The Impact of Competition on Non-Interest Income of Vietnamese Commercial Banks

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Abstract

The present research examines the impact of competition on non-interest income of 27 joint stock commercial banks in Vietnam in 2010-2017. Generalized least squares regression is used, and the results suggest that competition, HHI and bank assets have positive relationship with non-interest income. Based on these results, implications are that bank managers should employ technologies to decrease costs, boost competitiveness and non-interest income for Vietnamese joint stock commercial banks. In addition, supervisory agencies need to replace their regulatory approach.

Keyword: Bank, non-interest income, GLS, Viet Nam.

Introduction

The banking industry is undergoing transformation process, in which information technology is making a difference in supporting business processes in a regular and fast manner. Therefore, commercial banks using traditional business methods are competing aggressively with commercial banks that are based on a digital platform, integrating electronic payment gateways, using methods of non-cash payment services. Therefore, digital transformation in the spread of the industrial revolution 4.0 is no longer an option, but an indispensable development in the integration process of Vietnamese commercial banks.

In order to be proactive in the integration process, Vietnam Joint Stock commercial banks are gradually improving the system in the direction of enhancing prestige, building up sufficient competitiveness, operating effectively and safely, mobilizing fund from society more effectively and expanding investments. This is also a challenge for each country when integrating, and improving the competitiveness of banks must be the number-one priority and the target to be achieved.

This paper examines the impact of factors including competition, income diversification, market share and bank size on non-interest income of Vietnamese JS commercial banks in the period of 2010-2017, which is also a rapid development period of digital era in banking industry. Part 2 of the paper presents the theoretical foundations and previous studies on competition, section 3 presents models, data and research methods, results and conclusions presented in sections 4 and 5. The study also provides some recommendations for governmental agencies, commercial bank managers to improve the

competitiveness of Vietnamese commercial banks.

Theoretical basis

Concepts

Competition: According to the English Business dictionary (1992), competition is considered a rivalry among businesses in the market for the same type of production resources or the same type of customer. The competition between commodity producers, between traders in a market economy is governed by supply and demand relations in an effort to win the most favorable production, consumption and market conditions.

According to M. Porter (1985, 1998), competition is for winning market share. The nature of competition is to seek profit higher than the average profit that an enterprise has. The result of the competition process is the averaging process of profit in the industry, resulting in a decrease in prices.

Vietnamese economists have also introduced the concept of competition, according to Pham Nam (1996): "The essence of competition is the problem of obtaining the competitive edge in terms of prices of goods and services (buying and selling) and that is the approach to gaining high profits for economic entities". According to Nguyen Tien Trien (1996), "the direct purpose of the market competition activities among economic entities is to take advantages to lower the price of "input" factors of the production-business process, and raise the price of "output" so that the business can have the lowest cost but achieve the highest profit.

It can be seen that the above-mentioned competition concepts are not really sufficient, especially the concepts of two Vietnamese scholars. Because, at different historical periods, the concepts and perceptions of competition are different, in terms of scope and different levels of application.

Especially in the banking industry, advances in technology are making gradual changes in structure and operation methods and aid in providing many modern services in the banking system, forming new financial services products such as M-POS, Internet banking, Mobile Banking, chip card technology, electronic wallet... This has facilitated consumers in using modern banking services and saving transaction costs. This in itself has created pressures that require joint-stock commercial banks to change their management and operation methods to survive in a currently competitive digital environment.

Competitive advantage: The viewpoint of Michael E. Porter (1980, 1998) competition is a fundamental issue that determines the success or failure of a business. Competitive strategy is the search for favorable competitive position in the industry, the main arena of competition, in order to create a favorable and sustainable competitive position against the pressures that shape the industrial competition. Specifically, the basic foundation for businesses to achieve above-average returns in the long term is a sustainable competitive advantage. Although businesses have many strengths and weaknesses against other competitors, there are generally two main types of competitive advantages: low cost or differentiation. When combining these two types of fundamental competitive advantages with the operational scale will allow the creation of three general competitive strategies to achieve above-average profit in the industry, namely low-cost strategy, differentiation strategy and centralization strategy (M. Porter, 1985, 1998). Christensen. H.Kurt (2010) argues that "Competitive advantage is any value a business provides to motivate customers to buy their products or services rather than those of peers, creating barriers to potential and existing competitors.

Theories related to competition

Theory of resources

Resource theory is one of the most important economic theories, adopted by most of the businesses in developed countries. Birger Wernerfelt (1984) was the first to build the foundation for the theory of resources. Resource theory combines traditional perspectives on strategies related to the special capabilities of a business and the heterogeneity of the capacity of businesses. In addition, enterprises that use this theory in their operations also bring added value to enterprises through diversification in resources. Resource theory is proven suitable for economic organizations, including the banks (Joseph T. Mahoney and J. Rajendran Pandian, 2003).

Market power theory

Berger and Hannan (1998) propose justifications that can be used to explain the influence of market power (measured by market structure) on efficiency. First, banks competing in a highly centralized market can set prices higher than marginal costs, and managers do not have to work hard to keep costs under control. In other words, monopoly power / market power allows managers to reduce their efforts. Second, market power can allow managers to pursue other goals besides maximizing profit or maximizing business value. Third, in the absence of competition, managers who devote resources to gaining and maintaining the market will increase costs and reduce efficiency unnecessarily. Fourth, if banks benefit from market power, poor managers can survive without trying to work more effectively. Berger

and Hannan (1998) studied the banking sector in the US, showing that banks in centralized markets have lower performance.

Experimental studies on the impact of competition on non-interest income

Davis and Tuori (2000) argue that larger banks are more dependent on non-interest income. Medium-sized banks in Europe are less dependent on non-interest income than their peers in the US.

Hirofumi Uchida's research, Yoshiro Tsuitsui (2005) use the MVR model and 3SLS to examine whether the competition between banking regions in Japan has really improved in the last years of the 20th century. The research results show that the competition between urban banks is higher than in other regions and the competition in the banking sector began to intensify after 1995.

Barbara Casu and Claudia Giardone (2009) apply an intermediate approach with both SFA and DEA models to examine the relationship between the level of competition, the level of concentration and the efficiency of commercial banks in the Eurozone. The study reports a nonlinear relationship between competition and efficiency, and other factors such as risk sensitivity, regulatory framework and macro factors can directly and indirectly affect this relationship, which helps explain later studies in the Eurozone.

Carbó et al (2009) evaluate the competitiveness of commercial banks in 14 developed countries in Europe during the period 1995-2001. The results show that the competitiveness of European commercial banks is mainly concentrated in the traditional deposit and lending market.

Soedarmono et al. (2011) also used the H index to measure the competitiveness of commercial banks. The research results provide evidence that the competitiveness of banks is greater when the level of capital adequacy is higher. However, in less competitive markets, higher levels of capital adequacy are not enough to cope with moral risks, thereby leading to high bankruptcy risk for banks.

Nguyen et al. (2012) show that commercial banks with a competitive advantage create less non-interest income than other banks. Therefore, the authors conclude that banks prefer to employ the advantage in traditional lending market rather than diversify their income to create non-interest income. The research findings also show that banks with a larger market advantage are more stable when implementing income diversification. Banks with high capital ratio and credit risk are more focused on diversification of income sources and therefore generating higher rates of non-interest income.

Using Frontier and Non-Frontier techniques, OLS and Tobit models, Koetter and et al. (2012) study the relationship between competition and bank efficiency in the US. The research has calculated the corrected Lerner index, which can be a new approach in studying the competitiveness of the banking and other sectors and useful in research of regulatory processes, market policies and related parties.

In Vietnam, Nguyen Thi Canh and Ho Thi Hong Minh (2014) use data from the financial statements of 22 Vietnamese commercial banks in the 2007-2013 period and study income diversification and factors impacting profitability of Vietnamese commercial banks. The study results suggest that income diversification helps increase profitability; however, this study only refers to income diversification without thorough examination of non-interest income.

Pham Minh Dien et al. (2016) use the panel corrected standard error model (PCSE) for the balanced dataset from 27 Vietnamese joint stock commercial banks in the period of 2011-2015 to examine factors affecting the net interest margin of Vietnamese commercial banks. The results show that factors such as Lerner index, opportunity cost of reserve, and operating costs have a positive relationship with net interest margin, while market share has a negative relationship with net interest margin. The two factors of HHI and credit risk do not affect net interest margin of commercial banks.

Tran Huy Hoang and Nguyen Huu Huan (2016) study the factors influencing the operational efficiency of Vietnam's commercial banking system in the integration period 2005-2011 using 2SLS and Tobit regressions. Their results show that the performance of commercial banks is determined by two main groups of factors. First, subjective factors include: market share, liquidity risk, ownership of foreign investors and bank size. Second, objective factors include gross domestic income and inflation rate. Factors that positively affect the performance of commercial banks are foreign investors' ownership ratio, bank size and market share. The authors believe that commercial banks need to cooperate and build strategic partners to support the development and exploitation of each other's technology infrastructure in order to reduce investment costs and management costs, and improve the use of existing infrastructure.

Vo Xuan Vinh and Dang Buu Kiem (2016) study the impact of factors, especially risks and competitiveness, on the profitability of Vietnamese commercial banks in the 2006-2014 period. Their findings suggest that bank risk has an inverse relationship with profit and this result remains

unchangedwith different indicators of risk and profitability. Competitiveness is measured by Lerner index which has a positive relationship with profit.

Vo Xuan Vinh and Duong Thi Anh Tien (2017) study the determinants of the competitiveness of Vietnamese commercial banks. The study uses Lerner index to measure bank competitiveness and estimation methods for panel data. The results show that competition between Vietnamese commercial banks is relatively strong in relation to Chinese commercial banks. At the same time, the results show factors such as size of capital, ratio of provision for credit risk, rate of non-interest income, equity ratio, number of banks, state ownership, inflation and GDP growth rates have significant impacts on the competitiveness of banks.

Nguyen Thi Lien Hoa and Nguyen Thi Kim Oanh (2018) study diversification of income and risks of commercial banking system in Vietnam. The results show that when a bank pursue diversification, it itself causes internal risks to increase. In particular, it will also have a more serious impact when directly affecting large banks in the Vietnamese banking system. On the other hand, banks in Vietnam have an extremely close relationship with each other, so risk of significant impact will affect all credit institutions.

Methods, models and research data

Research method

This research uses quantitative research methods and panel dataset. According to Wooldridge (1997) and Khanh (2011), the conventional regression methodsfor panel data are Pooled OLS, fixed effects model (FEM) and random effects model (REM). The use of the Pooled OLS method is usually inappropriate because the estimation results are misleading, causing autocorrelation to occur and value of Durbin - Wason become low (Baltagi, 2005 and Park, 2009). In order to have a choice of FEM or REM, the study uses Hausman test to select the appropriate model (Wooldridge, 1997). In addition, to overcome the defects after selecting the appropriate model, the study applies GLS to bring the best results for the research model.

Research model

This research draws on models of Davis and Tuori (2000), Barbara Casu and Claudia Giardone (2009, Nguyen et al. (2012), Koetter et al. (2012).These studies have been carried out in developing countries with similar features compared to the dataset in this research. This paper also consults Pham Minh Dien et al (2016), Tran Huy Hoang and Nguyen Huu Huan (2016), Vo Xuan Vinh and Dang Buu Kiem (2016), Vo Xuan Vinh and Duong Thi Anh Tien (2017) and Nguyen Thi Lien Hoa and Nguyen Thi Kim Oanh (2018) for models on the impact of competition on non-interest income of commercial banks. Consequently, the research model is built as follows:

$$TNNL_{it} = \beta_0 + \beta_1 COM_{it} + \beta_2 HHI_{it} + \beta_3 MS_{it} + \beta_4 SIZE_{it} + u_{it}$$

In which the variables interpreted and measured are presented in Table 1

Table 1. Interpretation of variables and measurements

Variable	Measure	Expected sign
TNNL (Non-interest income)	$\dfrac{TNNL}{Total\ assets}$ TNNL = Total income – Income from interest (Huang and Chen (2006), Deyoung and Rice (2014))	
COM (Competition)	$\dfrac{(Interest\ income + Income\ from\ services)-(Interest\ expense + Services\ expense)}{Interest\ income + Income\ from\ services}$ (Maudos and Guevara, 2004, Hawtrey and Liang (2008), Maudos and Solís (2009), Kasman et al. (2010), Gounder and Sharma (2012), Pham Minh Hien et al. (2016))	+

HHI (Income diversification)	$HHI_{it} = 1 - \left[\left(\frac{ThuNhapLaiRong}{TongThuNhap}\right)^2 + \left(\frac{ThuNhapNgoaiLai}{TongThuNhap}\right)^2\right]$ (Chortareas et al. (2012), Nguyễn Thị Cành and Hồ Thị Hồng Minh (2014), Võ Xuân Vinh and Đặng Bửu Kiếm (2016), Nguyễn Thị Liên Hoa and Nguyễn Thị Kim Oanh (2018))	+
MS (Market share)	$\frac{\text{Total assets of each bank}}{\text{Total assets of all banks}}$ (Chortareas et al. (2012), Trần Huy Hoàng and Nguyễn Hữu Huân (2016), Phạm Minh Điền et al. (2016))	+
SIZE (Size)	Ln (Total asset) (Nguyen et al. (2012), Hakimi, Hamdi and Djelassi (2012), (2015), Meng et al. (2017), Hamdi et al. (2017))	+

Source: Author's synthesis

Research data

Research data were collected from the financial statements of 27 Vietnamese commercial banks in the period of 2010 - 2017, forming 216 observations. Table 2 shows the minimum, maximum, average value and standard deviation of these variables.

Table 2. Descriptive statistics of variables

Variable	Min	Max	Avg. value	Standard deviation
COM	-0.1156	0.5911	0.3357	0.1201
HHI	-0.7304	0.4999	0.2269	0.2103
MS	0.0029	0.1674	0.0370	0.0419
SIZE	29.8647	34.7230	32.1416	1.0878
TNNL	-0.0058	0.0379	0.0054	0.0052

Source: Author's calculation using Stata 13

Table 3 presents correlation matrix to support the analysis of the correlations among variables.

Table 3. Correlation matrix and Variance Inflation Factor of variables

	COM	HHI	MS	SIZE	TNNL	VIF
COM	1.0000					1.57
HHI	0.1473	1.0000				1.05
MS	0.1911	0.2365	1.0000			3.28
SIZE	0.1947	0.2431	0.8315	1.0000		1.63
TNNL	0.0701	0.5995	0.1863	0.1736	1.0000	3.27

Source: Author's calculation using Stata 13

From Table 3 we see that the correlation coefficients of each pair of the independent variables are relatively low (all below 0.65) and all correlation coefficients between the variables in the model are positive; only correlation coefficient between SIZE and MS is 0.8315 which is quite high but the Variance Inflation Factor values (VIF) of the variables are all low (all below 3.5). The conclusion is that multicollinearity phenomenon is not likely to exist in the regression model.

Research results

Analysis of regression results

Table 4. Regression results using Pooled OLS, REM and FEM

Variable	Pooled		REM		FEM	
	Coeff	P>|z|	Coeff	P>|z|	Coeff	P>|z|
C	0.0061	0.683	-0.0012	0.938	-0.0308	0.167
COM	0.0011	0.645	0.0027	0.312	0.0127	0.210
HHI	0.0147***	0.000	0.0137***	0.000	0.0142***	0.000
MS	0.0090	0.466	0.0033	0.816	-0.1447	0.510
SIZE	-0.0001	0.797	0.0001	0.793	0.0012	0.781

Source: Author's calculation using Stata 13
Note: *, **, *** denote significance at 10%, 5% and 1% respectively

Table 5. Summary of tests for model selection

Test	Pooled-OLS and FEM	Pooled-OLS and REM	FEM and REM
F – test	F (26, 185) = 2.64 and Prob > F= 0.0001		
Breusch & Pagan Test		Chibar2 (01) = 8.56 Prob > chibar2 = 0.0017	
Hausman Test			Prob>chi2 = 0.0002
Conclusion	FEM	REM	FEM

Source: Author's calculation using Stata 13

The results of Table 5 comparing the validity of the 3 models (Pooled OLS, REM, FEM) suggest that FEM is the most suitable model to estimate the effect of competition on non-interest income of commercial banks in Vietnam.

Table 6. Tests of heteroskedasticity and autocorrelation for FEM

Test	Heteroskedasticity	Autocorrelation
Value	Chi2 (27) = 72371.51 and Prob>chi2 =0.0000	F(1,26)=27.670 And Prob>F=0.0000

Source: Author's calculation using Stata 13

Results presented in Table 6 suggest that heteroskedasticity and autocorrelation exist. To tackle these defects the study apply FEM using GLS command with the combination of

two options, namely panels (heteroskedastic) and corr(ar1).

Table 7. Regression results of FEM after addressing defects in the model

Variable	Coeff	Standard error	t	P>|z|
C	-0.0308	0.0222	-1.3870	0.1671
COM	0.0100**	0.0038	-2.5873	0.0104
HHI	0.0125***	0.0015	8.0626	0.0000
MS	-0.1101**	0.0423	-2.6016	0.0100
SIZE	0.0012**	0.0007	1.7491	0.0819
Obs	216			
F-statistic	7.0918			
Prob(F-statistic)	0.000			

Source: Author's calculation using Stata 13

Results of research and discussion

From the regression results in Table 7, the estimated coefficient of COM variable has positive value (0.0100) and is statistically significant at 5%, indicating the presence of impact of competition on non-interest income of Vietnamese commercial banks in the period of 2010-2017. Specifically:

The income diversification variable (HHI) has an estimated coefficient of positive value (0.0125) and is statistically significant at 1%, indicating that income diversification has a positive impact on non-interest income. This result is consistent with the study of Chortareas et al. (2012), Nguyen Thi Canh and Ho Thi Hong Minh (2014), Vo Xuan Vinh and Dang Buu Kiem (2016), Nguyen Thi Lien Hoa and Nguyen Thi Kim Oanh (2018).

As for market share variable (MS), the result shows that the MS variable has negative value (-0.1101) and is statistically significant at 5%, indicating that the market share affects the non-interest income of Vietnamese commercial banks in period 2010-2017. Regression coefficient implies that market share factor has a negative and strongest impact on non-interest income of Vietnamese commercial banks in the research period. Although the results are contrary to the author's expectations, it is consistent with the research of Pham Minh Dien et al (2016).

According to the results in Table 7, the SIZE variable, which represents the size of the bank's assets, has a positive

impact (0.0012) on non-interest income of Vietnamese Joint Stock Commercial Banks. This result is consistent with the expectation from authorand previous studies such as Hakimi, Hamdi and Djelassi (2012), Aslam et al (2015), Meng et al (2017), Hamdi et al. (2017).

Recommendations

The research results show that the factors of income diversification, competition, market share and bank size have significant impacts on non-interest income of commercial banks in Vietnam. From the above findings, the study also provides some recommendations for bank managers, the governmental agencies operating the commercial banks in Vietnam as follows:

For bank managers

The estimation results suggest that banks implementing income diversification (HHI) will improve their non-interest income, but also face more risks at the same time. In reality, while lending is still the main source of income for Vietnamese commercial banks, the revenue of commercial banks all over the world mainly comes from services. Therefore, in order to improve competitiveness and increase non-interest income, commercial banks need to expand to other activities, especially support services for credit activities. Banks need to apply modern internet technologies such as cloud computing, large-scale data storage (Big Data), Internet of Things, that will help commercial banks reshape their business and management models, perfect the electronic payment system, build smart digital banks in the future to increase income, especially

value-added services for customers, which are a source of non-interest income Vietnamese commercial banks have not touched upon. The development of the modern banking service market in Vietnam has had positive changes but still quite fragmented, not yet synchronous and has not created a highly competitive service.

The results also show that increasing bank size (Size) will contribute to improving non-interest income and competitiveness. However, the increase in this scale should ensure a safe financial status at or above the requirements from Basel II. Bank managers may consider increasing the size of banks through increasing charter capital by contributing capital or issuing securities to attract capital, issuing convertible bonds. At the same time, it is necessary to improve the capacity of credit risk management, increase bad debt to increase capital flows, minimize losses and maintain public trust.

In addition, market share in terms of total assets (MS) of Vietnamese commercial banks has a negative relationship with TNNL, meaning that when market share of total assets increases, water resources decrease. This suggests that when total assets increase, banks that use inefficient assets lead to a decline in net interest income. Therefore, in order to increase water resources, Vietnamese commercial banks need to better manage their assets through managing loans, investments and fixed assets of the bank. In addition to maintaining the current market share, the expansion of domestic and international market shares is also an issue of concern for Vietnamese banks' commercial bank managers.

For governmental agencies

The reality has shown that the reputation and prestige of banks belong to intangible resources but are of great importance in creating competitiveness for commercial banks. The research results show that the competition factor (COM) has a positive impact on non-interest income, which shows that commercial banks that increase competition will promote service activities to serve customers more and increase utility. Therefore, the central bank (Central Bank) needs to take measures to manage the competition of commercial banks in the direction of increasing transparency and publicity in order to strengthen the banking market in particular and Vietnam's financial market in general. Therefore, the central bank needs to have regulations to promote cooperation with foreign banks to learn from management experience and softwares applying advanced technology in management. This will help the Central Bank to control the transaction to ensure safety, contribute to stabilizing and improving the competitiveness of the Vietnamese commercial banking system.

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