DOES THE BUSINESS MODEL INCREASE BANK STABILITY?

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ABSTRACT

Research on risk or sustainability in the banking system does play an important role in the banking industry, where competitiveness increases unceasingly. Simultaneously, the trend of diversifying banks' business models is becoming more popular. Thus, this paper attempts to investigate the impact of business model diversification on bank risk and stability. The proxy of business models includes (1)Non-net interest income; (2) trading income. The paper applied Generalized Least Squares (GLS) to conduct empirical research on 18 joint-stock commercial banks listed on the Vietnam Stock Exchange from 2010 to 2019 (The GLS with panel data). The results indicated the negative impact of non-net-interest income on bank stability. Trading in foreign exchange, gold has no meaning for bank risk. The study offers some theoretical and practical implications for banks to control better risks based on new empirical findings. Especially, the diversification of business models is ineffective, and banks need more suitable solutions.

Contribution/Originality: This study has an important contribution as it shows that business model diversification is ineffective for banks in developing countries. Therefore, this result has great significance in adjusting for profitable activities other than lending.

1. INTRODUCTION

The two-level banking system is organized in Vietnam. The State Bank of Vietnam is responsible for implementing monetary policy, performing the function of inspection and state management of currency, banking activities, and foreign exchange; perform the functions of the Central Bank in terms of money issuance, banking of credit institutions, and provision of monetary services to the Government. The second level includes commercial banks, cooperative banks, development banks, people's credit funds, microfinance institutions, finance companies, finance leasing companies, and insurance companies.

In 2021, the stock market witnessed a strong growth rate of 27 commercial banking stocks. To be considered the lifeblood of the economy, the bank has proven its performance when profits are still growing, despite the impact of the COVID-19 epidemic. The restructuring, especially the digital transformation of the commercial banking system, is a matter of concern to policymakers, administrators, and investors, especially the ownership, size, and type of commercial bank.

So how do the above factors affect the bank risk level of Vietnamese commercial banks? Through data retrieved from 18 joint-stock commercial banks listed on the Vietnam Stock Exchange in the period 2010 - 2019, this paper analyzes the impact of business models (different varieties of income), thereby offering some suggestions to contribute as a basis for the implementation of restructuring and digital transformation at Vietnamese commercial banks in the coming time.

2. LITERATURE REVIEW

A business model is defined as the way an organization does business (Magretta, 2002) and aims to advance the company's overall goals (this goal can be financial or non-financial (Yip & Bocken, 2018). Business models can analyze and evaluate productivity (Osterwalder, Pigneur, & Tucci, 2005). The growing interest in analyzing business models in enterprise innovation showed its usefulness in sustainable innovation (Bocken, Short, Rana, & Evans, 2014; Boons & Lüdeke-Freund, 2013; Lüdeke-Freund, 2010; Stubbs & Cocklin, 2008). Recently, it has been quite diverse. In addition to the business type of borrowing and lending, other business models such as money transfer, money withdrawal, and bill payment services have also become popular. For banks, business model diversification is other activities within the bank to increase the bank's goals and mainly financial goals. Implementing business model diversification in enterprises in general and banks, in particular, has certain risks.

Bank risk is the opposite of bank stability, meanwhile, sustainability represents a sustainable business with little volatility but high profits (Köhler, 2015). Therefore, sustainability will focus heavily on business results, capital adequacy ratios, and volatility of business results (Köhler, 2015). As a result, the bank's sustainability is inversely proportional to the risk in the bank. Therefore, some studies research bank stability (Abuzayed, Al-Fayoumi, & Molyneux, 2018; Köhler, 2015; Nguyen, Skully, & Perera, 2012), and others do evaluate research on risk (Nguyen, Ho, Van Nguyen, Pham, & Nguyen, 2021). In addition, several market studies focus on bank performance (Mergaerts & Vander Vennet, 2016). One factor considered important in influencing banks' risk is the diversification of business models (Mahdaleta, Muda, & Nasir, 2016). Accordingly, the diversification of business models will aim to create more sources of income for the bank (Köhler, 2015; Nguyen et al., 2021). Diversifying business models in the bank make different sources of income besides the main source - interest income. Business models describe how banks generate profits, what customers they serve, and which distribution channels they use (Köhler, 2015).

Researches evaluating the impact of business model diversification on the sustainability of banks is still controversial. Studies show a positive effect of the business model on bank stability (Froot, Scharfstein, & Stein, 1993; Köhler, 2015; Trivedi, 2015b). Banks implemented diversification of business models at that time, and business results grew well from this diversification (Froot et al., 1993; Froot & Stein, 1998). This will show that the bank's operating system for non-interest businesses is highly effective. The increase in non-interest income has helped banks develop more stably and reduce bank risk due to the increased role of banks as financial intermediaries (Köhler, 2015). The diversification of business models will help reduce the level of risk concentration in the bank. People perform better based on management skills or existing management systems (Trivedi, 2015b). Besides the positive impact of business model diversification on bank sustainability, there is still a negative impact on bank sustainability (Abuzayed et al., 2018; DeYoung & Torna, 2013; Nguyen et al., 2021; Williams & Prather, 2010). Banks will face more risks when diversifying their business models when the management system is limited (Nguyen et al., 2021). Concurrently, increased participation in the derivatives market and larger loan portfolios have increased the bank's exposure to capital ratios (DeYoung & Torna, 2013). Besides, some studies show that diversifying business models helps reduce risk but does not make banks more sustainable (Abuzayed et al., 2018).

3. METHODOLOGY

3.1. Empirical Research Model

This paper follows the previous research of Köhler (2015), presenting as follows:

$$Bank\ risk_{it} = \alpha_i + \beta_1 * Bank\ busines\ model_{it} + \beta_2 * ControlVariables_{it} + \varepsilon_{it}$$

Table 1 presents the description of the variable.

Table 1. Variables description.

Variables	Description	Expected sign
Dependent variables		
Z-score	Bank risk, calculated by the sum of ROA and CAR, divided by SDROA	
RACAR	Risk-adjusted CAR of banks= CAR/SDCAR	
Main independent variables		
NNII	The fraction of net non-interest income divided by net operating income	(+)
Trade	The fraction of trading income divided by net operating income	(+)
Control variables		
SIZE	Banks' total assets	(+)
Loans	The ratio of total loans to total assets	(-)
CAR	The ratio of equity on total assets.	(+)

In the model, the bank risk index is used in contrast to bank stability. Particularly, the higher the Zscore and RACAR, the more sustainable the bank or reduce the bank risk.

3.2. Data

Data is collected through the financial statements of commercial joint-stock banks listed in Vietnam from 2010 to 2019. The collected data will be cleaned when excluding banks with missing values in 3 years and a missing rate of more than 15% of the general data. The final data included in the analysis of 18 banks were retained. The results describe the data collected in Table 2. The mean Zscore is 25.19, the largest is 57.43, and the smallest is 0.49. The mean RACAR was 23.02, the maximum was 53.31, and the smallest was 0. The mean NNII was 0.20, the maximum was 0.57, and the smallest was -0.05. The mean TRADE is 0.559, the largest is 8.54, and the smallest is -8.89. The mean LOANS is 0.55, the maximum is 0.74, and the smallest is 0.14. The mean CAR is 0.1, the maximum is 0.4, and the minimum is 0.

Table 2. Descriptive variables.

Variables	Mean	Std. Dev.	Min.	Max.
Zscore	25.197	16.722	0.495	57.440
RACAR	23.028	15.896	0	53.314
NNII	0.207	0.163	-0.055	0.576
TRADE	0.560	3.473	-8.893	8.657
SIZE	32.596	1.083	30.162	34.937
LOANS	0.556	0.120	0.145	0.743
CAR	0.108	0.064	0	0.401
Observations=180				

4. METHODOLOGY

The study uses panel data analysis with basic models such as the fixed effect model (FEM) and random effect model (REM). Hausman test will be used to choose the FEM or REM model that is more suitable for the data. Additionally, autocorrelation and heteroskedasticity tests will be performed to check the model's reliability. Finally, if these defects exist in the model, the authors will proceed to calibrate the model through the Generalized Least Squares (GLS) model.

The paper runs FEM and REM before the Hausman test, which compares the two models and shows that the FEM is more suitable than the REM in all models with the dependent variables Zscore and RACAR. However, the autocorrelation and heteroskedasticity of change test show that the model exists in these phenomena. Therefore, the GLS correction model will be used for the analysis. The empirical results are shown in Tables 3 and 4.

Table 3 describes the results of the impact of business model diversification represented by NNII and TRADE on the sustainability of Zscore banks. The analysis results through the GLS model show that NNII has a negative effect on Zscore (negative beta coefficient and satisfies statistical significance). TRADE does not affect Zscore (p-value greater than 0.1). Simultaneously, the study also shows that CAR and SIZE positively affect Zscore (positive and statistically significant beta coefficient). LOANS does not affect Zscore (p-value greater than 0.1).

Table 3. Regression with Zscore.

Zscore	(1) FEM	(2) FEM	(3) REM	(4) REM	(7) REM	(8) GLS
NNII	-13.25*** (4.204)		-14.13*** (4.274)		-22.47*** (6.227)	
TRADE		0.0505 (0.198)		0.00204 (0.199)		-0.260 (0.317)
SIZE	0.261 (1.418)	0.464 (1.819)	1.604 (1.297)	1.957 (1.579)	6.284*** (1.068)	5.495*** (1.143)
LOANS	7.382 (7.076)	2.567 (8.657)	6.209 (7.015)	1.558 (8.401)	17.58* (9.394)	17.02 (10.90)
CAR	179.4*** (10.47)	183.3*** (12.83)	181.0*** (10.50)	185.5*** (12.48)	157.5*** (15.33)	162.5*** (16.98)
Constant	-4.020 (44.54)	-11.32 (57.59)	-47.17 (40.70)	-59.72 (49.93)	-202.0*** (32.87)	-181.8*** (35.64)
Observations	167	148	167	148	167	148
Number of banks	18	18	18	18	18	18
Hausman test			0.000			
Autocorrelation test			0.000			
Heteroskedasticity			0.000			

Note: Standard errors in parentheses.
*** p<0.01, * p<0.1.

Table 4 describes the results of the analysis of the impact of business model diversification represented by NNII and TRADE on the sustainability of RACAR banks. The analysis results through the GLS model show that NNII has the opposite effect on RACAR (negative beta coefficient and statistical significance).

Table 4. Regression with RACAR.

Racar	(1) FEM	(2) FEM	(3) REM	(4) REM	(5) GLS	(6) GLS
NNII	-12.71*** (4.126)		-13.63*** (4.182)		-21.29*** (5.851)	
TRADE		0.0527 (0.194)		0.00573 (0.194)		-0.216 (0.299)
SIZE	0.398 (1.391)	0.440 (1.782)	1.681 (1.254)	1.879 (1.522)	5.629*** (1.004)	4.879*** (1.078)
LOANS	6.443 (6.944)	1.587 (8.481)	5.562 (6.847)	0.846 (8.191)	17.39** (8.827)	16.30 (10.28)
CAR	176.3*** (10.28)	180.1*** (12.57)	177.7*** (10.26)	182.0*** (12.17)	155.1*** (14.40)	159.9*** (16.01)
Constant	-9.899 (43.71)	-11.76 (56.43)	-51.23 (39.34)	-58.51 (48.12)	-182.7*** (30.89)	-163.1*** (33.62)
Observations	167	148	167	148	167	148
Number of banks	18	18	18	18	18	18
Hausman test			0.000			
Autocorrelation test			0.000			
Heteroskedasticity			0.000			

Note: Standard errors in parentheses.
*** p<0.01, ** p<0.05.

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TRADE does not affect RACAR (p-value greater than 0.1). Concurrently, the study also shows that CAR and SIZE have a positive effect on RACAR (positive and statistically significant beta coefficient). LOANS have no impact on RACAR (p-value greater than 0.1).

Zscore and RACAR show that diversifying business models negatively impact banks. It can be seen that in the developing financial market like Vietnam, banks are still gradually expanding other business forms. Therefore, banks still face difficulties in implementing expectations (Nguyen et al., 2021). In the case of Vietnam, the banking system has begun to build new business models beyond lending to generate interest income. And the use of resources available in the bank is still not effective. This has led to inconsistent or bad business results and reduced the sustainability of banks. In Vietnam, the business expansion based on fee activities (fees collected from lending, transaction, and payment activities) is consuming a lot of resources, and the income is not proportional (Abuzayed et al., 2018). In addition, the fee-based activities worsen the quality of loans due to the psychological burden of associated fees leading to restrictions or changes in customer behavior.

Subsequently, TRADE does not affect the sustainability of the bank. This result shows that foreign exchange or gold trading activities reduce the bank's sustainability. Although it is the only unit authorized to conduct foreign exchange business, this activity has not been effective for the bank. This shows that foreign exchange-related activities are not being effectively controlled. Moreover, the cause also comes from the policy of the State Bank by tightening foreign currency lending to pursue the goal of anti-dollarization of the economy by gradually shifting from lending transactions to buying and selling foreign currencies is one of the main reasons foreign exchange revenue declined. It can be seen that this is a common influence on the state. Additionally, the value of VND remained stable in recent years despite strong fluctuations of many domestic currencies worldwide. The difference in interest rates between VND and USD is no longer large, so there is not as much room to use financial leverage based on currency fluctuations as before.

Bank size (SIZE) positively affects bank stability or reduces the bank's risk. This result shows that expanding assets or scale helps banks approach customers better. This is a positive sign indicating the efficiency of the banks' size in recent times. Concurrently, CAR has a positive effect on sustainability, showing that the higher the capital adequacy ratio of the bank, the lower the risk. Although a high CAR may affect the effectiveness of lending activities, in terms of risk, the CAR ratio is helping banks better control risks. Finally, LOANS do not affect the bank risk. The risk of bad debt accompanies the increase or decrease in lending, so these two factors are currently in balance, leading to no effect of LOANS on bank risk.

5. CONCLUSION AND IMPLICATIONS

The paper systematizes the business model diversification theory and banks' risk and sustainability. Two non-interest income activities from fees and foreign exchange and gold trading activities are typical for diversifying business models in banks. Furthermore, the study figured out the negative impact of NNII business model diversification on the bank's sustainability through quantitative data analysis. Meanwhile, the TRADE business is not meaningful in the research period due to the influence of the government's policy on the issue of monetary tightening. Finally, the paper suggests some following theoretical and practical implications based on new findings.

5.1. Theoretical Implication

The paper tested the relationship between business model diversification and bank risk. In the developing financial market, business activities other than lending are not bringing sustainability to the bank. Nevertheless, it can be said that lending activities are still an important factor in the maintenance and sustainable development of the bank. This will be an important factor in making a firmer addition to the relationship between business model diversification, bank risk, and bank stability.

5.2. Practical Implication

The impact of business model diversification on bank risk will help managers in the bank have appropriate intervention policies to make non-interest income more effectively. As fee-based activity increases, processes and resources for fee-based operations are experiencing problems leading to increased bank risk. Simultaneously, income from foreign exchange or gold trading is not meaningful with bank risk, which shows that this activity needs to be maintained at a moderate level and wait for positive signals from the government about this foreign exchange business activity.

6. LIMITATION AND FUTURE RESEARCH

Although the paper found a positive effect of business model diversification on bank risk, however, this still exist some limitations. First, the article has not yet considered the mediating role of business results, non-performance loans, to bank risk. Diversifying business models can affect business results, and bank risks are different, so this nexus also has more in-depth judgments. Similar to non-performance loans, lending problems can affect non-performance loans, and bank risk may also need to be considered for a more thorough judgment. Second, the data source is currently only collected until 2019. Therefore, the effects of the COVID-19 pandemic and bank risk have not been considered.

The study suggests that further research should consider adding more relationships with business results and non-performance loans to find more exciting relationships. The dataset can be collected closer to the present to include the impacts of a COVID-19 pandemic.

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