
Payment system and bank performance: Evidence from Vietnam

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Abstract: This paper investigates the relationship between the business of payment system and the performance of banking industry in Vietnam. Using data of 20 listed banks from 2009 to 2019, we find that the innovations in mobile payment have significant impact on bank performance, while the traditional types of payment show little evidence. We also argue that payment system in Vietnam does not contribute much to the stability of banks' performance.

JEL classification: G01, G21, G28

Keywords: payment system, bank performance, mobile payment.

INTRODUCTION

The relationship between retail payment and financial system has been widely acknowledged. The robust and efficient system can enhance the effectiveness of the financial system and motivate consumer confidence (BIS, 2003). Recent years witness the revolutionary development of the payment business based on technological advance, especially with the development of financial technology (fintech). There are also remarkable challenges, including competition, regulatory changes and technical risks. Therefore, the banking and payment businesses today are much more different to the past.

Providing payment services are the crucial role of the commercial banks, accounting for the remarkable part of its incomes and operational costs. It is also regarded as the backbone of the banking business. Indeed, the payment services significantly associated with the increase of market share of bank business, such as the deposits and provision of credit. Payment business contributes 30-50% of bank incomes, and become the most attractive segment of banking activities, in term of revenue generation, market share growth rate and relatively low level of capital needed (Boston Consulting Group, 2009).

Vietnam is one of the emerging economies in South East Asia which shows fundamental strength and resilience in recent years. According to World Bank's report, the real GDP of Vietnam grew by nearly 7% in 2019, one of the fastest growth rates in the region. In 2020, Vietnam's economy has been strongly affected by the ongoing Covid-19 pandemic due to its deep integration with the global economy. However, thanks to the successful containment of the pandemic, the macro-economic and fiscal framework remains resilient with an estimated GDP growth rate of 1.8 percent in the first half of 2020, projected to reach 2.8 percent for the year, which makes Vietnam become one of the few countries in the world not to expect a recession (World Bank, 2020).

The banking system plays a crucial role in Vietnam economy. Indeed, the domestic credit provided by Vietnam banking system accounts for more than 140% of the GDP, which doubles the contribution of equity market, government bonds and corporate bonds⁽¹⁾ The World Bank data. Available at:

<https://data.worldbank.org/indicator/FS.AST.DOMS.GD.ZS?locations=VN>). Therefore, any factor which is believed to influence the performance and stability of Vietnam commercial banks should be considered carefully. Our study, therefore, aims to fulfil this gap.

This study investigates the impact of payment system on fostering performance and stability of Vietnamese commercial banks. Specifically, it focuses on the contributions of the number of ATM, POS, the number of transactions via mobile device on bank performance. Using panel data from 20 listed banks in Vietnam stock market from 2008 – 2019, we find significant impact of mobile payment on bank's financial performance. Besides, it is evidence that the payment instruments do not affect the stability of bank performance.

The remaining of the paper are as follow. Section 2 covers literature, while Section 3 discovers the research questions and research model. Section 4 present the data, followed by the empirical analysis in Section 5. The paper concludes in Section 6.

LITERATURE REVIEW

The importance of the electronic-based banking services on bank performance has been widely acknowledged. Indeed, the literature on this topic is not novel. In economic perspective, efficient and robust payment systems are crucial as they facilitate financial transactions in the economy. The performance of payment system is subject to

economy of scale as they require significant investment in infrastructure to operate, but relatively small marginal cost per transaction using the existing infrastructure. In Europe, it is evidence that standardization of payment instruments results in economy of scale in payment services (Bolt and Humphrey, 2007; Beijnen and Bolt, 2009). In banking perspective, it is clear that electronic-based banking offers relatively low risk but high return and comparatively low-cost advantages for banks. The advanced payment technologies also reduce the labor cost of face-to-face transaction, the cost of handling cash for banks and lead to less demand for currency in circulation (Amromin and Charkravorti, 2009). The technology-based products reduce the operational risks of the bank (Hasan, 2002; Ciciretti et al., 2009) and increase the asset quality and therefore promote the financial performance of banks (Kagan, 2005). Hasan et al. (2010) study 27 countries across European area and find that banks perform better in markets where payment technologies are more developed. Payment technology improves bank performance, and the diversification in payment instruments is corresponding with the enhance of bank performance.

Ciciretti et al. (2009), Weigelt ve Sarkar (2012) find that advanced technology based electronic banking applications increase the overall profitability and have significant contribution to the competition of a bank in the banking sector and banks' performance. Competition in the payment market has been widely regarded as an important contributor to banks' efficiency (Scholnick et al., 2007). Effective payment services are important in fostering banks to establish relationships with their private and corporate clients. These services are tightly linked to other services that banks provide, for example, deposits, as clients tend to deposit money into a bank that they can obtain a good and efficient payment service (Kemppainen, 2008). The advance in technological progress also facilitates the geographic expansion of the banking sector (Berger and DeYoung, 2006). The facilities e.g., ATMs, POS terminals and similar advanced technologies can reduce the costs of asset convertibility (Berger et al., 1996). Besides, the geographical and digital distribution of payment services plays an important role in attracting clients to the bank and therefore generate more values.

It is also worth to note that effective and robust payment service are tightly associated with bank stability. Indeed, the payment services are likely to revive against the context of the ongoing financial turmoil (Hasan et al., 2010). Particularly, when other sources of bank income become more volatile during crisis period, payment services contribute to the stability of bank performance by generating regular and reliable revenues. Besides, the financial turmoil will let bank revise their business model and focus on one of their core tasks: providing efficient and innovative payment services.

The Vietnam payment industry has undergone remarkable with the popularity of the electronic payment services. New payment technology and instruments (e.g. mobile banking) have replaced older paper-based and old-school payment instruments, for example, Automatic Teller Machine (ATM) and Point of Sale (POS). In a competitive payment market, customers have more choice to complete their transaction quickly and efficiently. The competition among payment instruments fosters banks and alternative payment providers to improve their services to attract more customers. The greater variety of payment instruments then promotes banking innovations. Therefore, this research hypothesizes that modern payment instruments help banks to strengthen their financial performance. In other words, we investigate the possible relationship between the growth of payment services and bank performance.

RESEARCH MODELS

This research aims to investigate the relationship between payment system and bank performance in Vietnam. Specifically, we investigate the impact of alternative means of payment of banks on their financial performance and efficiency over time. Of these payment instruments, we focus on the ATM, POS and the mobile banking payment (MB) as these represent the prior and modern means of electronic payment.

To examine our research questions, we use panel data and propose two models to capture the potential association in the light of prior literature. The baseline models are presented as below:

$$ROA = \beta_0 + \beta_1 * ATM_{i,t} + \beta_2 * POS_{i,t} + \beta_3 * MB_{i,t} + \beta_4 * NB_{i,t} + \beta_5 * Size_{i,t} + e_{i,t} \quad [1]$$

$$STD_{(ROA)} = \beta_0 + \beta_1 * ATM_{i,t} + \beta_2 * POS_{i,t} + \beta_3 * MB_{i,t} + \beta_4 * NB_{i,t} + \beta_5 * Size_{i,t} + e_{i,t} \quad [2]$$

in which equation model [1] researches the potential impact of payment instruments on banks' financial performance and equation model [2] is for measuring the impact of payment instruments on its stability.

In equation [1] and [2], we use ROA ratio as the proxy of bank's financial performance and the standard deviation of ROA ($STD_{(ROA)}$) as the stability of bank's financial performance. To measure payment intensity, we use variable ATM as the number of the ATM, while variable POS is the number of POS provided by banks. ROA depends majorly on bank's size (Haan and Poghosyan, 2012a; 2012b) due to the economy of scale by minimizing fixed costs per product. Thanks to its large scale and bank is subjected to 'too big to fail' problem, making it easier for them to attract more customers as well as more favorable when providing credit. We use the number of branches (NB) as the control variables, as the number of branches could have a positive impact on operational efficiency by increasing customer service, especially in state-owned banks that hold a dominant stake due to its sizes and better public trust. The large number of branches also drive fluctuations in asset returns to be more stabilized.

4. Data

This research employs data of 20 listed banks on Vietnam stock market from 2008 to 2019, as this period witnesses the rapid development of Vietnam payment system. We collect the ROA ratio, number of branches (NB) and bank sizes (SIZE) from S&P Global data source, while the number of ATM, POS and the number of transactions via mobile banking (MB) are hand collected from banks’ annual reports and from the database of the State Bank of Vietnam. Our sample covers 20 banks chose to represent the Vietnamese banking system when they account for more than 55% of the charter capital and 66% of the total assets of the banking system. Some banks were not included due to shortage of data in 2019.

In our models, we scale variables ATM, POS, MB, NB and Size by taking natural logarithm, while ROA is presented as original value. Descriptions of the data are shown in Table 1.

Table 1: Descriptive statistics of data

	Independent variables				Control variables	
	ROA	ATM	POS	MB	NB	Size
Mean	0.81	2.42	3.98	4.79	2.56	4.92
Median	0.68	2.49	4.48	5.31	2.43	5.04
Max	2.87	3.60	5.52	6.72	3.51	5.89
Min	0.03	0.48	0.69	0.85	0	3.52
No of observations	240	240	240	240	240	240

Note: Table 1 shows the descriptive statistic of data, including 20 banks from 2008 to 2019.

EMPIRICAL ANALYSIS

The impact of payment system on bank’s performance

The regression results for equation model [1] are shown in the Table 2 below. The first finding from the empirical analysis is that with 95% level of confidence, the number of ATM does not have significant impact on the financial performance of banks. In recent years, ATMs have done very well job in shaping the form of cashless payment via account, especially with state policy of requiring all state-owned companies and government sector pay salary through bank account. However, the rate of ATM growth has begun to decline in urban areas due to its high maintenance cost and low profitability. Similar to ATM, the number of POS does not have a significant on ROA of banks. Both ATM and POS are the old form of retail payment which only offer payment service at specific place and time. Due to these disadvantages, bank clients tend to use mobile banking as an alternative and more modern merchant to make payment. Our empirical analysis shows the statistically significant impact of the mobile banking payment of banks’ financial performance.

Table 2: The impact of payment instruments on bank performance

Equation [1]						
	Constant	ATM	POS	MB	NB	SIZE
Est. value	0.076	-0.00617	0.002	0.0118	-0.03353	-0.0331
t-stats	0.9809	-0.5218	0.4212	2.2189	-1.0877	-0.8055
p-value	0.3298	0.6033	0.6748	0.0296	0.2802	0.4231
Equation [2]						
	Constant	ATM	POS	MB	NB	SIZE
Est value	0.060	-0.001	-0.008	0.000	-0.008	-0.058
t-stats	2.610	-0.450	-0.308	-0.010	-1.334	-2.409
p-value	0.012	0.654	0.759	0.918	0.188	0.019

Note: Table 2 shows the regression results of model [1] and [2], presenting the estimated value, t-stats and p-value of the variables.

Recent years witness the revolutionary popularity of smart phones and mobile payment in Vietnam. These mobile services (e.g., 24/7 money transfer via Mobile banking application, E-wallet, QR code payment) have been creating cashless payment era, matching the increasing demand of fast, secure and efficient payment services of customers and businesses. For the first 6 months of 2020, the number of transactions via mobile phone channels reached more than 472 million transactions, increased by 78% in comparison to 2019).

The impact of payment system on bank’s stability

The model [2] results show that the development of the payment system through ATM, POS, and MB does not affect the stability of banks’ financial performance. This can be explained that in Vietnam, the revenues from payment services does not contribute much to the total revenues of banks compared to other traditional services such as bank credit, deposits. This might be also that from 2009 to 2019, the Vietnam banking industry experience a comprehensive restructuring of credit institutions due to bad debts which lower their profitability and increase

volatility. From Table 2, we find that bank size shows significant and negative impact on the standard deviation of the ROA. In other words, the bank size helps reducing the volatility of ROA, therefore increasing the stability of banks' financial performance. It can be explained that large banks have the economy of scale in payment business, therefore they can provide payment services with more competitive prices and generate more incomes. They are also less vulnerable to the market and policy changes than small banks.

CONCLUSIONS

The paper examines how payment system and payment instruments affect bank profitability and stability. Using panel data from 20 listed banks in Vietnam stock market from 2008 – 2019, we find some interesting points. In terms of bank profitability, it is weak evidence that a large amount of ATM/POS could support banks' financial performance. However, our empirical analysis show that the mobile banking payment have significant impact on bank's financial performance. It is evidence that the payment instruments do not affect the stability of bank performance, but the bank size is shown to be significantly and positively correlated with banks' stability.

There are possible ways for future research. One can study the impact of the mobile payment via fintech firms on the financial performance and stability of bank. Besides, it is possible to examine the impact of payment system on the performance of the state-owned banks and private banks separately.

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REFERENCES

1. Akhisar, I., Tunay, K.B. and Tunay, N., 2015. The effects of innovations on bank performance: The case of electronic banking services. *Procedia-Social and Behavioral Sciences*, 195, pp.369-375.
2. Amromin, G. and Chakravorti, S., 2009. Whither Loose Change? The Diminishing Demand for Small-Denomination Currency. *Journal of Money, Credit and Banking*, 41(2-3), pp.315-335.
3. Beijnen, C. and Bolt, W., 2009. Size matters: Economies of scale in European payments processing. *Journal of Banking & Finance*, 33(2), pp.203-210.
4. Berger, A. N. – Hancock, D. – Marquardt, J C (1996) A Framework for Analyzing Efficiency, Risks, Costs, and Innovations in the Payments System. *Journal of Money, Credit and Banking* 28 (Part 2), 696–732.
5. Berger, A. N. – DeYoung, R. (2006) Technological Progress and the Geographic Expansion of Commercial Banks. *Journal of Money, Credit, and Banking* 38 (6), 1483–1513.
6. Bolt, W. and Humphrey, D., 2007. Payment network scale economies, SEPA, and cash replacement. *Review of network Economics*, 6(4).
7. Ciciretti, R., Hasan, I. and Zazzara, C., 2009. Do internet activities add value? Evidence from the traditional banks. *Journal of financial services research*, 35(1), pp.81-98.
8. De Haan, J. and Poghosyan, T., 2012a. Bank size, market concentration, and bank earnings volatility in the US. *Journal of International Financial Markets, Institutions and Money*, 22(1), pp.35-54.
9. De Haan, J. and Poghosyan, T., 2012b. Size and earnings volatility of US bank holding companies. *Journal of Banking & Finance*, 36(11), pp.3008-3016.
10. Hasan, I. (2002). Do Internet activities add value? The Italian bank experience. *Fondo Interbancario Di Tutela Dei Depositi, Essays*, No. 2, July.
11. Kempainen, K. (2008). Integrating European Retail Payment Systems: Some Economics of SEPA. *Bank of Finland Discussion Papers*.
12. Scholnick, B – Massoud, N – Saunders, A – Carbo-Valverde, S – Rodríguez- Fernández, F (2007) The Economics of Credit Cards, Debit Cards and ATMs: A Survey and Some New Evidence. *Journal of Banking and Finance* 32(8), 1468–1483.
13. Weigelt, C. and Sarkar, M.B. (2012). Performance implications of outsourcing for technological innovations: Managing the efficiency and adaptability trade-off. *Strategic Management Journal*, 33, 189-216.