Impact of Legal Environment on Bank Performance: An Empirical Study from a Developing Country

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In recent years, a number of studies have highlighted the effects of the institutional environment on the performance of business organizations through empirical evidence across both developed and developing countries. In the pursuit of this type of evidence, this paper clarifies the nature of the relationship between the banking regulatory framework and bank performance in the case of Vietnam. With this objective, the study uses cross-section data from 152 Vietnamese banks. In the model of this study, bank performance is a dependent variable. The reform of capital adequacy requirements, the reform of government intervention and supervision, and the prudent implementation in monetary policy are independent variables. To examine the relationship between the regulatory framework and bank performance, this study uses confirmative factor analysis to test the reliability and validity of this correlation. By using the ordinary least squares technique, the hypothesis on the relationship between the regulatory framework and bank performance is measured. Results are consistent with the hypothesis: the regulatory framework has a positive impact on the performance of banks in the case of Vietnam. In order to test the robustness of the outcomes of the study, the presence of autocorrelation and heteroskedasticity in the model is also tested. And then, implications for macroeconomic and macro-finance policies are drawn for the case of Vietnam.

Major Field of Research: Banking

1. Introduction

Bank regulation is a complicated topic because it is easily entangled with a number of articles of different laws, derivative instruments, and guidelines from various jurisdictions from country to country. In this sense, this paper places a special focus on the discussion of some banking legal aspects with which developing countries are concerned. They are capital adequacy, supervision by government, and monetary policy. These interests become stronger when global financial crises take place, which impact seriously on the safety of financial systems all over the world. One of the causes of recent global financial crises was believed to be attributed to a lack of supervision and on-time intervention of governments in the financial sector. For example, underlying causes of the Asian crisis a decade ago were the housing bubble, greedy bankers, a flood of liquidity, excess leverage, and lax regulation; and the lesson from this crisis is that the role of states in the financial sector should increase (Kim and Rhee, 2009). The current financial crisis which originated in the United States is perceived to be due to many complex reasons. One of the key causes is considered to be low interest

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monetary policy and lack of financial oversight in terms of sub-prime mortgage loans in the real estate market and financial transactions in the stock market (Kim and Rhee, 2009).

For the important role of the banking regulatory framework, this paper places emphasis on how this factor impacts on the performance of banks. It focuses on issues of capital adequacy, the role of government supervision and monetary policy. These matters are perceived to be key aspects which every country uses to stabilize and enhance the development of the banking sector in financial crises and global economic integration.

2. Review of Literature

Among performance measures, the balanced scorecard, which was developed by Kaplan and Norton (1992, 1996a) is considered as one of the most widely-used models because it goes through the whole process of business and focuses on both short- and long-term objectives of the organization. The balanced scorecard is the combination of financial measures that result from a broad range of activities already implemented with operational measures on customer satisfaction, internal processes, and the corporation's innovation and improvement operations (Wheelen and Hunger, 2002). This means that the balanced scorecard model includes both financial information which refers to profitability, costs, as well as productivity of the organization, and non-financial information by referring to three perspectives: customer perspective, internal business and production process perspective and innovation and learning perspective (Kaplan and Norton, 1992).

The performance of banks can be affected directly by principles of a legal framework because regulations refer to a variety of government interventions into their operations and markets. It is a tool for the government to correct shortcomings of entities in the economy. In this sense, the legal framework is designed in such a way that it can both adjust any misconduct of banks to ensure a fair business environment and enhance their performance.

It seems that one of the key factors in the institutional environment impacting on the performance of banks in developing countries is financial reforms. It refers to the reform of government supervision and intervention, the reform of effectiveness and consistency of regulations by applying international standards to the banking sector, and prudent implementation of monetary policy to stabilize the economy.

Harmonization of current regulatory framework with international standards is also an important aspect of the financial reform in developing countries. In the context of an increasingly volatile environment, the regulatory framework needs to be the more consistent with more elaborate requirements of supervisory standards and risk management for banks. Basel I & II include a wide range of supervisory standards to improve risk management with three main pillars. The first one determines minimum capital requirements for credit and operational risks, the second one offers guidance on supervisory oversight processes, and the third one requires banks to supply extensive public information disclosure on their risk profile and capitalisation in line with market

discipline (Stephanou and Mendoza, 2005). It is likely that the main objective of the minimum capital adequacy requirements is to maintain the stability of the banking system and improve the risk management to help banks avoid any possibility of loss in their activities (Milne, 2001).

One of the key aspects of the financial reform in developing countries is financial liberalization. It refers to the process of lifting or releasing government barriers on operations of banks such as regimes of foreign exchange rate, deposit rate ceilings, investing and new lending power, and entries by financial intermediaries (Kaufman, 2004). Releasing these restrictions can create the flexibility, independence and determination for banks in their business, which brings about more efficient resource allocation and higher welfare benefits for society. However, removing these barriers can result in new challenges in controlling and managing loans and liquidity due to the boom in lending (Eichengreen and Arteta, 2000).

Monetary policy is an effective tool which is used for controlling and maintaining the price stability, market interest rates and exchange rates. Central banks with monetary policy via main instruments such as legally required reserves, open market operations, discount and rediscount rates control the monetary supply in the economy in terms of easy monetary or tight monetary policies (Nellis and Paker, 2004). By implementing monetary policy, central banks affect market interest rates in terms of lending and deposit rates and prices of products and services in the economy, which impact the performance of commercial.

3. Methodology

3.1 Factor analysis

Factor analysis is a method used to minimize the number of variables while also maximizing the amount of information in the analysis. The original set of variables is reduced to a much smaller set that underlies and represents meaningfully the initial number of variables (Remenyi et al., 1998). There are three main tools to determine these aspects.

The first one is the indicator of eigenvalues or latent roots which refers to the vertical sum of squared loadings representing the amount of variance explained by a factor. Normally, factors with an eigenvalue of greater than one are viewed as surrogate factors and are chosen in the analysis (Tharenou et al., 2007; and Hair et al., 2006).

The second criterion refers to values of factor loadings which indicate relationships between the original variables and the factors. According to (Ford et al., 1986), factor loadings greater than at least 0.40 are suggested for the analysis.

The last one is confirmatory factor analysis (CFA) which refers to an approach to testing the validity of a structure. According to Byrne (2001), the construct validity is the extent to which the number of measured items are represented by the theoretical latent construct those items are tailored to measure. In this paper, CFA by a structural

equation model (SEM) was used to evaluate the validity of a particular measurement theory.

3.2 Linear regression models

The relationship between the factor of the performance of banks and regulatory environment factors is tested in the following multiple-regression model.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e \quad (1)$$

Where,

Y is the factor of bank performance, which is measured by a wide range of financial and non-financial elements (see Table 1).

α, β_1, β_2, β_3 are the constant term and regression coefficients, respectively.

X_1, X_2, X_3 are referred to as the reform of capital adequacy requirements (BS), the reform of government intervention and supervision (GS), and the prudent implementation in monetary policy (MP), respectively (see Table 1).

The model is tested with the following hypothesis:

Considering regulatory environment factors together, the likelihood of bank performance improves when:

The capital adequacy requirements of current banking regulatory framework are consistent with the Basel Accord I & II.

The government supervision and intervention in operations of commercial banks are efficiently reformed.

The monetary policy is implemented flexibly, effectively and in a timely manner.

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Table 1: Variables of Research Model

| Factor	Proxy	Symbol
Bank performance		**BP**
1. Financial variables		
Capital structure and solvency	Leverage ratio	q30b.1
Management	Non-performance loan ratio	q30b.4
Profitability	Return on equity	q30b.7
Bank size	Total assets	q30b.10
Growth	Deposit growth rate	q30b.11
2. Non-financial variables		
Customer satisfaction	Quality of employees	q65.1
	Quality of services	q65.2
Leadership	Vision and strategy	q65.7
Technology	ATM	q65.9
	E-banking	q65.11
Capital adequacy requirement		**BS**
The current level of regulatory restriction contributes to improving capital adequacy.	Regulatory contributes to improving capital adequacy	q26.1
Regulations on risk provisions and contingencies consistent with the Basel guidelines	Regulations on risk provisions and contingencies and the Basel guidelines	q26.2
Current regulations on capital adequacy and market discipline are consistent with those of Basel I and II	Current regulations are consistent with those of Basel I and II	q26.3
Government supervision and intervention		**GS**
The quantum requirement on liquidity does not restrict bank business activities	The quantum requirement on liquidity reserves and bank business activities	q28
Too many government bodies are supervising banks	There are too many supervisory government bodies	q30.1
Supervisory bodies are working professionally	Supervisory bodies are working professionally	q30.2
Government supervision and intervention is effective and timely	Government supervision and intervention is effective and timely	q30.3
Banking legal reforms have effects on performance of banks	Banking legal reforms have effects on performance of banks	q30.4
Financial liberalization has effects on the development of the financial market	Financial liberalization has effects on the development of the financial market	q30.5
Monetary policy		**MP**
Monetary policy is prudent and timely.	Monetary policy is prudent and timely	q31.1
Open market operations are implemented flexibly and effectively.	Open market operations are implemented flexibly and effectively.	q31.2
Changes in the discount rates are implemented flexibly and effectively	Changes in the discount rates are implemented flexibly and effectively	q31.3
Changes in the required reserve ratio are implemented flexibly and effectively	Changes in the required reserve ratio are implemented flexibly and effectively	q31.4
Monetary policy has effects on the development of the financial market.	Monetary has effects on the development of the financial market	q31.5

3.3 Data collection

Lists of 200 commercial banks were randomly selected from the Vietnamese yellow pages for the mail survey. Determining the sample size depends very much on the proportion of the total sample variation in the dependent variable (Green, 1991). Fortunately, Roscoe (1975) believed that a sample size larger than 30 and smaller than 500 is appropriate for most research projects. In this survey, 152 questionnaires were received from managers of these banks.

4. Data analysis

4.1 Validity testing

According to Byrne (2006), a structural equation model specifies the behaviour by which certain unobserved variables impact on values of other latent variables. In this regard, tests were performed for a full structural equation model involving the relations between three independent unobserved variables: the reform of capital adequacy requirements (BS), the reform of government supervision and intervention (GS), and the implementation of monetary policy (MP), and the dependent unobserved variable: the factor of bank performance. Results of the full structural equation model tested are presented in Figure 1.

Figure 1: The original structural equation model for all factors
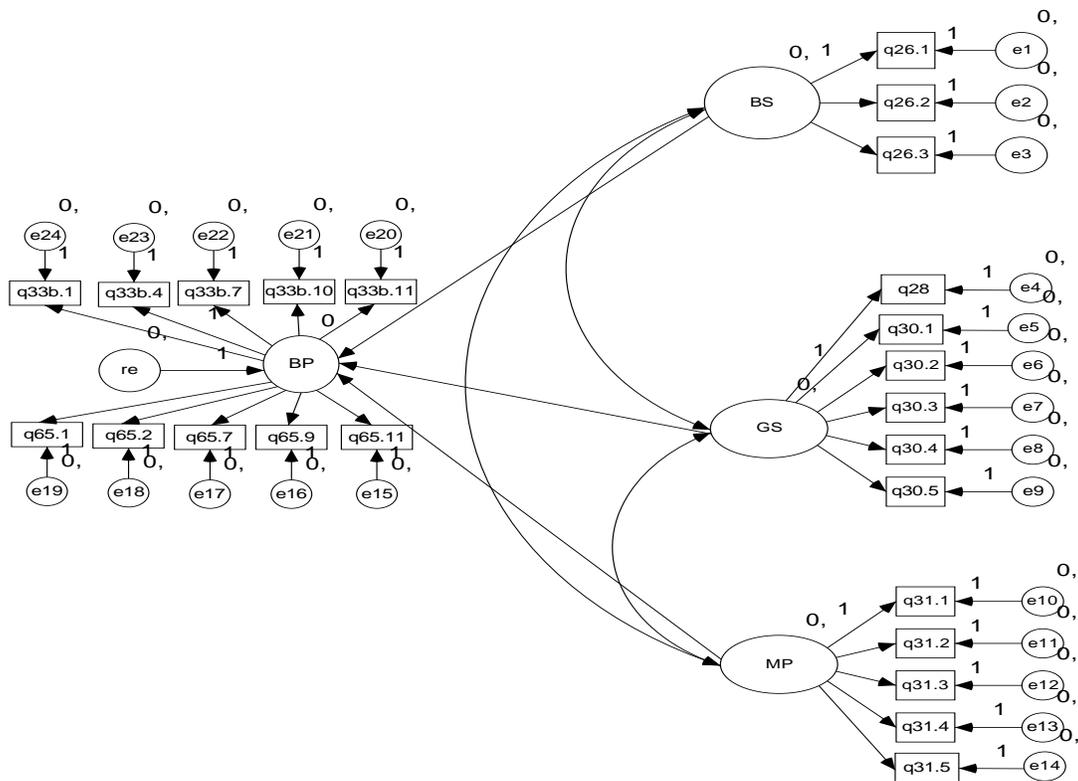
According to Byrne (2001), indices commonly used to test the goodness of fit are the IFI- Incremental Index of Fit introduced by Bollen (1989); the TLI-Tucker-Lewis index initiated by Tucker and Lewis (1973); the CFI- Comparative Fit index developed by Bentler (1990); and the RMSEA- Root Mean Square Error of Approximation. For the first three indices, a value greater than 0.90 is considered indicative of a well-fitting model (Bentler, 1990), and the last one is suggested by Byrne (2001) that a value of less than 0.08 is an acceptable one

Table 2: The indices of goodness of fit

Structure Model	RMSEA	IFI	TLI	CFI
	.065	.745	.698	.731

The indices of goodness of fit of the model are presented in Table 2. The report of the model shows that it is not a good fit model. The MIs (modification indices) are focused on the highest value (Byrne, 2001) with the main principle by which the variable retained is the one that increased the goodness of fit indices most. And eliminating variables with high values of MIs was repeated until goodness of fit indices were satisfied. By doing so, the goodness of fit indices have been improved and are quite well-fitting with the data set because they all fall within the recommended range and RMSEA is less than the 0.08 threshold (see Table 3). Therefore, the relations between the independent factors and the dependent factor in the finalized structure model that is presented in Figure 2 have become valid.

Table 3: The indices of goodness of fit

Structure Model	RMSEA	IFI	TLI	CFI
	.045	0.932	.908	.928

Figure 2: The adjusted structural equation model
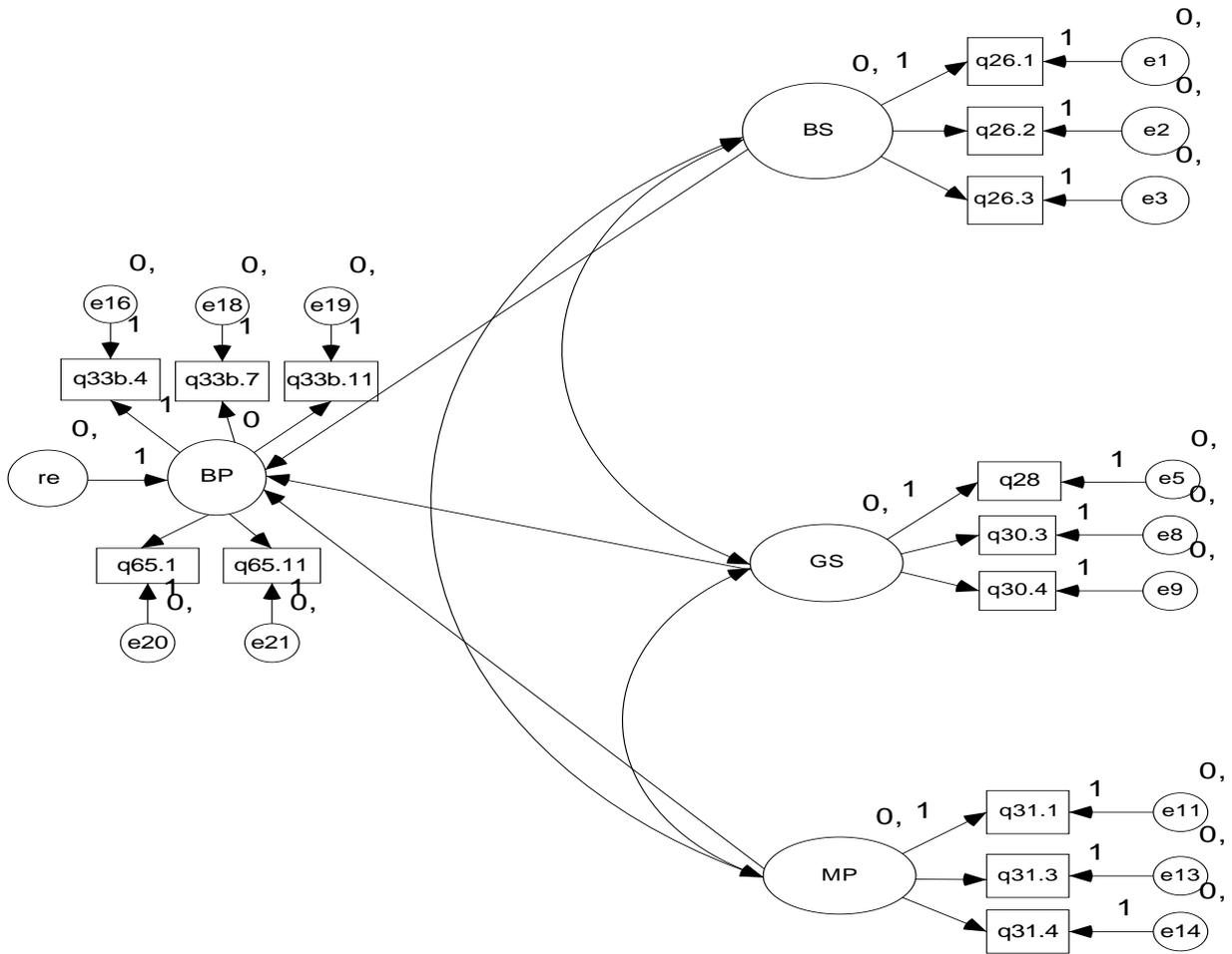
By doing the validity test, the number of observed variables in the structural model has been reduced considerably, from 24 down to 14 variables. These variables underlie and represent meaningfully the initial number of variables.

4.2 Regression analysis

The graphical Scree Plot test displays the descending variance accounted for by the factors initially extracted. The new variables to be retained are ones where the plot typically shows a break between the steep slopes of the initial factors and the gentle one of the later factors (Bryman and Cramer, 2009). In this sense, the factor analysis has created the new variable which represents the bank performance factor with a factor score calculated from scores of 5 elements. By the same method, all of the other factors used in regression analysis of this research are represented by factor scores generated from the factor analysis by examining the eigenvalues, and their factor loadings in Table 4.

Table 4: Factor loadings of factors

Variable	BP	GS	BS	MP
q33b.4	0.67			
q33b.7	0.68			
q33b.11	0.59			
q65.1	0.61			
q65.11	0.57			
q28		0.66		
q30.3		0.80		
q30.4		0.78		
q26.1			0.77	
q26.2			0.80	
q26.3			0.75	
q31.1				0.61
q31.3				0.76
q31.4				0.74

The relationships between the factor of bank performance and consistency in the reform of capital adequacy requirements (BS), the reform of government intervention and supervision (GS), and prudent implementation in monetary policy (MP) are tested by running Equation 1. The result of this regression is shown in Table 5.

Table 5: Initial Regression Results

Independent factor of the model	B	Sig. (t-statistic)	R^2	Sig. (F-statistic)
BS	0.29	0.00		
GS	0.37	0.00	0.315	0.000
MP	0.09	0.21		

Table 5 displays that three factors: BS, GS, and MP have positive effects on bank performance, but the effect of the MP is not statistically significant because the probability of the t-statistic is greater than 5 percent. However, values of the effects of the model can be underestimated or over estimated as a result of a violation on the assumptions of classical linear regression model (CLRM). So, it was necessary to implement tests on autocorrelation and heteroskedasticity of the model.

4.3 Testing and resolving violations on the assumptions of CLRM

The method of Breusch-Godfrey (Halcoussis, 2005) was employed to test the presence of autocorrelation where there exist covariance and correlations among error terms. The results are presented in Table 6.

Table 6: Testing Autocorrelation

Structure model	Autocorrelation Testing – Breusch-Godfrey Serial Correlation LM Test*			
	F-statistic		Obs*R-squared	
	Value	Sig.	Value	Sig.
Model 1	5..358	0.006	10.393	0.006

(*LM = nR^2 statistic, where the LM statistic follows the chi-squared distribution (χ^2) with p degrees of freedom which equals the number of slope coefficients, n is the number of observations (Obs) in the auxiliary regression, and R^2 (R-squared) is the coefficient of determination of this regression)

Values of the LM test in this table show that there is presence of autocorrelation in this model because values of the F-statistic and Obs*R-squared are highly significant. This means that the null hypothesis of no autocorrelation in the model is rejected. The presence of this problem could have biased estimators of the model. The technique of Cochran and Orcutt (Halcoussis 2005) was used to resolve the problem, and the results of this resolution are depicted in Table 7.

Table 7: Correcting Autocorrelation

Independent factor of the model	B	Sig. t-statistic	R^2	Sig. (F-statistic)
BS	0.26	0.00		
GS	0.27	0.00	0.36	0.000
MP	0.07	0.33		

After the model has been corrected for the problem of autocorrelation, its estimators are more accurate. The value of R^2 has increased up to 0.36 instead of 0.32, which indicates that there is an increase in the role of independent factors contributing to the value of the dependent factor.

White's technique was used to test and resolve the presence of heteroskedasticity in the structure model where error variances are not homoskedastic or constant (Halcoussis 2005). The result of testing heteroskedasticity for the model is depicted in Table 8.

Table 8: Testing heteroskedasticity

Structure model	Heteroskedasticity Testing – White Heteroskedasticity Test			
	F-statistic		Obs*R-squared	
	Value	Sig.	Value	Sig.
Model 1	0.399	0.981	6.860	0.976

The result shows that there is not the presence of heteroskedasticity in the model because the values of the F-statistic and Obs*R-squared are highly insignificant.

Therefore, the final result of measuring the effects of the independent variables on bank performance was not changed as depicted in Table 7.

Table 6 shows that the overall F-statistic is statistically significant, which indicates that the effects of all independent factors' contribution to overall bank performance are valid at the contribution level of 36 percent. The results also display that factors, such the reform of capital adequacy requirements, the reform of government supervision and intervention are statistically significant at the level of 1 percent and have positive impacts on overall bank performance; the factor of prudential implementation of monetary policy has a positive effect on the overall bank performance, but this effect is not statistically significant

5. Findings

5.1 Reform of capital adequacy requirements

Under the pressure of requirements of WTO for the safety of the banking sector and the support of the State Bank, state-owned banks have improved CARs due to a huge amount of capital injected by the government, and thereby CARs and capital of these banks have improved remarkably since 2005 (see Table 9). However, on the business moral aspect the government has to some extent created an unfair business environment by treating favourably state owned banks, which leads to unnecessary dependence of state-owned banks on the support of government. Moreover, in the long-term, by depending on the capital support of government or by increasing government ownership of banks, performance of state-owned commercial banks became worse "…*government ownership of banks ceteris paribus reduces subsequent financial development"* (Porta et al., 2002, p.281-282).

Table 9: Owner equity and CARs of state-owned commercial banks

	2006		2007	
	Owner' equity (VND Bn)	CAR (%)	Owner' equity (VND Bn)	CAR (%)
Vietcombank	6.499	12.28	10.838	12.25
BIDV	6.214	5.9	10.643	6.7
VBARD	3.566	4.97	10.451	7.2
VietinBank	3.975	5.18	7.972	11.62

Source: Collection of the author from banks' Annual Reports (2007)

Furthermore, in order to meet the capital adequate requirements regulated by the State Bank of Vietnam and the Basel Accord, joint-stock commercial banks have also mobilized a huge amount of capital via the stock market. Therefore, the capital level and CARs of these banks have improved considerably. According to Warjiyo and Rama (2009, p.4) "as at end – 2008, equity capital in the banking system increased 30 percent compared with the level a year earlier, while the capital adequacy ratio improved from 8.9 percent to 9.7 percent over the same period". This could contribute to the soundness of the banking sector in recent years.

Thus, it is likely that complying capital adequate requirements with the Basel Accord is an important factor to improve the performance of banks. This notion is held up by the finding of this research by evidence that the reform of capital adequacy requirements in the direction of harmonizing the banking regulatory framework consistent with capital adequacy requirements from the Basel Accord is statistically significant and has a positive impact on bank performance.

5.2 Reform of government supervision and intervention

In Vietnam, the financial reform started in the early 1990s, but not until December 21, 1997, was this need recognized formally by the enactment of the Laws on the State Bank and Credit Institutions. Accordingly, the major reform policies are shown in Table 10.

Table 10: policy roadmap of financial liberalization

Year	Liberalization process
1991	Allowing entry of foreign banks
1996	Liberalizing Dong deposit rate
1997	Passing Law on State Bank of Vietnam and Law on Credit Institutions
2001	Liberalizing foreign exchange rate
2002	Applying Dong lending rate with a negotiable interest rate mechanism
2004	Amending Law on Credit Institutions
2005	Introducing the minimum requirement of CAR, liquidity ratios, new loans classification and provisioning, and supervisory oversight processes (Basel I & II).
2010	Removing limitations on 100% foreign –owned banks

Source: Compilation of the author from legislative documents of Vietnam

Because there was the introduction of supervisory oversight mechanisms which are closely consistent with the Basel Accord and the financial liberalization implemented step-by-step for the banking sector, the efficiency of supervision and intervention in the banking sector by the State Bank of Vietnam has been improved. This efficiency could outweigh volatility in terms of interest rates caused by the financial liberalization process. This argument is strongly supported by the fact that although the current global financial crisis has negatively impacted on the stability of many banking sectors all over the world, the Vietnamese banking sector is still operating steadily and has recovery

signs in its performance. Thus, it is likely that the reforming supervision and intervention mechanism by the Vietnamese State Bank has statistically had significant and positive influence on the performance of banks in recent years.

5.3 Implementation of monetary policy

In recent years, the monetary policy was implemented in a more flexible and prudential manner. With the objectives of macroeconomic stabilization, inflation containment and the enhancement of the Vietnamese Dong purchasing power, the State Bank of Vietnam has been regulating the monetary policy in a way that the quantity of money supply is in line with capital supply and demand in the financial market so that interest rates, including lending and deposit rates, reflect correctly the cost of capital in the economy (State Bank of Vietnam, 2006). This means that implementation of monetary policy in terms of contraction or looseness depends on the context of the existing economy. In 2008, in dealing with the global financial crisis that originated from the United States, the central bank loosened monetary policy by injecting money into the economy to stimulate investment and consumption, leading to a remarkable decrease in interest rates. By doing so, the central bank stabilized the macro-economy.

From these realities, it appears that the monetary policy of the State Bank can and does benefit the performance of banks, but in some circumstances it impacts negatively on bank performance when does not operate very flexibly and in a timely manner when the economy needs its activation. So, effects of monetary policy instruments on the performance of banks vary greatly in different periods of time. The finding of this research reveals that the effect of monetary policy has impacted positively on the performance of banks in recent years. Thus, it is likely that positive influences of this policy outweigh its negative effects on bank performance in the case of Vietnam. However, the research indicates that this effect is not statistically significant because the nature of monetary policy and its effects on the stability of the economy as well as on bank performance are still controversial matters in developing countries like Vietnam.

6. Conclusion

It is clear that although the financial system is coping with the global financial crisis, the soundness of the Vietnamese banking system has become stronger than what it was decades ago. Its current health is partially due to the continuous reform process of the banking legal environment. In this innovation, the digestion of international standards of supervision and intervention mechanisms, capital adequacy requirements, and flexible and timely monetary policy are decisive factors that have improved the soundness and performance of the banking sector. Thus, in the future, the banking legal environment should continuously be reformed in accordance with the market principles and international standards on capital adequacy and supervision requirements.

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