

# Restructuring the Banking System: the Case of Vietnam

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**Abstract.** This paper aims at studying the restructuring of commercial banks that has been started since 2008 in Vietnam by analysing in two angles: Efficiency and Stability of the banking system. Firstly, the paper applies a modified Data Envelopment Analysis (DEA) model in 2 cases to estimate the changes of the efficiency by analyse the E-scores of 26 commercial banks from 2008 to 2012 and examine the profits and productions efficiency of 7 DMUs of the Vietnamese banking system in 2 years 2011 and 2013. Secondly, this study will calculate the Z-scores and T-test by using SPSS program to assess the stability of the banking system. Moreover, this study uses quantitative and qualitative methods to assess and quantify the results of the Vietnam commercial banks' restructuring under the Decision No. 254/QD-TTg. The results showed that Vietnamese banking system remained stable during the process and contributed to economic growth, however the results were quite limited and lacks of long-term effects, such as many restructuring objectives were not achieved thorough handling bad debt, cross-ownership, improving governance and enhance the operational efficiency of commercial banks. In particular, the major cause of these problems is due to the lack of a general approach to the overall handling of the issue of restructuring commercial banking system, particularly is missing a legal framework for the systematic implementation of the restructuring process in the context of economic restructure.

**Keywords:** Restructuring; banking system; performance; efficiency; stability; data envelopment analysis (DEA); Vietnam.

## Реструктуризация банковской системы: пример Вьетнама

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**Аннотация.** В статье проанализирована реструктуризация коммерческих банков, начатая во Вьетнаме в 2008 г., с двух точек зрения: эффективности банковской системы и стабильности банковской системы. В двух случаях применена модифицированная модель анализа среды функционирования (АСФ) для оценки эффективности изменений с помощью анализа E-рангов 26 коммерческих банков в период с 2008 по 2012 г. Проанализированы прибыль и эффективность 7 DMU банковской системы Вьетнама в период с 2011 по 2013 г. Рассчитаны Z-ранги и T-тест для оценки стабильности банковской системы с помощью программы SPSS. Для оценки результатов реструктуризации банковской системы в соответствии с распоряжением № 254/QD-NNg применены как количественные методы оценки, так и качественные методы. Результаты анализа показали, что банковская система Вьетнама остается стабильной, содействует экономическому

росту, хотя некоторые цели реструктуризации не были полностью достигнуты, например проблемы безнадежных долгов, перекрестного владения титулами собственности, повышения уровня управления, улучшения эффективности оперативной деятельности банков.

**Ключевые слова:** реструктуризация; банковская система; результативность; эффективность; стабильность; анализ среды функционирования (АСФ); Вьетнам.

## INTRODUCTION

In the trend of globalization and international economic integration, the banking system's operations play a key role in the stability and development of the economy. According to Claessens (1999), bank restructuring aims to organize, enhance governance of CBs to ensure the safety of the system and create a strong financial, capable of risk managements and goods management system of CBs. The study of Waxman (1998) showed that restructuring banks often is conducted whenever there is evidence of one or more banks' inability to pay more than 20% of total deposits throughout the banking system and the need to have a package of measures related to institutional and legislation to deal with weak banks and bring the banking system back to a sustainable and healthy state.

Vietnam is increasingly integrated into the international economy, since the financial markets have gradually interconnected so instabilities in one country also have impacts on others. Restructuring the banking system is a complex problem not only in the banking sector, but also for the economy. Vietnam — a developing country should have the review and evaluation of the measures appropriate to the conditions and circumstances of the country follow the steps in the restructuring of the banking system from international experience. In Vietnam, the growth of the economy has had a strong impact on the development of the banking system from 2001 to 2015. The quick economic growth, especially in the application of modern science and technology has boosted the banking system to develop rapidly in both scale and service qualities. However, with the rapid development, the banking system has potential risks such as high credit and liquidity risks, instability, underperformance, lack of competitiveness, and inadequate governance capacity. In addition, interest groups and cross-ownership between the big banks created mutual dependence and high

risk systems. Therefore, if the risks and weaknesses are not processed promptly, it will have a negative impact on macro-economic stability and national financial system. Therefore, the restructuring of the banking system and financial institutions is imperative to avoid the collapse of the banking system and economy.

The system of credit institutions in Vietnam have 3 State — owned commercial banks, 34 Commercial banks, 5 Wholly foreign owned banks, 4 Joint — ventures banks, 2 Policies banks and 1 cooperative bank (for more detail see Appendix 1). With a total number of 38 banks, the commercial banks are playing a leading role in Vietnam's banking system and are the main object of the process of restructuring the banking system in the period 2008–2014. Therefore, the study evaluated the results of the banking system before and after the restructuring will also focus on the aforementioned banks.

Under the scope of research subjects, the research answers four main questions:

(i) *How effective and stable were the banking industry's performance after restructuring process?*

(ii) *What are the main aspects of Vietnam banking restructuring process? (For example, legal framework, policies, measures...)*

(iii) *What are the effects after restructuring the banking system in Vietnam in the period 2008–2012?*

(iv) *What are the targets to improve the banking restructuring process in Vietnam in 2015–2020?*

The purpose of this study are: (1) explore the advantages and disadvantages in the process of restructuring the banking system; (2) review the implementation of the objectives and measures to restructure under the scheme “Restructuring the system of credit institution in 2011–2015”, which is issued under Decision No. 254/QĐ-TTg dated 01/03/2012 (see more in Appendix 9); (3) evaluate the effectiveness of methods of restructuring the banking system in Vietnam in recent years. This study approaches from the perspec-

tive of the method of restructuring the banking system, thereby assess the efficiency and stability of the restructuring measures already implemented by using the DEA model and calculate Z-scores with T-test by using SPSS program, then draw the successfully, limit institutions and causes. Combined with the study of international experience and the reality in Vietnam, this study has suggested some policy recommendations to the authorities and banks in order to continue the process of restructuring the banking system effectively in the future.

Consequently, this study will focus on assessing the situation the processes of restructuring the banking system of Vietnam, through the layout of the study are as following: section 2 provides the rationale for restructuring the banking system in Vietnam. Section 3 presents the methods and models specification. Section 4 analyzes the empirical results and Section 5 gives the conclusion.

### THE RATIONALE FOR RESTRUCTURING BANKING SYSTEM IN VIETNAM

The reasons for Vietnam's banking system restructuring can be explained by following: (1) Vulnerability of Vietnam's banking system (such as increasing risk of bad debts; poor quality of governance, technology and human resources; liquidity risk, institutional risk, credit risk...); (2) Not really effective performance (of the banking system and its impact on the whole economy); (3) Requirement of global integrity (for example, internationalization, international standards, competitiveness, reactions to external shocks...); and (4) Requirements of new stage of Vietnam's socio-economic development (like high-quality, effective, social-economic and environment sustainable development).

In Vietnam, the market conditions that has not really developed, Vietnam is considered as a bank-based economy. Vietnam's banking system in recent years has grown rapidly, with total assets of more than 1.5 times the GDP at the end of 2014; total credit to the economy to around 100% of GDP, satisfy the development demand of the country. However, the sudden explosion of both scale and the diversity of the banking system in a short time have potential risks and impacts significant risk to the safety and sound-

ness of the entire system. In particular, since 2011, the banking system began to show signs of tensions and accumulation of vulnerability factors, bad debt tends to rise sharply, after a process of increasing the pace of credit expansion for the economy along with the weakness of the corporate sector and the general decline of the economy. Before the restructure, the banking system in Vietnam met many problems that can be summarized in the **Table 1** below:

In other words, it could be concluded the difficulties and risks in restructuring in Vietnam's banking system are followings:

*Firstly*, risk of long-lasting restructuring for there is lack of legal framework, scientific basis (data base...) and institutional capacity for restructuring the banking system (like schemes of resolving assets).

*Secondly*, risk of dependence on foreign banks: the number of banks in short of liquidity and with bad assets is quite large in the banking system; the number of good banks which is capable of acquiring others is much less than the number of bad banks. The national financial and monetary security.

*Thirdly*, risk of public confidence erosion. State-owned banks may have implicit guarantee for depositors. Meanwhile, that the Government declares not to insure private banks may lead to bank runs, or closures of some banks can lead to doubts of soundness of other banks in the system.

*Fourthly*, risk of interest conflicts arising in the restructuring process. They are conflicts of interests of depositors, different groups of shareholders, banks, and borrowers...

*Fifthly*, risk of costs arising in the restructuring process and tolerance of the economy. The study of Dickle, P. (1999) has shown that costs of the restructuring can occupy from 20 up to 50% of GDP if the restructuring occurs after crisis. More specific, his results shown that 20% of GDP in Korea, over 30% in Thailand and over 50% in Indonesia.

The system of CB in Vietnam grows rapidly in quantity and sources of equity after the renovation, especially since joining the World Trade Organization (WTO). With the rapid development in terms of quantity, so far the system of CB has a network covering all provinces and cities in the country, particularly CBs has

Table 1. Problems of the bank system in Vietnam

The problems from the macro environment	The problems from commercial banks		The problems from management agencies
	Issues related to balance sheet assets	Issues related to operational efficiency and banking management	
<p>The effects of the global financial crisis 2008–2009.</p> <p>The situation of operation of enterprises that faced some difficulties.</p> <p>The confidence in the banking system decline.</p> <p>Request of banking services integration.</p>	<p>Tensions in liquidity.</p> <p>High credit growth.</p> <p>The credit structure is irrational.</p> <p>The proportion of deposits and loans to other CIs are large.</p> <p>The growth rate of capital sources does not keep up the growth rate of parties' use of resources.</p> <p>The imbalance in term between deposits and lending.</p> <p>NPL increased.</p> <p>Potential risks in CAR.</p> <p>The situation of cross-ownership (ability cope with risks of banks is not properly appreciated; cross-ownership could increase lending uncontrolled; The provisions on limits credit, loan classification and risk provisioning of SBV can be falsified by cross-ownership).</p> <p>Business operations focused on credits.</p>	<p>The results of business activity are low.</p> <p>Perform intermediary functions ineffective.</p> <p>Corporate governance is limited.</p> <p>The risk of system is high.</p>	<p>The operating monetary policy ineffective.</p> <p>Capacity inspection and supervision CBs of the SBV generally still limited.</p> <p>Market principles, discipline and safety in banking activities has not been think highly.</p>

Source: Compiled by author

built their branches system covered until districts, even to the communes; the networks of the CB system spread across to different regions of the country, thereby increasingly satisfy the demand for banking services products by organizations and individuals in domestic and foreign, which contributed largely to economic development.

Besides, under pressure of increasing chartered capital to meet the requirements of competition and international economic integration, as well as reaching the requirements as stipulated in Decree No. 141/2006/ND-CP dated 22/11/2006 by the Government, by 2010, the minimum charter capital of the CB to reach is 3.000 billion VND. Up to now, the bank has fulfilled specified minimum legal capital, which some banks still have relatively high number of charter capital such as Vietcombank, BIDV, Vietinbank, Agribank, ACB... affiliates foreign banks also gradually increase the size of its charter

capital to ensure the operation of over 15 million USD.

The loans outstanding increased rapidly in recent years. In fact, the system of CB in Vietnam has played the dominant role of credit market (86,47% of the whole system), and this is a significant capital contribution for promoting economic growth of the country, as well as contributing to hunger eradication, poverty reduction and the stability and order of the society.

The foreign exchange management policy has been gradually liberalized. The implementation of the foreign exchange management policy has been conducted under the direction of decentralization, authorization management in order to improve accountability and efficiency of the local operations, while creating the conditions for business and people who implementation of the foreign exchange transactions, thereby helping CB have more conditional focus studying mechanisms and policies modeled modern Cen-

tral Bank. Besides, the Central Bank has removed more than one license in the appropriate direction gradually with international integration requirements, gradually meet the requirements of the administrative reform, creating a more open for economic exchange activities.

The system technology-banking sector has been a marked progress. This is shown very clearly that if, as before, in the payment process takes one day to a week to implement a completely payment transaction, now with the technological innovation, time for payments was reduced to only in minutes or even a second. Moreover, thanks to technological innovations that commercial banking system has given a lot of product value-added service platform based on the foundation of information technology, such as: ATM, POS, EFTPOS, EDC, internet banking, telephone banking, online banking... thereby contributing significantly to meet the needs of customers, as well as contributing to the production and development of cargo traffic.

Despite of the above results, the situation of operation of the CB in Vietnam these years still has problems:

The mobilization of the entire capital of the banking system continued to increase over the years, but the growth rate is not stable, which is a downward trend. In the early years of the global financial crisis, the growth rate of capital mobilization remained above 20%, but the next year deposit rate reached just over 12%. Some notable points in the mobilization of capital from 2008 to 2012: interest rate capital has complicated development; real interest rate exceeds

the interest rate prescribed; outstanding loans of the CB system increased sharply. In the period 2008–2012, the growth rate of outstanding loans is quite high, which is above 21,2%. Credit activities of the CB these years contained many hidden limitations: the ratio of granting credit compare with mobilization funds are far exceeded the permitted level of the Central Bank, which makes the liquidity system always tensions; hot credit growth leads to lower credit quality; loan term structure and term deposit unbalanced.

Credit activities of CB development towards to increase the scale and the speed of growth, but do not focus on improving credit quality in terms of macroeconomic instability, causing the quality of the very low credit that has become a bad debt. Non-performing loans (NPLs) of the CB system period 2008–2014 tended to increase.

This figure is the Central Bank announced, but according to the credit rating agency Fitch Ratings in 2011 was not be less than double digits to around 13%. NPL banks remained high and were a growing trend. Having too many banks is not bad, but the main problem is that banks do not operate effectively in such bad debt problems in the bank – the non-performing assets of the enterprise is the biggest challenge for the system of CB. The main bad debt situation of the banks worsened make requests bank restructuring could not delay further. Although we have established VAMC to handle bad loans, but until now, bad debt remains ‘ulcer’ of the CB.

Capital Adequacy Ratio (CAR) can reduce the loss if the CB reserve funds appropriated properly and fully in accordance with regulations of

Table 2. Transactions via ATM, POS/EFTPOS/EDC (in Quarter I/2015)

Terminal	Number of terminals	Number of transactions (item)	Value of transactions (VND billion)
ATM	16,112	162,009,637	378,868
POS/EFTPOS/EDC	192,255	11,772,833	44,613

Source: Payment and Settlement and Settlement Department – SBV.

Table 3. NPL of CBs system in period 2008–06/2015

Year	2008	2009	2010	2011	2012	2013	2014	06/2015
NPLs	2.17	2.05	2.165	3.07	4.08	4.67	3.25	3.72

Source: Data compiled from the financial statements.

Table 4. Dealing with NPLs of Indonesia, South Korea, Malaysia and Thailand

	Indonesia	South Korea	Malaysia	Thailand
Centralized asset management corporation buys assets at subsidized prices	Yes	Assets were initially purchased above market-clearing prices with recourse. Since February 1998 purchases have been attempted at market prices	Purchased assets are valued by independent outside auditors.	Not applicable
Type of assets transferred	Worst assets	Not particular strategy	Loan larger than 5 million ringgit, and mostly loans secured by property or shares	Not applicable

Source: World Bank (2000).

Table 5. Key Statistical Ratios (as of 30/06/2015, growth rate as compared to the end of last year)

Unit: Billion VND, %

Categories of CIs	Total Assets		Regulatory capital		Charter Capital		ROA	ROE	CAR	Ratio of short-term funding to be used for medium-and long-term loans
	Amount	Growth rate	Amount	Growth rate	Amount	Growth rate				
State-owned banks	3,042,843	2.49	183,572	8.18	149,453	3.63	0.18	2.48	9.38	28.47
Joint stock commercial banks	2,675,509	-0.47	224,111	10.32	185,506	2.43	0.12	1.49	13.10	32.36
Joint venture, 100% foreign-owned banks, foreign banks' branches	724,017	3.14	113,395	7.58	89,455	3.27	0.16	0.97	34.37	-
Finance and leasing companies	76,227	11.00	16,353	7.53	18,749	-0.66	1.08	3.85	26.83	67.31
Cooperative bank and People's Credit Funds	95,311	9.44	3,061	21.94	5,483	13.49	0.70	5.20	30.97	43.30
Whole system	6,613,907	1.52	540,491	8.97	448,645	2.98	0.17	1.84	13.28	26.56

Source: State Bank of Vietnam (2015).

the SBV. Recently, as reported by CBs, a majority of CB has reached a rate guaranteed minimum equity capital of 8% recommended by Basel II. However, the rate of CAR also differs between banks and banking groups. Especially in the current period, the proportion of bad loans increased, while other revenues decreased, that of course this proportion will decline rapidly if

the CB compliance with the provisions of SB, accounting right, and enough provisions for debts.

The liquidity of the CB is sometimes precarious, in 2011, the proportion of capital in the banking system amounted to more than 100%, resulting in a lack of liquidity. This situation has improved, the percentage of capital ranged between 93–96%, but this is not for sure. For

world leading CBs, the rate of use of funds is only about 30–70%, and the rest of 30–40% will be used to invest in instruments with high liquidity, while the Vietnamese bank completely invested in credit. The liquidity of the CB is increasingly reflected declining proportion of total credits / total deposits increased continuously but mobilization in the expression decreased. So SBV issued Circular 13/2010/TT-NHNN, effective in October 2010 stipulated percentage at a maximum of 80% for banks and 85% for other credit institutions but so far the rate has not been reduced and the problem has not been solved. At the same time, the ratio of credit loans / deposits tends to increase, while higher credit growth in deposits growth. This is not a good thing to increase liquidity in the lending activities of banks.

The instability of macroeconomic in domestic particularly high inflation in the past year and the tight monetary policy of the Central Bank to curb inflation have put CB systems at the risk of high interest rate. In addition, the big and sudden fluctuations in interest rates, together with interest rate management measures are still heavily in administration which made the regular CB in coping state, likely this time will have the race of rising interest rates or we can have the lending rate maintained at very high levels to prevent fluctuations in interest rates in other time. Thus, the interest rate ceiling phenomenon occurs relatively commonly reduces the effectiveness of the monetary policy, simultaneously depress business ethics of many managers and optional staff in the system banking sector.

Governance capacity of the credit institution is inadequate compared to the scale, pace of credit growth and the level of risk. Capacity evaluation, appraisal, management and monitoring of credit using loans of CIs are still weak. A large part of credit funds and credit institutions invests in potential high-risk areas, such as property, therefore the fall in property prices will entail bad debts of the credit institutions increased.

Violation of legislation on credit-granting activities and secure banking operations resulted in many large bad debt credit institutions. Through the inspection, many credit institutions detected serious violations of safety regulations credit operations such as a limited

loan customers and people involved, especially the granting of loans great value for the largest shareholder and related persons. Borrowers with poor financial situation healthy or losses, dissolution, bankruptcy, using improper loans and investment plans, business inefficiency leads unable to repay bank loans. The legal system is still inadequate, especially in the field of land management, bankruptcy, dissolution of the business, civil enforcement, debt settlement, loan security assets remained problematic, complex, slowly overcome, finishing for creating facilitate for settlement of bad debts.

The disposal of bad loans depends on the macroeconomic conditions and the market, but the real estate market has been recovered, increasing difficulties in manufacturing business, slower consumer goods, low and slow improvements of businesses' financial capability and repayment capacity. The prolonged stagnation of the real estate market, the financial markets make it difficult to sell, handle property securing loans and bad debts have increased risk. Therefore, raising funds and seeking investors who have sufficient financial capacity to participate in the bad debts of the credit institution is not favorable.

In the economic transformation and emerging as Vietnam, the credit institution is still the main capital channel of the economy, so the evolution of macroeconomic indicators has profoundly affected the banking business activities and vice versa. Steaming from the practical at the end of 2011, the situation of Vietnam banking sector is potentially systemic risk, probably led to the factors that triggered the economic collapse: the lending rate increased to over 20% and lasted from 2009–2011; the liquidity of the CB system is in troubles, lending rates of Interbank up to 30–40%; NPLs increased rapidly; efficiency and profitability decline... imposes requirements on restructuring operations of the system.

With this situation, the restructuring of the banking system is seen as a key step in the strategic restructuring of the overall economy.

## **METHODS AND MODELS SPECIFICATION**

This study analyses the effect of the restructuring banking system in Vietnam in the period

2008–2014 with 2 main methods: qualitative and quantitative.

*In the qualitative method*, the study analyses the indicators based on the criteria of the CAMEL (Capital adequacy, Assets quality, Management efficiency, Earnings performances, Liquidity) for 2 major banking groups in the banking system of Vietnam that are: (1) Group of 5 banks with the largest of total assets of Commercial Joint Stock Bank system of Vietnam and no acquisition or merger period from 2008 to 2014; (2) Group of banks trafficking, merged or restructured itself phase 2008–2014.

*In the quantitative method*, there are two ways to measure the efficiency of a bank: parametric (SFA, DFA, TFA) and non-parametric (DEA) approaches. However, this study will analyse the E-scores of 26 banks from Bank scope database source in the period 2008–2012 and examines the profits and productions efficiency of 7 DMUs in two years 2011, 2013 by using non-parametric approach, which is DEA model, to see the differences before and after the restructuring banking system in Vietnam. Additionally, this study will calculate the Z-scores and T-test by using SPSS program to assess the stability of Vietnam's banking system.

Due to the lack of data in 2015s, this study will only analyse the restructuring of banking system in Vietnam in the period from 2008 to 2014. The study will use a combination of methods analyse the assessment reports of the management agencies, the financial statements of banks to assess the status of restructuring the banking system in Vietnam. Data on Vietnamese CBs is collected from their audited annual reports, Bankscope, and the State Bank of Vietnam from 2008 to 2014. The secondary data was compiled from the reports of the Government and the Central Bank, the General Statistics Office, the Commercial banks with foreign specialized literature. The primary data was collected as follows: the topic will perform the survey of CB in Vietnam and divided into two groups, group banks undertook restructuring and group banks have not been restructured. This study also uses synthetic methods, analyses and compares some indicators of banking system before and after the restructuring process under the scheme "Restructuring the system of credit" approved in Decision 254/QĐ-CP.

In general, based on the practical usage of DEA application as above and the current situation of research into this field in Vietnamese banking sector, this paper will use two soft wares: DEA solver to analyse the efficiency of 26 banks by calculate the E-score and Z-score; MaxDEA 2.1 to analyse the profit efficiency and production efficiency before and after the restructuring of the banking system of 7 banks.

The data in this study, which were obtained from the Vietnamese Banking Statistics, consists of annual observations of outputs and inputs from 28 sample commercial banks in Vietnam in period 2008–2012. Because of the lack of data of 28 sample banks from 2013 to 2015, therefore this study only focuses on the period 2008–2012.

In this study, the inputs and outputs variables of both soft wares DEA solver and MaxDEA 2.1 will be chosen regarding their important to the banking activities. For the software MaxDEA 2.1, this study calculate the profit efficiency and production efficiency of 7 banks then drawn to comment on the initial results of the process of restructuring at the bank.

The names and the result of the sample banks are provided in Appendix 2, 3 4 and 5.

## **DATA ENVELOPMENT ANALYSIS (DEA) MODEL**

The financial system, especially the banking system in Vietnam, is potentially risky. The implementation of effective assessment and financial supervision are primarily oriented towards compliance analysis, control risks, models of credit risk ratings are less studied and applied. Among a variety of methodologies, the model DEA is widely used to evaluate efficiency performance of the banking sector.

Data Envelopment Analysis (DEA) was first introduced by Charnes et al (1978), and has now been widely used in performance evaluation or productivity evaluation. DEA is one way of testing for X-efficiencies. DEA is a "non-parametric" approach because it is not based on any explicit model of the frontier. The methodology was originally developed for non-profit-making organizations, because accounting profit measures are difficult to compute. The purpose of DEA is to construct a nonparametric envelopment frontier over the data points such that all



Table 6. The variables of 2 soft wares

Variables	DEA solver		MaxDEA 2.1	
	3 inputs – 3 outputs	3 inputs – 5 outputs	Profits efficiency	Productions efficiency
Inputs	(X1) fixed assets (X2) deposits (X3) operating expenses	(X1) fixed assets (X2) deposits (X3) operating expenses	(X1) cost of borrowing (X2) operating costs	(X1) payments to employees (X2) payments to suppliers
Outputs	(Q1) total loans. (Q2) securities (Q3) operating income	(Q1) total loans. (Q2) securities. (Q3) operating income (Q4) ROAA (Q5) ROAE	(Q1) interest income. (Q2) income from operations.	(Q1) client's deposits (Q2) customer lending

Source: Compiled by author.

Note: (Q2) are estimated by the investment securities includes investment securities available for sale, investment securities held to maturity – diminution in value of investment securities.

observed points lie on or below the production frontier. DEA compares the observed outputs ( $Y_{jp}$ ) and inputs ( $X_{jp}$ ) of several organizations. If measuring cost X-efficiency, the relatively more efficient firms can be compared against the relatively less efficient by identifying a “best practice” firm or firms. To do this, maximize the following:

$$E_p = \sum u_j Y_{jp} / \sum v_i X_{ip}$$

Subject to  $E_p \leq 1$  for all  $p$ ; where  $p$  represents several organizations and weights  $v_i, u_j > 0$ . A linear programming model is run respectively with each firm appearing in the objective function once to derive individual efficiency ratings. Each firm will have a derived rating of E, a measure of relative efficiency. Efficiency is defined and measured as the distance from a best practice frontier. The closer E is to 1, the higher the relative efficiency. E = 1 is for the “best practice” unit, and will be lower for all other firms in the study. Thus,  $E < 1$ , which implies relative inefficiency. The DEA efficiency score for a specific firm (DMUs) is not defined by an absolute standard but it is defined relative to the other firms in that particular data set. In this study, we chose 7 sample banks before restructuring or self-restructuring (in 2011) and after the implementation of restructuring (in 2013) by running in MaxDEA 2.1 software (see the name of sample banks in appendix 3).

### THE Z-SCORE

The Z-index is an inverse proxy for the firm’s probability of failure. It combines profitability, leverage, and return volatility in a single measure. It is given by the ratio:

$$Z_i = \frac{ROA_i + E / TA_i}{\sigma ROA_i}$$

where  $ROA_i$  is the period-average return on assets for bank  $i$ ,  $E/TA$  represents the period-average equity to total assets ratio for bank  $i$ , and  $\sigma ROA_i$  is the standard deviation of return on assets over the period under study, which is 2011 and 2013. The Z-index increases with higher profitability and capitalization levels, and decreases with unstable earnings reflected by a higher standard deviation of return on assets. It inversely proxies the bank’s probability of failure and is an indicator of financial stability at the firm level.

### EMPIRICAL RESULTS

#### Quantitative analysis of the results of restructuring

The result of the Efficiency of 26 banks through E-scores in the period 2008–2012 together with the result of the profit efficiency and production efficiency of 7 banks in 2 years, 2011 and 2013.

The result of the E-scores including compare between listed banks and unlisted banks.

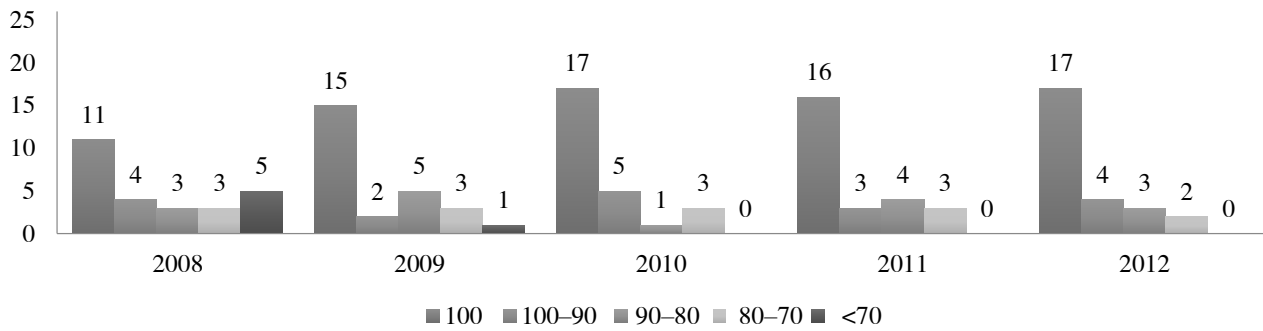


Figure 1. The E-scores of 26 banks in case 3 inputs – 3 outputs in period 2008–2012

Source: Author's calculation.

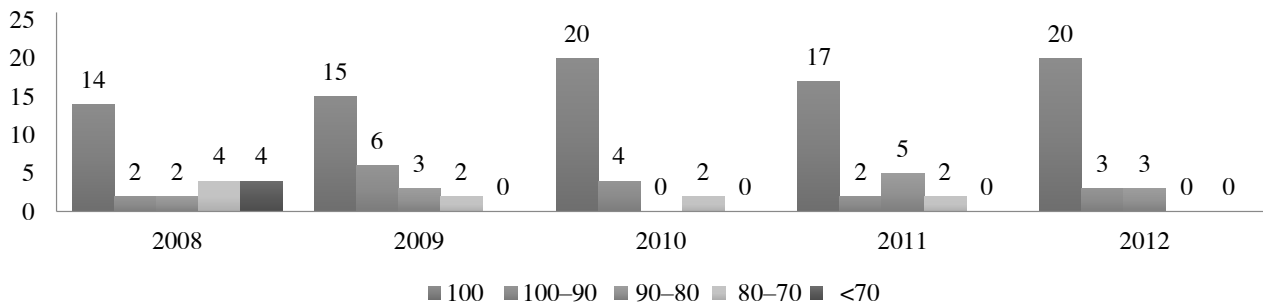


Figure 2. The E-scores of 26 banks in case 3 inputs – 5 outputs in period 2008–2012

Source: Author's calculation.

Table 8. Listed banks versus Unlisted banks in case 3 inputs – 5 outputs in period 2008–2012

Efficiency (%)	2008		2009		2010		2011		2012	
	L	U	L	U	L	U	L	U	L	U
100	3	11	3	12	6	14	4	13	6	14
90-100	1	1	3	3	2	2	1	1	0	3
80-90	1	1	1	2	0	0	2	3	2	1
70-80	1	3	1	1	0	2	1	1	0	0
<70	1	3	0	0	0	0	0	0	0	0

Source: Author's calculation.

### ***The result of the Profit efficiency***

**Table 9. The results of DEA model to assess the effectiveness of the bank's profits before and after restructuring**

No.	Name of bank	2011	2013
1	Ho Chi Minh City Development Joint Stock Commercial Bank	1.00000	0.93978
2	Lien Viet Post Joint Stock Commercial Bank	1.00000	1.00000
3	National Citizen Commercial Joint Stock Bank	0.95397	0.81332
4	Vietnam Public Joint Stock Commercial Bank	0.67122	n.a
5	Saigon-Hanoi Commercial Joint Stock Bank	0.93006	0.95855
6	Tien Phong Commercial Joint Stock Bank	0.63192	0.99266
7	Vietnam Bank for Industry and Trade	1.00000	1.00000

Source: Author's calculation.

### ***The result of the Production efficiency***

**Table 10. The results of DEA model to assess the effectiveness of the bank's productions before and after restructuring**

No.	Name of bank	2011	2013
1	Ho Chi Minh City Development Joint Stock Commercial Bank	0.61362	1.00000
2	Lien Viet Post Joint Stock Commercial Bank	0.62392	0.75447
3	National Citizen Commercial Joint Stock Bank	1.00000	0.46902
4	Vietnam Public Joint Stock Commercial Bank	1.00000	n.a
5	Saigon-Hanoi Commercial Joint Stock Bank	0.57565	1.00000
6	Tien Phong Commercial Joint Stock Bank	0.18166	0.65768
7	Vietnam Bank for Industry and Trade	0.68691	0.84887

Source: Author's calculation.

### ***The result of the Stability of 26 banks through Z-scores and T-test***

**Table 11. Results of Z-scores and T-test of SPSS program**

Method	df	Value	Probability
t-test	49	2.060769	0.0447
Satterthwaite-Welch t-test*	30.17423	2.029611	0.0513
Anova F-test	(1, 49)	4.246770	0.0447
Welch F-test*	(1, 30.1742)	4.119319	0.0513
*Test allows for unequal cell variances			
Analysis of Variance			
Source of Variation	df	Sum of Sq.	Mean Sq.
Between	1	2123.637	2123.637

Table 11.

Method		df	Value	Probability
Within		49	24502.90	500.0593
Total		50	26626.54	532.5308
Category Statistics				
Variable	Count	Mean	Std. Dev.	Std. Err. of Mean
Z_CORE_2013	25	25.19819	29.90968	5.981937
Z_SCORE_2011	26	12.28991	11.01411	2.160044
All	51	18.61750	23.07663	3.231374

Source: Author's calculation.

With  $p = 0.0447 < 0.05$ , there is a significant difference of two overall average.

### **Qualitative analysis of the results of restructuring**

In this section, the study analyses the indicators based on the criteria of the CAMEL (Capital adequacy, Assets quality, Management efficiency, Earnings performances, Liquidity) for each group in the banking system of Vietnam. In CAMEL criteria, the indicators were selected as follows:

Table 12. Assessment framework CAMEL

Indicators	Contents
C (Capital adequacy)	Capital structure, focusing on the level of relative importance of tier 1,2 capital Coefficient of capital adequacy ratio CAR
A (Assets quality)	NPLs ratio / Total loans
M (Management efficiency)	Expenditure / Income
E (Earnings performances)	ROA ROE NII
L (Liquidity)	The proportion of assets with high liquidity / total deposits

The study evaluated 2 major banking groups: (1) Group of 5 banks with the largest of total assets of Commercial Joint Stock Bank system of Vietnam and no acquisition or merger period from 2008 to 2014; (2) Group of banks trafficking, merged or restructured itself phase 2008–2014.

### **Group 5 commercial banks largest joint stock (by total assets)**

Research data collected five commercial banks which are not traded or merged in the period from 2008 to 2014 and are in the top of the bank had total assets of the largest were: Vietnam Joint Stock Commercial Bank for Industry and Trade (Vietinbank), Bank for Investment and Development of Vietnam (BIDV), Joint Stock Commercial Bank for Foreign Trade of Vietnam (Vietcombank), Military Commercial Joint Stock (MB Bank) and Asian Commercial Joint Stock Bank (ACB). The percentage of holding deposits of these five commercial banks compare to the total deposits of this entire system of commercial banks is as follows:

**Table 13. The proportion of deposits held by 5 largest banks compared with the total deposits of commercial banks system phase 2008–2014**

Unit: percentage (%)

Year	2008	2009	2010	2011	2012	2013	2014
%Total deposits of 5 largest commercial banks / Total deposits of all banks	46.06	42.84	42.64	43.96	40.82	40.13	40.03

Source: Data compiled from the financial statements.

**Table 14. The average CAR of group 5 largest commercial banks (by total assets) in the period 2009–2014**

Unit: percentage (%)

Year	2009	2010	2011	2012	2013	2014
CAR	9.94	9.91	12.74	11.29	11.73	11.42

Source: Data compiled from the financial statements.

**Table 15. The average of NPL ratio of group 5 largest commercial banks (by total assets) in the period 2008–2014**

Unit: percentage (%)

Year	2008	2009	2010	2011	2012	2013	2014
NPLs	2.54	1.79	1.71	1.75	2.05	2.18	2.05

Source: Data compiled from the financial statements.

**Table 16. The average ratio of expenditure / income of group 5 largest commercial banks (by total assets) in the period 2008–2014**

Unit: percentage (%)

Year	2008	2009	2010	2011	2012	2013	2014
Expenditure / Income	40	41.7	41.3	41.4	45.9	45.4	45.1

Source: Data compiled from the financial statements.

**Table 17. The average coefficient of ROA, ROE and NII of group 5 largest commercial banks (by total assets) in the period 2008–2014**

Unit: Billion VND, %

Year	2008	2009	2010	2011	2012	2013	2014
ROA	0.0131	0.0129	0.0121	0.0119	0.0094	0.0089	0.0098
ROE	0.1842	0.1952	0.1897	0.1972	0.1307	0.1104	0.1237
NII	4,839.63	5,209.57	7,431.73	11,387.73	11,208.27	10,704.11	11,552.42

Source: Data compiled from the financial statements.

**Table 18. The average of liquidity index of group 5 largest commercial banks (by total assets) in the period 2008–2014**

Unit: percentage (%)

Year	2008	2009	2010	2011	2012	2013	2014
Assets have high liquidity / Total deposits	5	3.6	4.3	3.1	2.7	2.1	1.7

Source: Data compiled from the financial statements.

### **The group of commercial banks make purchases, mergers and restructuring itself phase 2008–2014**

In the period 2008–2014, commercial banks have been staking weakness and in turn conducted the acquisitions, mergers or approved by the State Bank to restructure itself. In this section, this study analyses the indicators CAMEL of group banks traded, merged or restructured itself as follows: Ho Chi Minh City Development Joint Stock Commercial Bank (HD Bank), Lien Viet Post Joint Stock Commercial Bank (LienvietpostBank), National Citizen Commercial Joint Stock Bank (NVB), Ocean Commercial Joint Stock Bank (Ocean Bank), Saigon – Hanoi Commercial Joint Stock Bank (SHB Bank), Tien Phong Commercial Joint Stock Bank (TP Bank), Vietnam Joint-Stock Commercial Bank for Industry and Trade (Vietinbank) and Vietnam Public Joint Stock Commercial Bank (PVcomBank).

**Table 19. The average CAR of group 7 banks in restructured from 2009 to 2014**

Unit: percentage (%)

Year	2009	2010	2011	2012	2013	2014
CAR	14.2	12.7	17.9	19.5	14.0	16.2

Source: Data compiled from the financial statements.

**Table 20. The average of NPL ratio of group 7 banks in restructured from 2008 to 2014**

Unit: percentage (%)

Year	2008	2009	2010	2011	2012	2013	2014
NPLs	1.63	1.54	3.04	2.34	4.67	3.48	3.05

Source: Data compiled from the financial statements.

**Table 21. The average ratio of expenditure / income of group 7 banks in restructured from 2008 to 2014**

Unit: percentage (%)

Year	2008	2009	2010	2011	2012	2013	2014
Expenditure / Income	45.10	37.61	45.4	76.29	107.83	69.23	53.43

Source: Data compiled from the financial statements.

**Table 22. The average coefficient of ROA, ROE and NII of group 7 banks in restructured from 2008 to 2014**

Unit: Billion VND, %

Year	2008	2009	2010	2011	2012	2013	2014
ROA	0.0168	0.0124	0.0092	0.0072	0.0029	0.0040	0.0058
ROE	0.0740	0.1054	0.0935	0.0740	0.0277	0.0425	0.0584
NII	379.90	412.97	610.21	990.14	1,155.51	1,310.03	1,458.90

Source: Data compiled from the financial statements.

**Table 23. The average of liquidity index of group 7 banks in restructured from 2008 to 2014**

Unit: percentage (%)

Year	2008	2009	2010	2011	2012	2013	2014
Assets have high liquidity / Total deposits	10.5	5.3	4.9	3.1	2.3	1.4	1.2

Source: Data compiled from the financial statements.

*In summary*, since 2010 until now, the activities of restructuring in the group of commercial banks have resulted in positive changes, such as reduced bad debt ratio, effective management and results of operations was initially improving. Meanwhile, banks still need a lot of effort to maintain capital adequacy ratio and bring liquidity to a higher level.

From the two banking groups under study: group of five banks had the largest of total assets and experienced no acquisition, merger or restructuring itself; and a group of seven banks trafficking, merged or restricted itself phase from 2008 to 2014, the results show that the process of restructuring the banking system have different impacts to different bank groups. Specifically, the process of restructuring has no clear impact on banks with large scale dominate the market and not be restricted, while the bank has undergone the direct restructuring, it obtains the positive results in 2014.

## CONCLUSION

The process of restructuring the banking system in the period 2008–2014 is still restricted due to the following main reasons:

*Firstly, the process of restructuring the banking system is not synchronization with the restructuring of public investment and restructuring of state-owned enterprises (SOEs).*

Three key tasks have been identified in close relationship with each other in the economic restructuring of Vietnam in the period 2011–2015 are: (1) restructuring the banking system, (2) restructuring of public investment and (3) the restructuring of SOEs. However, due to the period 2008–2014, the process of restructuring the banking system has no coherence and coordination with the two remaining tasks. The restructuring of SOEs through privatization and divestment in the SOEs State not required holding shares of the State utmost delays while the most bad debts of the banking system came from SOEs with relationships to the bank.

*Secondly, the objectives and priorities for restructuring established inappropriate.*

The scheme 254 set too many tasks and measures to restructure the CIs for 2011–2015 as well as for each year. The scheme restructuring process focused on implementing priority handling

weak CIs through M&A in the absence of mechanisms for handling resolutely and radically bad debts and problems of cross-ownership as well as issues governance in CIs led to the restructuring results not as expected and the system does not guarantee the sustainable development of CIs.

*Thirdly, the lack of legal framework for the restructuring of the banking system.*

The legal framework relating to the main aspects of the restructuring of CIs such as bad debts, M&A of CIs, risk management of CIs, cross-ownership of CIs, State capital management and State divestments problems at CIs, intervention of the State of the weak CIs, bankruptcy of the CIs... are missing and asynchronous. In the process of restructuring since 2008 until now, the Central Bank has issued a number of documents complete the legal framework for banking system administrators but patchwork and asynchronous. Restrictions on institutional and legal framework has made the process of restructuring in the period 2008–2014 were difficult as: the bad debts of the CIs fell into a stalemate, the M&A of weak CIs is not achieving its objectives, not handle cross-ownership status in the CIs.

*Finally, the lack of political and the coordination have not synchronized by the State management agencies in restructuring.*

Before the scheme 254 by Vietnam Prime Minister issued in 03/01/2012, there were a lot of comments that in order to have an effective process of restructuring, there must be the political determination in performing restructure through the establishment of an inter-agency committee or committee bank restructuring by one of the Prime Minister or Deputy Prime Minister headed. The experience of restructuring of the country shown that these recommendations are science-based and practical. For example, research by Dziobek and Pazarbaşıoglu (1997) by examining the policy of restructuring the banking system of 24 countries on 6 territories showed that only 20% of the country with high efficiency in the restructuring the banking system with the Central Bank implemented the restructuring process and with the country effectively lower, this figure is up to 100%.

However, the final scheme 254 was adopted in the form decision of the Prime Minister and the permanent body implementing the scheme is the State Bank of Vietnam. The allocation for the permanent Central Bank implemented the scheme in terms of the role and independent status of the Central Bank in managing monetary policy is rather limited as well as the scheme has relationships with several other Ministries such as the issue of restructuring of the SOEs of the Ministry of Finance, the issue of public investment restructuring of the Ministry of Planning and investment and other line ministries have made effective implementation of the scheme in 2008–2014 not as high as the period expectations and objectives of the scheme. Before asynchronous collaboration between the State authorities, after nearly 3 years of implementation of the scheme, on 11/03/2014, on the basis of the Report of the Central Bank, the Prime Minister issued Decision No.363/QD-TTg on the establishment of inter-agency steering committee whether later but is expected to help accelerate the process of restructuring the CIs system in the future.

*To summarize*, restructuring the banking system as a means of bringing the macro level, with enormous influence on the economy of the country. Before this process takes place, governments will have to devise a specific implementation roadmap for gradually removing internal

difficulties. Directly, process reengineering commercial banking system would obviously solve the factors which negatively affect banks, to help the banking system becomes healthy, effective and energy greater competitiveness. Indirectly, it is helping the economy to grow, create a favorable environment for business activity and expansion. Before achieving the final goal, the process of restructuring the commercial banking system will create short-term goals and long-term objectives consistent roadmap outlined. In short, the Government, the Central Bank will solve the immediate difficulties, the cause of this process such as stable interest rates and exchange rate policy with the resolutions and the instruments on hand. Maybe these measures are not comprehensive but in the current situation will help stabilize banks temporary basis for sustainable development at a later stage. The success of banks restructuring depends, ultimately, on a favourable macroeconomic environment and the wherewithal of the authorities to make hard (often political unpopular) decisions regarding banking system restructuring. Last but not least, future research on cross – sectional expect such as comparing with foreign banks and branches in Vietnam, or with foreign banks in other countries in the region, or compare with the efficiency in other industries within the country... will then still are very important.

## APPENDICES

### Appendix 1. The system of CIs in Vietnam

State-owned commercial banks	Vietnam Bank for Agriculture and Rural Development (Agribank); Ocean Commercial One Member Limited Liability Bank; Construction Commercial One Member Limited Liability Bank.
Wholly foreign owned banks	ANZ Bank (Vietnam) Limited; Hong Leong Bank Vietnam Limited; Hongkong – Shanghai Bank Vietnam Limited; Shinhan Bank Vietnam Limited; Standard Chartered Bank (Vietnam) Limited.
Joint-ventures banks	Indovina Bank Limited; VID Public Bank; Vietnam – Russia Joint Venture Bank; Vinasiam Bank
Commercial banks	Asian Commercial Bank (ACB); Tien Phong Bank (TP Bank); DongA Bank (DAB); SeABank; ABBank; BacABank (NASB); Viet Capital Bank (VCCB); Maritime Bank (MSB); Techcombank; KienLongBank; Nam A Bank; National Citizen Bank (NVB); VPBank; HDBank; Orient Commercial Bank (OCB); Military Bank (MBB); PVcom Bank; VIBBank (VIB); Sai Gon (SCB); Saigonbank (SHB); SHBank (SHB); Sacombank (STB); VietABank (VAB); BaoVietBank (BVB); VietBank; Petrolimex Group Bank (PG Bank); Eximbank (EIB); LienVietPostBank (LPB); Ngoai Thuong Viet Nam (VCB); Vietinbank (CTG); BIDV; Agribank
Policies banks	Vietnam Bank for Social Policies (VBSP); Vietnam Development Bank (VDB)
Cooperative bank	Central People's Credit Fund

Source: State Bank of Vietnam, 2015



## Appendix 2. Efficiency (Score) summary of research sample by DEA solver with 3 inputs and 3 outputs

No.	Bank	Code	2008	2009	2010	2011	2012
1	Saigon Thuong Tin Commercial Joint Stock Bank	STB	0.7491	0.8937	0.9142	0.8511	0.8173
2	Asia Commercial Bank	ACB	1.0000	1.0000	1.0000	0.9806	0.8548
3	Petro Vietnam Finance Joint Stock Corporation	PVF	1.0000	1.0000	1.0000	1.0000	1.0000
4	Saigon-Hanoi Commercial Joint Stock Bank	SHB	0.8053	0.7679	0.7576	0.7692	0.7336
5	Bank for Foreign Trade of Vietnam	VCB	1.0000	1.0000	1.0000	1.0000	1.0000
6	Vietnam Joint Stock Commercial Bank for Industry and Trade	CTG	1.0000	1.0000	1.0000	1.0000	1.0000
7	Vietnam Export Import Commercial Joint Stock Bank	EIB	0.9305	0.8850	1.0000	1.0000	0.9755
8	Vietnam Technological and Commercial Joint Stock Bank	TCB	1.0000	1.0000	1.0000	1.0000	1.0000
9	Lien Viet Post Joint Stock Commercial Bank	LVB	1.0000	1.0000	1.0000	1.0000	0.9839
10	Housing Development Commercial Joint Stock Bank City, Ho Chi Minh	HDB	0.7744	0.8438	0.9321	0.8542	0.9729
11	Orient Commercial Stock Bank	OCB	0.6948	0.8508	0.9680	0.9666	1.0000
12	Saigon Bank for Industry and Trade	SGB	0.9025	0.7448	1.0000	1.0000	1.0000
13	An Binh Commercial Joint Stock Bank	ABB	0.5027	0.6619	0.7399	0.8131	0.7887
14	Southern Commercial Joint Stock Bank	PNB	0.6237	1.0000	1.0000	1.0000	1.0000
15	National Citizen Commercial Joint Stock Bank	NVB	0.7793	1.0000	1.0000	1.0000	1.0000
16	Nam A Commercial Joint Stock Bank	NAB	0.5816	0.7823	0.9143	0.9367	1.0000
17	Viet Capital Commercial Joint Stock Bank	GDB	1.0000	1.0000	1.0000	1.0000	1.0000
18	Vietnam Prosperity joint Stock Commercial Bank	VPB	0.6473	0.8052	1.0000	1.0000	1.0000
19	Ocean Commercial Joint Stock Bank	DCB	1.0000	1.0000	1.0000	1.0000	1.0000
20	Military Commercial Joint Stock Bank	MBB	0.9432	0.9842	0.9896	0.7658	1.0000
21	Maritime Commercial Joint Stock Bank	MSB	0.8953	1.0000	1.0000	1.0000	1.0000
22	Vietnam International Commercial Joint Stock Bank	VIB	0.8443	1.0000	1.0000	1.0000	1.0000

No.	Bank	Code	2008	2009	2010	2011	2012
23	Bank for Investment and Development of Vietnam	BIDV	1.0000	1.0000	1.0000	1.0000	1.0000
24	Petrolimex Group Commercial Joint Stock Bank	PGB	1.0000	1.0000	1.0000	1.0000	1.0000
25	Mekong Housing Bank	MHB	1.0000	1.0000	0.7603	0.7046	0.9027
26	Eastern Asia Commercial Bank	EAB	0.9081	0.9264	0.8388	0.8378	0.8509

Source: Author's calculation

### Appendix 3. Efficiency (Score) summary of research sample by DEA solver with 3 inputs and 5 outputs

No.	Bank	Code	2008	2009	2010	2011	2012
1	Saigon Thuong Tin Commercial Joint Stock Bank	STB	0.7783	0.9772	0.9469	0.8511	0.8173
2	Asia Commercial Bank	ACB	1.0000	1.0000	1.0000	1.0000	0.8548
3	Petro Vietnam Finance Joint Stock Corporation	PVF	1.0000	1.0000	1.0000	1.0000	1.0000
4	Saigon-Hanoi Commercial Joint Stock Bank	SHB	0.8096	0.8036	0.9293	0.8203	1.0000
5	Bank for Foreign Trade of Vietnam	VCB	1.0000	1.0000	1.0000	1.0000	1.0000
6	Vietnam Joint Stock Commercial Bank for Industry and Trade	CTG	1.0000	1.0000	1.0000	1.0000	1.0000
7	Vietnam Export Import Commercial Joint Stock Bank	EIB	0.9305	0.9442	1.0000	1.0000	1.0000
8	Vietnam Technological and Commercial Joint Stock Bank	TCB	1.0000	1.0000	1.0000	1.0000	1.0000
9	Lien Viet Post Joint Stock Commercial Bank	LVB	1.0000	1.0000	1.0000	1.0000	1.0000
10	Housing Development Commercial Joint Stock Bank City, Ho Chi Minh	HDB	0.7744	0.8438	0.9321	0.8542	0.9768
11	Orient Commercial Stock Bank	OCB	0.7437	0.9495	1.0000	0.9666	1.0000
12	Saigon Bank for Industry and Trade	SGB	1.0000	0.9143	1.0000	1.0000	1.0000
13	An Binh Commercial Joint Stock Bank	ABB	0.5027	0.7014	0.7727	0.8131	0.8448
14	Southern Commercial Joint Stock Bank	PNB	0.6836	1.0000	1.0000	1.0000	1.0000
15	National Citizen Commercial Joint Stock Bank	NVB	0.7793	1.0000	1.0000	1.0000	1.0000
16	Nam A Commercial Joint Stock Bank	NAB	0.5816	0.7823	1.0000	0.9367	1.0000
17	Viet Capital Commercial Joint Stock Bank	GDB	1.0000	1.0000	1.0000	1.0000	1.0000
18	Vietnam Prosperity joint Stock Commercial Bank	VPB	0.6616	0.8128	1.0000	1.0000	1.0000

No.	Bank	Code	2008	2009	2010	2011	2012
19	Ocean Commercial Joint Stock Bank	DCB	1.0000	1.0000	1.0000	1.0000	1.0000
20	Military Commercial Joint Stock Bank	MBB	0.9934	0.9918	1.0000	0.7881	1.0000
21	Maritime Commercial Joint Stock Bank	MSB	1.0000	1.0000	1.0000	1.0000	1.0000
22	Vietnam International Commercial Joint Stock Bank	VIB	0.8443	1.0000	1.0000	1.0000	1.0000
23	Bank for Investment and Development of Vietnam	BIDV	1.0000	1.0000	1.0000	1.0000	1.0000
24	Petrolimex Group Commercial Joint Stock Bank	PGB	1.0000	1.0000	1.0000	1.0000	1.0000
25	Mekong Housing Bank	MHB	1.0000	1.0000	0.7603	0.7046	0.9027
26	Eastern Asia Commercial Bank	EAB	1.0000	0.9606	0.9677	0.8946	0.9508

Source: Author's calculation

#### Appendix 4. The commercial affairs about M&A of banks in Vietnam in the period of restructuring the banking system

Year	The organizations before M&A	The organizations after M&A	The form of M&A	The implementation
2011	Sai Gon Commercial Bank (SCB) Vietnam Tin Nghia Commercial Joint Stock Bank (Vietnam Tin Nghia Bank) First Joint Stock Bank (FICOMBANK)	Sai Gon Joint Stock Commercial Bank	Consolidated	Completed
2012	Hanoi Building Commercial Joint Stock Bank (HabuBank) Sai Gon-Ha Noi Commercial Joint Stock Bank (SHB)	Sai Gon-Ha Noi Commercial Joint Stock Bank (SHB)	Merger	Completed
2013	DaiA Bank Ho Chi Minh City Development Joint Stock Commercial Bank (HDBank)	Ho Chi Minh City Development Joint Stock Commercial Bank (HDBank)	Merger	Completed
2013	WesternBank PetroVietnam Finance Corporation (PVFC)	Vietnam Public Joint Stock Commercial Bank (PVcombank)	Consolidated	Completed
2015	Housing Bank of Mekong (MHB) Joint Stock Commercial Bank for Investment and Development of Vietnam (BIDV)	Joint Stock Commercial Bank for Investment and Development of Vietnam (BIDV)	Merger	Completed
2015	Petrolimex Group Commercial Joint Stock Bank Vietnam Bank for Industry and Trade (Vietinbank)	Vietnam Bank for Industry and Trade (Vietinbank)	Merger	Completed
2015	Southern Commercial Joint Stock Bank Saigon Thuong Tin Commercial Joint Stock Bank	Saigon Thuong Tin Commercial Joint Stock Bank	Merger	SBV has approved undertakings

Year	The organizations before M&A	The organizations after M&A	The form of M&A	The implementation
2015	Mekong Development Commercial Joint Stock Bank (MDBank) Vietnam Maritime Commercial Stock Bank	Vietnam Maritime Commercial Stock Bank	Merger	SBV has approved undertakings
2015	An Binh Commercial Joint Stock Bank DongA Bank	DongA Bank	Consolidated / Merger	SBV has approved undertakings

Source: Compiled by author.

#### Appendix 5. M&A among banks and financial companies in Vietnam

Year	The commercial affairs M&A	The implementation
2013	WesternBank consolidated with PetroVietnam Finance Corporation (PVFC)	Completed
2013	Ho Chi Minh City Development Joint Stock Commercial Bank acquires SGVF	Completed
2014	VPBank acquires Vinacomin	Completed
2015	Vinaconex-Viettal Finance Joint Stock Company merged Saigon-Hanoi	SBV has approved undertakings
2015	Vietnam Maritime Commercial Stock Bank acquires TFC	SBV has approved undertakings
2015	Techcombank acquires Vietnam Finance Joint Stock Company	SBV has approved undertakings
2015	Military Commercial Joint Stock Bank (MB Bank) participate restructuring Song Da Finance Joint Stock Company (SDFC)	SBV has approved undertakings
2015	Joint Stock Commercial Bank for Investment and Development of Vietnam (BIDV) acquires Post and Telecommunication Finance company limited (FPT) towards acquisition / merger	SBV has approved undertakings

Source: Compiled by author.

#### Appendix 6. List of listed and unlisted banks

	Listed	Unlisted
Number of banks	8	18
Name of banks	Saigon Thuong Tin Commercial Joint Stock Bank; Asia Commercial Bank; Saigon-Hanoi Commercial Joint Stock Bank; Bank for Foreign Trade of Vietnam; Vietnam Joint Stock Commercial Bank for Industry and Trade; Vietnam Export Import Commercial Joint Stock Bank; National Citizen Commercial Joint Stock Bank; Military Commercial Joint Stock Bank.	Vietnam Technological and Commercial Joint Stock Bank; Lien Viet Post Joint Stock Commercial Bank; Ho Chi Minh City Development Joint Stock Commercial Bank; Orient Commercial Stock Bank; Saigon Bank for Industry and Trade; An Binh Commercial Joint Stock Bank; Southern Commercial Joint Stock Bank; Nam A Commercial Joint Stock Bank; Viet Capital Commercial Joint Stock Bank; Vietnam Prosperity joint Stock Commercial Bank; Ocean Commercial Joint Stock Bank; Maritime Commercial Joint Stock Bank; Vietnam International Commercial Joint Stock Bank; Bank for Investment and Development of Vietnam; Petrolimex Group Commercial Joint Stock Bank; Mekong Housing Bank; Eastern Asia Commercial Bank

Source: State Bank of Vietnam, 2015.

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