the use of mobilized capital in banks.

In addition, the study also analyzed the group of state-owned and non-state banks. The analysis results show that the ownership factor has no significant impact on the bank stability of banks.

Table 4: The Result of Regression with Ownership

	(1)	(2)	(3)
VARIABLES	STATE	FOREIGN	OTHERS
NNII	-5.16e-05	-0.00164	-0.000987
	(0.00740)	(0.00761)	(0.00748)
NII	0.0129***	0.0131***	0.0134***
	(0.00451)	(0.00448)	(0.00454)
SIZE	0.00102**	0.00104***	0.000863*
	(0.000468)	(0.000391)	(0.000501)
LOANS	-0.00941***	-0.00868***	-0.00907***
	(0.00311)	(0.00320)	(0.00313)
NIM	0.458***	0.451***	0.458***
	(0.0305)	(0.0304)	(0.0302)
STATE	0.000863		
	(0.00145)		
FOREGN		0.00338	
		(0.00338)	
OTHERS			-0.00131
			(0.00136)
Constant	-0.0370***	-0.0379***	-0.0309*
	(0.0144)	(0.0117)	(0.0163)
Observations	140	140	140
Number of	16	16	16

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

5. Conclusions and Implications

5.1. Conclusion

The study has provided theories related to income diversification and business results in joint-stock commercial banks in Vietnam. The diversification of income in banks usually has two main sources: interest income and non-interest income. In which interest income is a traditional activity and has the main contribution. Besides, non-interest income has also started to contribute more to banks.

With the data collected from banks, the panel data regression analysis model showed that interest income positively impacts the bank stability, and non-interest income hasn't impact on bank stability. From this result, there aren't positive signs of income diversification in banks. At the same time, with the obtained results, the study also provides a policy implication for banks. Banks need to be more careful with investment decisions to expand non-interest business.

5.2. Theoretical Implication

Research has demonstrated that the distribution of interest income plays an important role for banks. The theory shows that when too many resources are lost on a new business form when it has not yet brought a good source of revenue for the bank, it will reduce the sustainability of the bank. Therefore, in this case, the social exchange theory may be correct. Furthermore, when the bank loses many resources, it will exhaust employees and reduce work results. Therefore, this is also a theoretical contribution when paying non-interest income is not meaningful to the bank's sustainability in case resources are not distributed appropriately.

5.3. Practical Implication

From the results, banks can refer to adjusting non-interest income activities when this activity is not effective for the bank. If the bank does not make adjustments, it will increase its dishonesty. Therefore, the policies are not only from the bank but also need a strategy to approach customers to increase non-interest activities. Diversifying income in banks is necessary, but how to make it influential banks has not yet been done. Therefore, the adjustments in non-interest business activities need to be carefully considered by banks.

6. Limitation and Future Research

Although research has shown the impact of income distribution in banks on the sustainability of banks, however, the study still has some limitations. Firstly, the study only focuses on research for banks in Vietnam. So, there is no comparison with other countries or economies (developing and developed countries can have different effects). Second, the research model has not considered endogenous phenomena, so there may be other endogenous relationships in the model. Third, the new study only shows income distribution through two forms: interest income and non-interest income. Activities that bring non-interest income, such as buying and trading gold, stocks, and other activities, have not been described in detail.

From these limitations, the authors make some recommendations for future research. First, further studies may collect more data in developed countries to make exciting comparisons on the impact of income distribution and banking sustainability. Second, the study can further investigate the endogenous phenomenon that may occur in the model. Third, the study can collect more detailed data from non-interest income sources in the bank to have a better overview.

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