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Abstract: This paper, based on the theory of industrial organisation and the SCP (Structure-Conduct-Performance) model, has studied competitive structure and factors affecting business performance of Vietnam state-owned commercial banks including Vietcombank, VietInbank, Agribank and BIDV. Time horizons of research data was 2002-2010 period. Research findings have suggested number of policy implications including expanding strategy; bad debt management; products and services diversification; customer relationship management…

1. GENERAL INTRODUCTION

General context

With the issuance of the Degree-Law on the State Bank of Vietnam (SBV) and the Degree-Law on Credit Organizations (1990) and later on, the Law of State Bank of Vietnam and the Law of Credit Organizations (1997), until now, Vietnam commercial banking system has enjoyed fast development and gradually modernized its technology, improved operational scales and offered more and more products and services in favour of economic-social needs. But there have also been signs of unsustainable development. During its development process, Vietnam banking system in general and Vietnam state-owned banks in particular have had many intrinsic defects and weakness. Problems such as limited management competence; employees skills; small operation scale; weakness in risk management, bad debts; etc… have been important challenges for Vietnam state-owned commercial banks at present and in the future. Especially, to gain the active position in process of international economic integration, Vietnam state-owned banks need to quickly strengthen and diversify its product ranges so that they can safely and efficiently operate; mobilize better resources and enlarge investment capacity to meet the requirements of industrialization and modernization of country. Moreover, Vietnam banking system is now

copping with many challenges in the process of economic integration, especially under commitments stated in Vietnam-USA Trade Agreement and those when joining the WTO. The performance, and hence, the competition of the Vietnam banking system in general and state-owned banks in particular now becomes a big concern of researchers and policy makers, because, one of main targets of national economic policies was creating a banking structure, which could provide efficient and cost - effective financial and banking services to the public.

Theorical reference and methodology

We base on general theorical approaches of industrial economy investigating the relation model between structure, conduct and performance as well as through application of the SCP model for banking structure analysis. For the econometric works, to identily factors affected to Performance (ROE) and their relative effect levels on ROE of Vietnam State – Owned Banks, a multiple regression model was tested.

2. VIETNAM BANKING SYSTEM AT A GLANCE
2.1. FROM ONE LEVEL TO TWO LEVEL BANKING SYSTEM

After the complete liberation of the South Vietnam in 1975, the whole country had implemented the one level banking model (with only one form of State-Owned Bank). This structure of State Bank was uniform from the central to lower levels as provinces and districts, under their geographical administration.

Branches operating in the same area were subject to the management of the State Bank branch, in compliance with uniform norms and plans regulated by the State Bank of Vietnam (SBV), and concurrently under Communist Party Committees' instructions, and the provincial authorities' direction through SBV branches. The Vietnam economy during the period of 1975 – 1988 had many difficulties resulting from different objective and subjective reasons: non equilibrium economic structure, high increase of prices, galopping inflation rate,… that seriously affected economic-social life and declined the trust of people. That situation called for innovation in mechanism of economic management, and a transition from the mechanism of central-planning into market economic institution. For banking system, the first requirement was innovation of organizational structure and operational system.

On March 26th 1988, the Council of Ministers issued the Decree No. 53/HĐBT, whereby the State Bank of Vietnam was a Council of Minister agency, and organized under two levels system:

- The State Bank of Vietnam,
- Specialized commercial banks.

The State Bank of Vietnam had functions of state management in field of money, credit, and banking activities. The State Bank of Vietnam's headquarter was in Hanoi and their branches located in every province and city. Specialized commercial banks include:

- The Industrial and Commercial Bank of Vietnam,
- The Agriculture Development Bank of Vietnam,
- The Foreign Trade Bank of Vietnam,
- The Investment and Development Bank of Vietnam.

The innovation policies have allowed state-owned commercial banks to operate more actively and increase of capital and funds mobilisation. The model of two-level banking system followed the Decree 53/HĐBT was totally appropriate in the transition from the central-planning economy to the market mechanism regulated by the state governance. However, with increasingly diversified and complex operational activities, there were still some shortcomings in activities of management, currency trading, credit transactions, etc… called for further innovation.

The Degree-Law on Credit Organisations issued in 1990 continuously created legal frameworks for the autonomy of commercial banks in utilizing all sources, diversifying banking services, contributing to implement national economic-social targets. However, such regulations were still not appropriate with Vietnam banking system mission and tasks in the new period, with increasingly diversified and complex requirements in the process of industrialization and modernization of the country. So, upgrading of these regulations was a necessary and indispensable step during the innovation process, and the construction of a modern banking system.

With such essential requirements, the Law on the State Bank and the Law on Credit Organizations were approved by the 10th National Assembly on December 12th 1997.

2.2. OVERVIEW ON THE STRUCTURE OF VIETNAM BANKING SYSTEM UNTIL 2009

Number of banks

From the issuance of the Law on State Bank and Law on Credit Organizations, Vietnam banking has grown fast both in number and scale. Number of banks increased from 9 in 1991 to 90 banks and branches of foreign banks in 2009. Especially, to carry out commitment of joining in WTO, from 2007, Vietnam authorities granted the establishment licences for 5 banks with 100% foreign investment.

Table 1: Number of Vietnam banks in the period 2005-2009

	2005	2006	2007	2008	2009
State-owned commercial banks	5	5	5	5	5[(*)]
Joint-stock commercial banks	37	37	37	39	39
Banks with 100% foreign investment			-	5	5
Branches of foreign banks	29	31	33	35	36 [(**)]
Joint-venture banks	4	5	5	5	5
Total	**75**	**78**	**80**	**89**	**90**

Source: SBV

(*): including two privatized banks: Vietcombank and Vietinbank

(**): On December 26th 2009, the Bank of Investment and Development of Cambodia (BIDC) opened its branch in Hochiminh City.

Beside growth in number, there was high growth of banking system. The growth of systems operation scale focused in two traditional fields: lending and source mobilization. The growth of credit and deposit operation were very high, in average of over 30%/year during period 2002-2009. Especially in 2007, credit growth became so "hot" up to 54%, because credit demand in the economy increased highly, including demand from stock trading and real estate investment. Fast credit growth made banks cope with higher risks when the ratio of credit/deposit was always over 90%, which higher than the average of 83%.

Besides two traditional activity fields as credit and capital mobilization, other services also developed strongly. With strong investment in technology and infrastructure, resulted from diversification of products and services, earnings from these new activities also increased impressively. In 2007, growth of net service income was 192% compared with that of 2006. For banks which applied strategy of services development, the proportion of earnings from this service activity became higher and higher. Leading banks in terms of service development are Vietcombank, ACB, Sacombank, Techcombank... It is necesary to say that products and services of retail banking were of great potential development due to economic growth. According to IMF, number of bank accounts in Vietnam in 2006 were estimated about 8 millions, with only 9,4% of the population. These accounts mainly belong to high income persons in urban areas. Payment in cash was a popular mode. Although the ratio of cash/total means of payment (M2) has decreasing tendency, but this ratio of Vietnam banking system was still the highest in the region, a great potential development for banking sector .

With sustained widening of bank network, we can see the increasing intensive competition among banks. Although competition environment was quite improved, it was still not really a level playing field. The competition in Vietnam commercial banks is oligopolistic. Five state-owned commercial banks (SOCB) account for the majority of the market share, and enjoy strong potential finance position results from the support of the government. They have more advantages in access and use of capital sources with low cost than the joint-stock commercial banks. However, those competitive advantages were not long term, because it may make these state-owned commercial banks become less productive and less active along with lower competitive advantages in the future.

Lending shares

The lending share showed impressive changes from 2005 to 2009. In 2005, group of state-owned commercial banks were of leading position, with lending and deposit shares were 73% and 75% respectively; but in 2009, these figures were 51% and 59% respectively. Meanwhile, group of joint-stock banks enjoyed a very fast growth from 15% and 16% in 2005 to 33% and 30% in lending and deposit shares, respectively in 2009. However, market share of foreign bank branches group has been rather stable during the period of 2005-2009.

Table 2 : Lending share in the period of 2005-2009 (%)

	2005	2006	2007	2008	2009

State-owned commercial banks	73	65	55	52	51
Joint-stock commercial banks	15	21	29	32	33
Branches of foreign banks, joint-venture banks, banks with 100% foreign investment	10	9	9	10	10
Other credit organizations	2	5	7	6	6

Source: SBV

Deposit shares

Similarly, state-owned commercial banks hold most of deposit market share, but have tendency to decrease. They hold 59% deposit share compared with group of joint-stock commercial banks' 30% deposit share in 2009. The joint-stock commercial banks and banks with 100% foreign investment were forecasted to significantly increase in deposit share relative to state-owned commercial banks.

Table 3 : Deposit market shares in the period of 2005-2009 (%)

	2005	2006	2007	2008	2009
State-owned commercial banks	75	69	59	60	59
Joint-stock commercial banks	16	22	30	29	30
Branches of foreign banks, joint-venture banks, banks with 100% foreign investment	8	8	9	9	9
Other credit organizations	2	1	2	2	2

Source: SBV

Capital Adequacy Ratio - CAR

The Capital Adequacy Ratio (CAR) is a ratio of a bank's capital to its risks, and expressed as a percentage of its risk-weighted assets. Bank supervising agencies in many countries always specify this ratio, and monitor to have banking system maintain a certain level, for example, in Vietnam this ratio now is 8% in compliance with the Basel standards universal standards of the world banking systems.

Table 4 : CAR of some major banks (%)

	AGRI	VCB	BIDV	ICB	MHB	ACB	STB	EAB
2005	0.41	7.27	3.97	4.36	10.19	12.1	15.4	8.94
2006	4.97	9.57	4.82	4.82	9.31	10.89	11.82	13.57
2007	7.2	11.2	11	11.6	9.44	16.19	11.07	14.36
2008	N/A	10.41	9.46	N/A	N/A	N/A	N/A	N/A
2009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: SBV

We can see that in the period of 2005-2008, Vietnam commercial banks' equities improved significantly, so until now almost commercial banks have CAR about 8% or higher. Except for Agribank, with CAR remained much lower than required percent value. Group of joint-stock commercial banks have created much pressures to maintain this ratio, especially in 2008-2009, but their CARs are still appropriate and higher than the group of state-owned commercial banks.

Credit and deposit growth

In 2009, banking credit growth was still "hot", upto 37,3% compared with 27,6% in 2008. The main factor creating high credit growth in 2009 was the easy monetary policy of the State Bank, concurrently with stimulus policies by the government, resulted in high berrowing demand. A huge amount of loans with low interest rate was disbursed under government's interest support programme. Total value of new loans in 2009 was 505 thousand billion VND (equivalent to 28 billion USD), 89% of which was from loans with interest support.

Meanwhile, deposit growth of 27% in 2009 did not catch up with the credit growth. Loan to deposit ratio (LDR) at the end of 2009 increased to 105% compared with 95% in 2008. Group of banks with the highest LDR included BIDV, Vietinbank and Agribank. The Vietcombank LDR was 87%.

2.3. GENERAL ASSESSMENT ON VIETNAM STATE-OWNED BANKS

Strengthness

- Wide branches network and long time experience were absolute advantages. Group of state-owned commercial banks developped their network all over of Vietnam. The largest network was of Agribank's with more than 2.200 branches and transaction offices throughout 64 provinces and cities;

- With large equity capital, state-owned commercial banks were usually considered as major funds suppliers to large state-owned enterprises. According to statistics data of the State Bank of Vietnam, lending for state-owned enterprises account for 30-40% of total loan outstandings of state-owned commercial banks, and in particlar, Vietcombank and BIDV'S loans for state-owned enterprises were about 40%-50% of total loans.

- As long experience credit suppliers, group of state-owned commercial banks have had deep insights of business environment.

- Having professional staff with long time experience.

- Having advantage of mobilizing huge capital sources with low costs from deposit payment accounts of state-owned enterprises -traditional customers of state-owned commercial banks, which was much more difficult to access in case of joint-stock banks.

- Having oppurtunities to access (although temporary) large capital source from the government, for example, sources related to financial aid programs, from the State Treasury, especially before 2008.

Weakness

- As major funds suppliers of state-owned enteprises, which have been considered weak in terms of performance, they have been faced with credit risks, resulting disappointedly bad profitability for a long period.

- State-owned commercial banks with low level of CAR due to increase of bad debts must reserve a provision account for such bad debts. The CAR of state-owned commercial banks was from 7% to 11%, calculated conformed with Vietnam Accounting Standards (VAS). This ratio was lower than the average ratio of other countries in the region (13.1% for Asia Pacific, as average of 52 banks of 10 countries and 12.3% for Southeast Asia, including 14 banks of Thailand, Indonesia, Malaysia, and Phillipines).

- High ratio of bad debts: at the end of 2008, according to VAS standard, bad debts of state-owned commercial banks account for 1-4% of total loan outstandings, while this ratio of the 10 Vietnam's leading joint-stock banks was under 2%. According to some foreign data (Morgan Stanley, IMF, Fitch…) the bad debt ratio of these state-owned banks would be 3-5 times higher when calculated following international accounting standards.

3. THEORY OF INDUSTRIAL ECONOMY, THE SCP MODEL AND ITS APPLICATION IN ANALYSING BANKING STRUCTURE

3.1. LITERATURE REVIEW

Industrial economy studies about behaviour and impacts of competitive manufacturers in the economy (Dang-Nguyen, 1995). So, learning about mechanisms is the key point of industrial economy research approaches. Hence, industrial economics is considered as a branch of micro economics. Industrial economics is best defined as the application of micro-economic theory to the analysis of firms, market and industries (Paul and Glenys Ferguson, 1994). Church (2000) briefly described that the study of industrial organisation comprises the following questions and problems:

- Why are markets organized or structured as they are?
- How does the manner in which markets are organised affect the way in which firms behave and markets perform?
- How does the behaviour of firms influence the structure or organisation of markets and the performances of the markets?

The SCP approach argues that performance is determined by the structural characteristics of the market. The linkage between structure, conduct and performance then turns on "matching" the structural characteristic against the model of perfect competition, monopoly, monopolistic competition and oligopoly. This technique was first formalised by Mason (Paul and Glenys Ferguson, 1994).

A. Marshall was the founder of industrial economics theory. Marshall analyzed different development phases of industry and outlined an analysis framework which combined descriptive

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analysis with theoretic approaches. His resulting theoretical model is a model of a theory of industry, where equilibrum is characterized by a more or less constant number of aggregate outputs and a fixed number of firms. The advantage of such model is that it is possible to prove the theory with empirical data. The framework is restrictive but it allows to economic science began to explain the real world (Ana, 2010). But until the end of 1930s, E. Mason (1949) and Bain (1951,1956) proposed an unified theory frame work for industrial economics. Concern with industrial organisation sterns from the work of Chamberlain on monopolistic competition in the early 1930s, Mason and Bain then developed the SCP paradigm, based on the neoclassical theory of the firm (Paul and Glenys Ferguson, 1994). With the names of Joe Bain and Edward Mason, the first wave of industrial organisation theory appeared and was sometimes called the "*Havard Tradition*", as commented by another well-known author on industrial organisation, Jean Tirole (1988). Unlike traditional theory of micro economics, usually deal with very abstract conceptions, make difficult to get insights and explain actual phenomena, Mason suggested a model to explain relations between markets structure, conduct of enterprises and their possible performance.

According to theory of perfect competition, all enterprises get the same profit rate regardless activity fields at equilibrium, contradicting with what happen in reality, that performance of enterprises were very different depending on field of business. In general, manufacturers must make dicisions about resources allocation to use them efficient and avoid waste and get high performance. Hence, the most important thing is to identify factors affecting enterprise performance, and to propose some theory explaining difference in performances of enterprises, as well as specifying relationship between explanatory variables and final performance.

Mason's research process was further developed and completed by J. Bain. The theory of cause and effect relationships is stated as follows: markets structures will affect conducts of enterprises, and in turn these conducts will define performance of the enterprise. The model of Structure-Conduct-Performance is described as follows:

BASIC CONDITIONS	
SUPPLY	DEMAND

Materials	Price elasticity
Technology	Substitutes
Products life cycles	Growth rate
Professional rules	Cyclical and seasonal features
Legal framework	Condition of commercialization
	Marketing Policies

$\downarrow$ $\downarrow$

MARKETS STRUCTURE

Numbers of buyers/sellers

Product differentiation

Barriers to entry

Cost structure

Vertical integration

Group structure

$\downarrow$

Conduct

Pricing policy

Product policy

R&D

Advertising

Investment strategy

$\downarrow$

Performance

Manufacture efficiency

Resources allocation efficiency

Technological advances

Employment

Effect of distribution policy

According to Kenneth, Caroline Lynk (1992), the development of an economy is characterized by changes in the structure of economic activity and the causes of such changes are complex but include: changes in the pattern of demand; the invention of new products and processes; the chaging importance of the role of government in economic activity; and the changing patterns of international competitiveness. Markets structures were affected by some basic conditions expressing industry characteristics and product features. In supply side, those conditions were ownership and distribution of materials, nature of technology applied in manufacturing processes, labour conditions, intervention and power of labour unions, principles of organizing professional activities, stage of products in their life cycles. Other factors related to supply side such as assets, transportation cost, etc… Factors related to demand side were responsiveness of customers to price changes, changes of demand, available substitution products, conditions of commercialization and materials of marketing-mix policies. Basic conditions were assumed remaining constant during adjustment process resulted from competition between enterprises.

These basic conditions contribute in defining markets structure which is specified by numbers of sellers and buyers, their business scales; level of product differentiation, with or without entry barriers to potential competitors; existence of horizontal, and vertical integration forms. How markets structure affects to competition depending on concentration degree of the markets.

In investigating markets structure, differences in structure were supposed to create differences in conduct of enterprise in terms of price/product/investment; advertisement forms; R&D activities; integration activities, etc… According to Dang-Nguyen (1995), key issue of new industrial economics theory is focusing on analysis of the performance of manufacturers.

Finally, according to this model, conduct of enterprise will determine their performance. Performance can be understood as profitability in narrow sense. Performance may be considered in two levels: level of enterprises and level of manufacturers. At enterprise level, performance were its financial outcomes and markets power. At industry level, performance is the best allocation of resources; technical development; effective redistribution policies and the satisfaction to the customers' demands. Overall, the SCP approach attempts to explain and predict the performance of an industry as a consequence of market structure and conduct, and

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assumes that there is a stable and causal relationship between the structure of an industry, firm conduct and market performance (Panagiotou, 2006)

There were strong implications in Bain's industrial policies. The causality of the SCP model suggests markets structure of organizations can be adjusted to get better performance. The target of this model is to explain performance of enterprises associated with their markets features, and their conducts. The first version of this model considered markets structure as exogenous and ignored enterprises conducts, because of belief that enterprises may not have behaviour strategies, and perhaps not try to influence competitors conducts. Rainelli (1998) thought that that belief was the weakest point of this approach.

In his empirical researches, Bain analyzed that average profit rate of enterprises operating in markets with high concentration degree was supposed to be higher than that in markets with lower concentration. Bain also proved that enterprise profitability was positively correlated with their concentration ratio and entry barriers. Hence, there were two extreme cases to explain theory of relationship between profitability and concentration level: in one extreme, it can be perfect competition, in other extreme, it is monopoly markets.

In the first case, the markets structure was characterized by numbers of sellers and buyers, homogeneous products, no entry barriers, and optimal distribution of factors with a standard profit rate, because enterprises were not large enough to affect price and quantity of products.

In the second case, markets structure consists only of a few large enterprises selling differentiated products protected by entry and exit barriers. So, these enterprises can operate in differentiated ways and with self-control. The higher the concentration level of this markets, the more enterprises can exploit their position to complete "perfect integration", in order to ensure the highest possible income equivalent to monopolistic position.

Barthwal (2000) argues that the theory of contestable market as developed by Baumol, Panzar and Willy is an important contribution in industrial organisation. The contestability theory stresses that a concentrated banking industry may nevertheless behave competitivity, if the hurdles to be surmounted by potential entrants to the market are low (Jacob, 2004).

The causality relationship does not always have validity and reliability, because performance and conduct of enterprises can create changes of markets structure and basic conditions. For example, the existing sellers in a markets can, by their pricing policy, encourage or prevent the

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penetration of potential competitors. It means that variables of structure and basic conditions become "endogenous", because they can be affected by feedback effects.

Jacob (2004) summarised the following shortcomings of the SCP paradigm:
- A major underlying problem of the SCP relationship is the fact that the explanatory variables are not really exogenous and that, they, together with the dependent variable, may be affected by third-factor determinants such as institutional, economic and technical changes;
- Two stepwise relationships, from S to C and from C to P, do not necessarily constitute a meaningful link between structure and performance.

According to Anjan and Arnoud (2008), a fundamental criticism leveled against the SCP model and the efficiency hypotheses related to the embedded one way causality from market to the performamce. In other words, most of SCP studies do not take into account the conduct of the banks in the market and the impact of the performamce of the banks on market structure.

Jacob (2004) also stated that the SCP paradigm is challenged by two other theorical strands:
- The contestability theory by Baumol (1982) according to which, a perfectly contestable market as one that is accessible to potential entrants and has the following two properties: First, the potential entrants can, without restriction, serve the same market demands and use the same productive techniques as those available to the incumbent firms. Thus, there is no entry barriers in the sense of the term used by Stigler. Second, the potential entrants evaluate the profitability of entry at the incumbent firms'pre-entry prices.
- The efficiency hypothesis. This theory states that if a bank enjoys a higher degree of efficiency than its competitors, it can choose between two opposite strategies. The first is to maximize profit by maintaining the present levels of prices and firm size, so, to increase the shareholder value. The second strategy is to maximize profit by reducing prices and expanding firm size. The most efficient bank will gain market share at the cost of less efficient bank. In that case, bank efficiency will be the driving force behind the process of concentration. Hence, concentration does not have to lead to abuse of market power and higher profit as assumed by the SCP paradigm.

Therefore, he argues that the contestability and the efficient hypothesis suggest that the competitive environment of banks does not necessarily suffer from market concentration.

Analyst of industrial organisation after Mason continued mostly to use a descriptive language, but later ones used price theory (sometimes referred to as the *Chicago School*) which conceded that monopoly is possible but contended that its presence is much more often alleged than confirmed. Thus, the Chicago School was not very supportive of the persistent-market-power approach that constituted Bain's major theory of entry barriers (Shy, 1995).

Although the causality of the SCP model still have issues to discuss, the basic model has been always applied in empirical researches. The following equation has been tested:

$$P = a_0 + a_1 S + \sum_{k=2}^{m} a_k X_k + u$$

With:

P: performance

S: structure

X_k: other explanatory variables

u : error

As analyzed above, performance was usually measured by profit. Due to monopolistic position characterized by high pricing, so statistic data of pricing can be directly used (Scherer & Ross, 1990). However, because there were thousands of different prices for many products and customers, so it's difficult to use price to measure the performance of an enterprise or an industrial branch. So, profitability ratios were used because they include price impacts. ROA and ROE were therefore usually used.

The markets structures were usually quantified by concentration ratio (CR) and Herfindahl-Hirschman (H-H) index. According to Stigler (1983), the purpose of a measure of concentration is to predict the extent of the departure of price (or, alternatively, of rate of return) from the competitive level. Two firms are equal in a market if they sell or buy equal quantities in that

market. Hence, measure a firm's size by sales, in a product market; by employees, in a labour market; by assets, in a capital market…

The first ratio specifying markets share of m largest enterprises:

$$C_m = \sum_{i=1}^{m} S_i$$

i=1,….,m: enterprise i classified in descending order

S_i = markets share of enterprise i

Index H-H is sum of squares of markets shares of all enterprises in the industrial branch.

$$H = \sum_{i=1}^{n} S_i^2$$

i=1,……,n

The value of H-H index is within [0,1]. The smaller the H-H index is ($\rightarrow$0), the less concentration the markets is.

Concentration ratio can be calculated easily, but choice of m was still arbitrary while H-H index was calculated basing on all enterprises of the same industrial branch. However, the two indexes were correlated, so choice of any one of these two indexes will not change significantly research results.

Beside variables of structure, other independent variables were found affecting to profitability. Independent variables were barriers to entry, elasticity of demand, and price, variables of growth, variables of risk, etc…

Concept of entry barriers hold an important role in explaining the difference of profitability. First, without barriers to entry, markets with high concentration will encourages enterprises to apply high price strategy which can attract new competitors entry to reduce monopolistic profit of existing enterprises.

On the other hand, enterprises which were protected by entry barriers can earn high level of revenue without relying on a concentrated markets. Let's consider price elasticity of demand, inelastic demand allow monopolistic enterprise got higher profit than that of enterprises in a competitive markets, and growth rate, industry with high growth get high profit because demand was higher than supply (Scherer & Ross, 1990). Finally, a high profit rate was also realized in industry with high risks.

3.2. APPLYING THE SCP MODEL IN BANKING SECTOR

The case of USA

The academical arguments and empirical researches about relationship between structure and performance in banking were mainly interested and developed in America, while European banking system, usually protected in some way, was inflexible, so it was ignored by structuralists. According to Jacob (2004), the past 20 years have seen a critical discussion on and general abandonment of the SCP paradigm in the economic literature. This is due primarily to its low flexibility, as a crucial role is played by the structural variables that are considered exogenous, so that firm can not modify their behaviour. In European countries, one of the crucial assumptions underlying the contestability hypothesis, that is free entry and exit was definitely not satisfied until the late 1980s. Government intervention in most of the banking system in Europe was fairly extensive up to thi mid-1980s. Banks were aslso legally restricted in their activities both within their national markets and across borders (Jacob, 2004).

In America, researchers had advantages in building a theory framework about performance of banking system (the ability to meet demands of loans, and deposits, as well as effectiveness of resources allocation) associated with its structure and organizational patterns. Banking system was also a specific sector that industrial economy theories could be applied in banking empirical researches. The first researches of banking competition was carried out in 1930s. Chandler (1938) applied theories of competition and monopoly in banking markets. Because this markets was characterized by some important markets factors, Chandler concluded that ologopoly theory (not theory of perfect competition) could explain the development of deposit rates, interest rates and banking service fees. He also emphasize that bank was a supplier of diversified services, and

customers selected banks depending on their operational seniority, their brand images, employees courteneous and other service facilities. In some sense, banking services were rather inelastic, so bank could take monopolistic position and could set the price. Berle (1949) thought that it's unnecessary to apply anti-monopoly policy in banking, because banking has been a long time operated under legal framework that less awared by scientists in 1950s . Smith (1950) thought that from 1930s, the key issue in banking sector was that increasing number of participants would lead to fierce competition. So, banking sector can be indentified as perfect competition, rather than an oligopoly sector. The main concern in banking sector was to ensure safety and liquidity by encouraging mergers and acquisitions.

But subsequent mergers have reduced the number of banks remarkably. People began to worry about maintaining the competition in banking. Performance and competition became factors of priority and banking structure became subject to academical studies. SCP researchs had an assumption actually developed in 1960s. According to this assumption, level of competition in a markets was affected by concentration level with a few of large scale enterprises. Through the approach of structuralists in theory of industrial economy, this assumption was tested by two following equations:

+ High concentration level of market structure was associated with high collusion chance.

+ Performance of banking is a function of concentration level in a markets.

Herebelow is the model proposed by Gilbert (1984):

$P = f(S,B,D,C,X)$

With:

P : Performance, measured by pricing (average interest rates, average deposit rates, profitability ratio)

S: Structure. Researches usually use total deposits to calculate concentration ratio and H-H index.

B: Other structure variables, such as barriers to entry. The entry of a new competitor will make competition stronger. In banking, there were two opposite views: the first view was of supervising agencies, believed that excessive competition was needed to avoid because free entry

can affect negatively to normal benefits, such as maintaining liquidity and rights of creditors. The second view advocates the elimination of entry barriers in order to maintain competition.

D: Demand of markets, usually measured by the size of markets, such as total assets or total deposit. D can also be measured by markets growth because when the markets developed it attracted more new competitors. Growth was the indicator of changes in demand conditions.

C: Difference in prices among enterprises. It can be indirectly measured by total assets considering the impact of economy of scale. Other ratios can be used, such as cost on employees, and total demand deposit to total deposit ratio. The latter may be considered as cost of capital, because demand deposit is considered as a cheap capital resource.

X: Other control variables describing the specificity of a product. If we consider interest rates and deposit rates as independent variables, we may add in other independent control variables, such as form/quantity/terms of deposits; risk of porfolio (total loans/total assets); capital /total assets ratio (smaller values associated with higher risks); provision of credit risks over total liabilities ratio.

Studies of US banking system usually lead to contradictory results that may support or not SCP arguments. However, adverse opinions often lead to methodology difficulties in relative to other ones. Smirlock (1985) and Evanoff (1988) believed that there was a significant relationship between markets share and performance.

Their including of markets share variables made concentration ratio (CR) lose its meaning, while Gilbert (1984) thought that profit rate was a reasonable parameter of P. He thought that measurement of P by service fee and average cost of mobilized capital were not reasonable because it ignored the differences in porfolio. He agreed that concentration ratio (CR) was the best measure to measure S, and profitability rates is most suitable to measure P.

The case of China

Chien-Shun Chen and Hui-Tzu Shih (2004) have carried out their empirical researches of China banking system. Their research has been implemented in the following dimensions:
- - Impact of banking markets structure to performance of banking (S-P).
- - Impact of banking markets structure to conduct of banker (S-C)
- - Impact of banking bankers/managers conduct to performance of banking (C-P)

To test whether the SCP model was appropriated with China banking system, their first sample was 20 banks including 7 state-owned banks and 13 joint-stock banks. Branches of foreign banks were not included in the research, because data access was difficult and their markets shares were still limited. Their study was carried out for the period 1995-2001. Because of 1997 Asian financial crisis, the time horizons was divided into two periods, from 1995 to 1997 and from 1998 to 2001 considering actual impacts impacts of the crisis, if any. They used the following variables:

Structure

- Total assets to consider the economy of scale.
- Markets share of mobilized capital and markets share of loans: these were two majors activities of China banks. According to the theory, smaller markets share of mobilized capital was associated with higher cost of mobilized capital and lower performance, while the small markets share of loans also reflects low quality of banks' selling activities.
- Concentration ratio (CR) and H-H index,

Conduct

When bank managers make decisions about strategic issues, they will choose major factors related to advantages and disadvantages, internal and external environment, to have different strategies before selecting the final strategy. However, in their opinion, it's difficult to measure managers' conduct. So they focused on banks responsiveness to changes in markets structure and business environment:

- Professionalism: measured by educational level and banking staff 's competence
- Diversification: measured by proportion of non-interest revenues.
- Wage-funds: wage-funds increase may reflect demand of markets. It also reflects sources creating profits.

Performance

They chose the following ratios:

- ROA
- ROE
- Net Profit Ratio
- The average deposit per employee
- The average profit per employee

Tested results showed that along with changes in Chinese banking business environment and its open financial markets, business models of China banking also change. For China banks, traditional products as capital mobilization and business loan have grown impressively, because markets spread after Asian financial crisis, expressed by in the increase in level of capital mobilization/employee and net profit/employee. Moreover, because of increase business scale, China banks began to focus on customer services, thus lead to increase of banking staffs. However, banking staffs increase did not contribute to professionalism. There was not any remarkable improvement in other business field but traditional products, such as capital mobilization and loans. For state-owned commercial banks, due to restraints imposed by legal framework, increase in total employees did not lead to improvement of professionalism, but on the contrary, it makes it worse. State-owned commercial banks were not motivated to develop new business fields besides traditional fields. Profitability increase of state-owned commercial banks mainly resulted from increase in markets scale. It was found that with oligopolistic position, state-owned commercial banks seem to be a strong competitive force. But with the problems of moral hazard risks and high management cost, even if a so-called "optimal contract" exists, was still difficult to eliminate agency risk in these banks.

4. THE SCP PARADIGM AND THE CASE OF VIETNAM STATE-OWNED BANKS

Research on impacts of components on ROE of Vietnam state-owned commercial banks is carried out according to the following process:

Step 1: Hypothetical model: It comes from initial expectation of relationships between ROE and influential components.

Step 2: Model selection: Selecting a model appropriate to each relationship is based on relationships between each component with ROE presented in the hypothetical model.

Step 3: Analysis of correlations: Results from the Step 2 are used for examining correlations between dependent variable (ROE) and each component variable.

Step 4: Developing and testing the hypothetical model after selection.

Step 5: Conclusion and recommendations about solutions based on research results.

Data used for analysis: Secondary data for the years 2002 – 2010 are publicized annually by the four state-owned commercial banks – Bank for Agriculture and Rural

Development (Agribank), Bank for Foreign Trade (Vietcombank), Bank for Industry and Trade (Vietinbank), and Bank for Investment and Development of Vietnam (BIDV). Regarding Vietcombank and Vietinbank, although they have been equitized, most of their shares are still held by the State, therefore they are treated as state-owned ones.

Reliability of data: Annual data provide 10 observations from 2002 to 2010. As for the Agribank, only data for 2002 – 2009 are available. To make them uniform, data for 2010 are estimated and calculated from data of the base period 2002-2009 employing the stable linear trend method. Thus, reliability of analysis process is expected to reach 85% or a significant level α of 15%.

Hypothetical model:

Based on the SCP model of affected relationships between ROE and different structural variables and results of application of SCP model to analysis of performance of Vietnam commercial banks (Truong Quang Thong, 2010), the research model is expected to be as follows:

$$Y1 = f(X1, X2, X3, X4, X5, X6, X7, X8, X9, X10, X11, X12)$$

and the variables are:

Y1	Return on equity (ROE)
X1	Deposit share
X2	Lending share
X3	Outstanding loan/total assets
X4	Lending to deposit ratio
X5	Total deposit/ total assets
X6	Inter-bank loan capital/ total assets
X7	Inter-bank lending/ total assets
X8	Non-credit income/ total income
X9	Net interest margin (NIM)
X10	Net non-interest margin (NNIM)
X11	Net return before special transactions (NRST)
X12	Average interest rate gap

Y1 : ROE equals after-tax income divided by average shareholder equity (average of equity at the beginning and the end of the year).

X1: Deposit share equals the amount on deposit at four selected state-owned commercial banks divided by the total amount on deposit at the whole banking system. Economies of scale assumes that performance have a positive relationship with deposit share.

X2: Lending share equals the total outstanding loan supplied by the selected state-owned commercial banks divided by the total loan from the banking system. Similarly, the economies of scale makes the relationship between performance and lending share positive. But it may be negative when the credit risk is high.

X3: Outstanding loan/total assets: The higher the ratio, the higher the potential credit risk. It has a negative effect of bank performance. Meanwhile, in banks where the ratio is low, possibility of credit risk can be reduced by diversification of portfolios of investment and services supplied.

X4: Lending to deposit ratio equals total outstanding loan divided by total deposit. Like X3, the increased ratio makes potential for credit risk higher, thus producing a negative effect on the bank performance.

X5: Interest income to total income: The higher ratio means that the bank is likelier to suffer credit risk. It is common among banks with poor supply of services.

X6: Inter-bank loan capital/ total assets: Major banks usually enjoy more advantages than the smaller ones in employing inter-bank loan capital.

X7: Ratio of inter-bank lending to total assets: Like the case of X6, major banks are more advantageous than smaller ones when supplying loans to the inter-bank market.

X8: Non-credit income/ total income: The higher the ratio, the lower the possibility of credit risk. The high ratio is common among banks good at supplying services.

X9: Net interest margin (NIM) expresses the difference between interest gained and interest paid the bank can achieves by controlling strictly interest-generating assets and pursuing sources of capital of the lowest cost. Theoretically, the bank performance is directly proportional to the NIM.

X10: Net non-interest margin: This ratio is used to measure the gap between non-interest income (mostly from service charges) and non-interest expenses paid by the bank. In a trend of diversifying banking services and reducing credit risk, this ratio has a positive effect on the bank performance.

X11: Net return before special transactions (NRST) reflects the income from stable sources including loans, investments, and charges for financial services against the bank total capital. This ratio, therefore, has a positive effect on the bank performance.

X12: Average interest-rate gap measures performance of the bank as a financial intermediary and its competitiveness in the banking market. This ratio has a positive relationship with the bank performance.

Model selecting technique

The regression model in consideration is also known as linear regression model, that is to say, a linear relation between each independent variable Xi with the dependent variable Y does exist.

In practice, the relation between Xi and Y is sometimes a non-linear one. Thus, application of the simple linear regression function may reduce explanatory power (or R^2) of the model. Mathematical techniques allow a change from a non-linear form to a linear one in order to transform from a form of non-linear function to the linear regression function. Regarding the practical relationship between each independent variable Xi and dependent variable Y, the model with a high R^2 appropriate to practical relationship is the selected one.

The research model is the sum of all relationships between independent variables Xi and the dependent Y.

Criteria for selecting the model

Selection of the model is based on the three following criteria:

- Relationship between two variables (Xi and Y) in practice.

- The relationship between Xi and Y is considered appropriate when its R^2 is higher in remaining relationships.

- When values of R^2 of two models are not much different, the simpler model is selected in order to avoid possible mistakes.

The following models are in consideration:

Model	Function
Linear	$Y1 = \beta_0 + \beta_1 X_i + \varepsilon$

Logarithmic	$Y1 = \beta_0 + \beta_1 Ln(X_i) + \varepsilon$
Inverse	$Y1 = \beta_0 + \beta 1(1/Xi) + \varepsilon$
Quadratic	$Y1 = \beta_0 + \beta_1 X_i^2 + \varepsilon$
Cubic	$Y1 = \beta_0 + \beta_1 X_i^3 + \varepsilon$

Selection of model

Examining relationships between ROE (Y) and each component variable and the hypothetical model allows two options of the model:

- The first option (Y) is the hypothetical model:

$$Y1 = f(X1, X2, X3, X4, X5, X6, X7, X8, X9, X10, X11, X12) \qquad (1)$$

- The second option (Y1) is based on relationships (2):

Independent variable (Xi)	Relationship with ROE (Y1)	New symbol
X1	Quadratic function	X1_2
X2	Quadratic function	X2_2
X3	Cubic function	X3_3
X4	Quadratic function	X4_2
X5	Quadratic function	X5_2
X6	Non-existence	
X7	Cubic function	X7_3
X8	Quadratic function	X8_2
X9	Non-existence	
X10	Quadratic function	X10_2
X11	Cubic function	X11_3
X12	Non-existence	

The assumed model offered by the second option is as follows:

$$Y1 = f(X1\_2, X2\_2, X3\_3, X4\_2, X5\_2, X7\_3, X8\_2, X10\_2, X11\_3) \qquad (2)$$

Thus, selection of the model is based on the two models Y1 of (1) and (2).

Correlations between performance and component variables (See appendix 1)

Relationships between ROE and component variables (Xi) are divided into two groups:

The first group that has close correlations within permissible range (with a significant level α of 15%) comprises X1, X2, X3, X4, X5, X7, X8, X10, and X11. Of these variables, X1, X2, X4, X5, X10, and X11 have correlations with statistical significance of less than 5%; and X1 has the closest correlation.

The second group with correlations that are not close enough comprises X6, X9 and X12.

Developing and testing the model

Developing and testing the model (1): Regression analysis of the model (1) is carried out in combination with tests for multicollinearity and autocorrelation according to backward elimination method. Results of the final regression model for system of commercial banks are factors that produce statistically significant effects on ROE.

The ultimately selected model can explain 94% of practical value (with sig_{ANOVA} of 0% and α of 15% after tests). No multicollinearity happens to variables. No autocorrelation is found in the model with Durbin-Watson statistic of 2.183 that is within the permissible range (from 1 to 3). (See appendix 2). Thus, the model can be used for testing relationships between ROE and expected factors in the model.

Some main results from the model:

- Group of factors with practical effects on performance (ROE):

+ X1: Deposit share has a negative effect on ROE

+ X4: Lending to deposit ratio has a negative effect on ROE

+ X6: Inter-bank loan capital/ total assets has a positive effect on ROE

+ X10: Net non-interest margin has a positive effect on ROE

+ X11: Net return before special transactions has a positive effect on ROE

+ X12: Average interest-rate gap has a negative effect on ROE

Of the four said state-owned commercial banks, Vietinbank and BIDV have similar ROE while Agribank and Vietcombank gain different ROE. In the years 2002 – 2010, Agribank gained a higher performance compared with the first two banks while Vietcombank gained a lower one.

Examining performance of the state-owned commercial banks in five phases (before 2004, 2004-2005, 2006-2007, 2008-2009, and after 2009) shows that they gained a better performance in 2004- 2005 and 2005-2006. In the years after 2009, their performance showed signs of recovery after the 2008-2009 crisis.

- The group of remaining variables has no clear effect on performance (ROE).

Comparison of signs of regression coefficients and correlation coefficients of variables with statistically significant effects on ROE is presented in the following table.

Variable	Sign of regression coefficient[1]	Sign of correlation coefficient[2]	Expectation[3]	Note
X1	-	-	+	Contrary to expectation but appropriate to reality
X4	-	-	-	Appropriate to expectation and reality
X6	+	-	+/-	Contrary to reality, appropriate to expectation
X10	+	+	+/-	Appropriate to expectation and reality
X11	+	+	+	Appropriate to expectation and reality
X12	-	+	+	Contrary to expectation and reality

(Having the same sign as correlation coefficients means being appropriate to changes in relationship taking place in reality, and having the same sign as expectation means being appropriate to original expectation)

Results of developing the model (2)

Regression analysis of the model (2) is carried out in combination with tests for multicollinearity and autocorrelation according to backward elimination method. Results of the final regression

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[1] Sign analyzing results from regression results
[2] Results of analysis from signs of correlation coefficients: They are practical relationships that exist between ROA and component indicators.
[3] Expectation, or expected sign, reflects author's expectations between two variables

model for system of commercial banks are factors that produce statistically significant effects on ROE.

The ultimately selected model can explain 79.4% of practical value (with $\text{sig}_{\text{ANOVA}}$ of 0% and α of 15% after tests). No multicolliearity happens to any variables. No autocorrelation is found in the model with Durbin-Watson statistic of 1.472 that is within the permissible range (from 1 to 3). Thus, the model can be used for testing relationships between ROE and expected factors in the model (See appendix 3).

Some main results from the model:

- Group of factors with practical effects on performance (ROE):

+ X1_2: Deposit share squared has a negative effect on ROE

+ X3_3: Outstanding loan/total assets cubed has a positive effect on ROE

+ X5_2: Total deposit/ total assets squared has a negative effect on ROE

+ X8_2: Non-credit income/total income squared has a negative effect on ROE

+ X11_3: NRST (Net return before special transactions) cubed has a positive effect on ROE

Besides, there is no difference in performance of state-owned commercial banks in all phases and years from 2002 to 2010.

- The group of remaining variables has no clear effect on ROE.

Comparison of signs of regression coefficients and correlation coefficients of variables with statistically significant effects on ROE is as follows.

Variable	Sign of regression coefficient[4]	Sign of correlation coefficient[5]	Expectation[6]	Note
X1_2	-	+	+	Not appropriate to expectation and reality
X3_3	+	-	-	Not appropriate to

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[4] Sign analyzing results from regression results
[5] Results of analysis from signs of correlation coefficients: They are practical relationships that exist between ROA and component indicators.
[6] Expectation, or expected sign, reflects author's expectations between two variables.

				expectation and reality
X5_2	-	+	+/-	Not appropriate to reality but appropriate to expectation
X8_2	-	+	+/-	Not appropriate to reality but appropriate to expectation
X11_3	+	+	+	Appropriate to expectation and reality

(Having the same sign as correlation coefficients means being appropriate to changes in relationship taking place in reality, and having the same sign as expectation means being appropriate to original expectation)

Selection of model

The following Table presents the selection of model based on results of the two options (1) and (2):

Model	Option (1)	Option (2)
Appropriateness coefficient	94%	79.4%
As compared with reality and expectation	Higher appropriateness	Lower appropriateness
Suggestion	Selected	Rejected

Thus, the model according to the option (1) is selected for the research on relationships between components and ROE

CONCLUSIONS FROM THE MODEL AND POLICY IMPLICATIONS
CONCLUSIONS

Examining the data about ROE shows that it increased slowly in the surveyed period. Comparing it with results from the model leads to the following conclusions:

- X1 (deposit share) tends to go against the expectation. In other words, when the deposit shares held by state-owned commercial banks reduces, their ROE tend to inch up.

- X4 (lending to deposit ratio) has changes appropriate to expectation and reality and contrary to changes in ROE. Analysis shows that increases in the lending to deposit ratio make ROE decrease.

- X6 (inter-bank loan capital/ total assets) changes in a direction that is contrary to reality but appropriate to expectation of the model. Thus, increasing the ROE according to the model requires rises in this ratio.

- X10 (net non-interest margin) has changes appropriate to expectation and reality. Analysis shows that the higher the net non-interest margin ratio, the higher the ROE.

- X11 (net return before special transactions) has changes appropriate to expectation and reality. When NRST increases, the ROE rises accordingly.

- X12 (average interest rate gap) has changes contrary to expectation and reality. Analysis shows that increases in the average interest rate gap make the ROE fall.

Of the four said state-owned commercial banks, Vietinbank and BIDV have similar ROE while Agribank and Vietcombank gain different ROE. In the years 2002 – 2010, Agribank gained a higher performance compared with the first two banks while Vietcombank gained a lower one. Examining performance of the state-owned commercial banks in five phases (before 2004, 2004-2005, 2006-2007, 2008-2009, and after 2009) reveals that they gained a better performance in 2004- 2005 and 2005-2006. In the years after 2009, their performance showed signs of recovery after the 2008-2009 crisis.

POLICY IMPLICATIONS

The group of state-owned commercial banks with an oligopolist position has been losing parts of their deposit shares to joint stock commercial banks. Before 2005, state-owned commercial banks enjoyed competitive advantages that came from historical factors and relations based on the old mechanism, such as wide networks of branches, traditional relations with state-owned companies, favorable resources supplied by the government, but their performance, as shown by secondary data, was lower than that of the years after 2005 when the competition in the banking system was keener.

Improvements in performance of such players as Vietcombank and Vietinbank after equitization (although most shares are still held by the State) could be seen as encouraging signs. It is

admitted that equitization had saved the government from burden of subsidies for state-owned banks. Moreover, competitive pressure from the market has become a dynamic that changed competitive potentials of local banks into real competitive edges.

In the surveyed period, however, concentration on lending service produced a negative effect on performance of state-owned commercial banks. They should make the best use of their competitive advantages to enhance effectiveness of assets management, diversification of investment portfolios, and development of new banking services. This argument is proven by the analysis of relationships between ROE and net non-interest margin, and between ROE and net return before special transactions as well.

Regarding the source of loan capital from the inter-bank market, it can be considered as a historical advantage for state-owned commercial banks. At their first stages of development, most joint stock banks have to open deposit accounts at state-owned commercial banks. Additionally, in the position of borrowers, state-owned commercial banks are still important channels for absorbing capital from joint stock banks. Thus, maintaining and enhancing the leading role of major commercial banks in supplying services to banks is an important measure for state-owned commercial banks to make the best use of sources of finance from the inter-bank market to improve their performance.

The last implication is about the relationship between ROE and average interest-rate gap enjoyed by state-owned commercial banks. The secondary dataset used for this research shows that state-owned commercial banks enjoyed a better average interest-rate gap in comparison with other banks. But what has happened to them when the analysis shows that a negative relationship between ROE and average interest-rate gap did exist?

According to Trương Quang Thông (2009), causes of this situation comes from high ratios of bad debt in state-owned commercial banks, and resulting provisions for credit risk produce bad effects on performance of the banks. At the end of 2008, bad debt in state-owned commercial banks worked out according to Vietnam's accounting standards (VAS) varied between 1% and 4% of outstanding loan while this figure of a group of 10 joint stock banks was below 2%.

Bad debts in state-owned commercial banks certainly had a lot to do with state-owned companies as their strategic customers because they still are principal supplier of capital for these companies. Statistics of State Bank of Vietnam reveal that loans supplied to state-owned companies in the surveyed period accounted for 30% - 40% of outstanding loan from state-owned commercial banks. In this brotherly relation, priorities in terms of maturity, size, mode of repayment, or guarantee for such loans supplied to state-owned companies imply a lot of potential risks for state-owned commercial banks. For example, fiduciary loans for state-owned companies (that certainly account for a big proportion of total loan from state-owned banks) require much bigger provisions for bad debt than those for secured loans. Thus, it is necessary to establish and execute "market discipline" with a more level playing field. It is the market discipline that forces bank managers to maximize profit from assets and sources of finance, and supply the most competitive services and products to the market.

We hope that the group of state-owned commercial banks as leading players in the banking system will maintain their performance, and deal successfully with such shortcomings as bad debt, assigned loans, poor non-credit services and bad habit of relying on government support.

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APPENDICES

Appendix 1

Correlations

Statistics=Pearson Correlation

	Y1	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12
Y1	1	-.605**	-.596**	-.234	-.435**	.311*	-.038	.220	.161	.122	.350*	.789**	.144
X1	-.605**	1	.993**	-.052	.046	-.014	.257	.157	-.174	-.324*	-.594*	-.374**	-.347*
X2	-.596**	.993**	1	-.047	.049	-.017	.258	.148	-.160	-.327*	-.589**	-.377*	-.352*
X3	-.234	-.052	-.047	1	.944**	-.134	.297*	-.893**	-.364*	.647**	.182	-.548**	.616**
X4	-.435**	.046	.049	.944**	1	-.375**	.301*	-.878**	-.426**	.582**	.135	-.670**	.573**
X5	.311*	-.014	-.017	-.134	-.375**	1	-.203	.208	.226	-.150	-.185	.330*	-.251
X6	-.038	.257	.258	.297*	.301*	-.203	1	-.153	-.244	.091	-.060	-.023	.128
X7	.220	.157	.148	-.893**	-.878**	.208	-.153	1	.311*	-.638**	-.282	.545*	-.623**
X8	.161	-.174	-.160	-.364*	-.426**	.226	-.244	.311*	1	-.281	.398**	.061	-.358*

X9	.122	-.324*	-.327*	.647**	.582**	-.150	.091	-.638**	-.281	1	.562**	-.269	.980**
X10	.350*	-.594**	-.589**	.182	.135	-.185	.060	-.282	.398*	.562*	1	-.141	.596**
X11	.789**	-.374*	-.377*	-.548**	-.670**	.330*	-.023	.545**	.061	-.269	-.141	1	-.256
X12	.144	-.347*	-.352*	.616**	.573**	-.251	.128	-.623**	-.358*	.980**	.596**	-.256	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Appendix 2

Model summary[b]

Model		R	R squared	Adjusted R squared	Std. Error of the estimate	Durbin-Watson
dimension0	1	.978[a]	.956	.938	.02456	2.183

a. Predictors: (Constant), GD2006_2007, Vietcombank, X10, GD2004_2005, X6, X11, X12, X1, Agribank, X4

b. Dependent variable: Y1

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.325	10	.032	53.838	.000[a]

Model summary^b

Residual	.015	25	.001		
Total	.340	35			

a. Predictors: (Constant), GD2006_2007, Vietcombank, X10, GD2004_2005, X6, X11, X12, X1, Agribank, X4

b. Dependent variable: Y1

Coefficients^a

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistics	
	B	Std. error	Beta	t	Sig.	Tolerance	VIF
1 (Constant)	.255	.121		2.111	.045		
X1	-.005	.093	-.005	-.059	.954	.229	4.371
X4	-.330	.100	-.503	-3.283	.003	.075	13.249
X6	.274	.098	.184	2.802	.010	.414	2.417
X10	14.188	3.080	.494	4.607	.000	.154	6.477
X11	16.868	1.421	1.217	11.868	.000	.169	5.922
X12	-2.573	1.008	-.224	-2.553	.017	.231	4.332
Agribank	.101	.028	.451	3.671	.001	.118	8.499
Vietcombank	-.168	.025	-.750	-6.812	.000	.146	6.833
GD2004_2005	.028	.013	.121	2.223	.035	.603	1.659
GD2006_2007	.037	.012	.158	3.148	.004	.705	1.418

a. Dependent variable: Y1

Model	R	R squared	Adjusted R squared	Std. Error of the estimate	Durbin-Watson
dimension0 1	.908[a]	.824	.794	.04469	1.472

a. Predictors: (Constant), X11_3, X8_2, X1_2, X5_2, X3_3

b. Dependent variable: Y1

ANOVA[b]

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	.280	5	.056	28.034	.000[a]
	Residual	.060	30	.002		
	Total	.340	35			

a. Predictors: (Constant), X11_3, X8_2, X1_2, X5_2, X3_3

b. Dependent variable: Y1

Coefficients[a]

Model		Unstandardized coefficients		Standardized coefficients			Collinearity statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.255	.105		2.425	.022		
	X1_2	-.290	.065	-.368	-4.499	.000	.877	1.140
	X3_3	.017	.044	.033	.376	.709	.773	1.294
	X5_2	-.014	.134	-.009	-.106	.916	.779	1.284
	X8_2	-.183	.227	-.067	-.808	.425	.847	1.181

X11_3	52962.361	6713.293	.750	7.889	.000	.650	1.538

a. Dependent variable: Y1