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Empirical Researches on Corporate Governance of China Commercial Banks Based on Panel Data

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Abstract

This article empirically analyzes the relation between the corporate governance mechanism of China commercial banks and their performances based on the unbalanced panel data selected from 36 annual report samples in 12 Chinese commercial banks during 2003 to 2006, and the results indicate that the improvement of corporate governance of China commercial banks is the essential approach to enhance performances of commercial banks.

Keywords: Commercial bank, Corporate Governance, Empirical research, Panel data

1. Introduction

When the interim that China joined WTO was ended at the end of 2006, the era of comprehensive competition between China commercial banks and foreign capital banks has come. Facing more and more intense competition, only China commercial banks deepen system reform and perfect corporate governance of banks, they can really actualize sustainable developments.

Four China state-owned commercial banks except Agricultural Bank of China, Bank of China, China Construction Bank and Industrial and Commercial Bank of China all have come into the market. Shenzhen Development Bank, Shanghai Pudong Development Bank, China Minsheng Bank, Huaxia Bank, China Merchants Bank, Bank of Communications, Industrial Bank and CITIC Industrial Bank in Chinese national shareholding commercial banks all have come into the market. The forthgoers in urban commercial banks such as Nanjing Bank and Ningbo Bank have come into the market just before, and other urban commercial banks are also implementing finance recombination and introducing into strategic investors like a raging fire, gradually advancing shareholding reform, and in several years for the future, China commercial banks will come into the market cosmically. As viewed from the form, various shareholding commercial banks especially listed banks all form integrated corporate governance structure including shareholders conference, board of directors, board of supervisors, and management layer, but as viewed from the essential, it needs to further study how to father China commercial banks. Therefore, at the crises that China commercial banks implement shareholding reform and come into the market, it has especially important practical meanings to study the corporate governance of commercial banks.

2. Theoretical analysis

The problem of corporate governance can cast back to Smith Adam's "the wealth of the nations (1976)", but because of era limitation, the author didn't deeply expatiate this problem. After 156 years, Berle A. and Means (1932) really put forward modern corporate governance, i.e. to separate ownership from managerial authority induced the actions that managers departed from stockholder's benefits. After that, because the corporate governance of enterprise became increasingly serious, scholars such as Johnson and Maclean (1976), Phlip L. Cochran and Steven L. Wartick (1988), Michael Hart (1995) and Andrei Shleifer and Robert Vishny (1997) begun to deeply study this problem from different views.

Comparing with general corporate governance, the researches to bank corporate governance are comparatively late. From 1980 to 1997, serious problems occurred in three fourths of IMF member banks, and especially the Asian Financial Crisis in 1997 induced people's attention to the self corporate governance of commercial banks. In September 1999, Basel Committee issued the guide document of "Enhancing Corporate Governance for Banks" aiming at the corporate governance of commercial banks, which emphasized that the importance of corporate governance in the bank management and finance supervision, and the prologue to study corporate governance of commercial bank had been undrawn.

The corporate governance mainly solves the agent problem and the benefit eroded problem of big holding stockholders

to middle and small stockholders produced after the separation of owner and manager. It mainly has two sorts of solution, and one is the interior governance mechanism including shareholding structure, board of directors, board of supervisors and encouragement of senior managers, and the other one is the exterior governance mechanism including law system, market environment and so on. But the interior frangibility of commercial banks limits the function of the exterior governance mechanism (Cai, 2003, p.208), so this article mainly studies the corporate governance of commercial banks from the interior governance mechanism.

2.1 Shareholding structure and bank performance

The shareholding structure is the most important part of corporate governance of banks, and the researches on this domain are generally centralized in the contents such as the equity concentration ratio, shareholder character and the reasons that different types shareholding structure form, but these researches finally come down to the influences of shareholding structure to bank performance. To the influences of shareholding structure to bank performance, there still has not an accordant conclusion. Shleifer and Vishny (1986) thought the equity concentration ratio had positive correlation relation with bank performance (Shleifer, 1986), but Burkart, Gromb and Panunzi thought the equity concentration ratio had negative influences to bank performance (Burkart, 1997, p.693-728), and Cao, Tingqiu (2004) took 19 annual reports from 11 commercial banks during 2001-2003 as references, took return on assets (ROA) and return on equity (ROE) of banks as performance indexes, and found the shareholding structure of banks had no influences on bank performances (Cao, 2004, p.35-40), and Weihua and Liu, Jinyan (2005), Zhu, Jianwu (2005) and Sun, Yuejing (2006) all got the conclusions that the equity concentration ratio had negative correlation relation with bank performance.

2.2 Board of directors and bank performance

As the double status of stockholder agent and manager client, the board of directors decides its core status in the corporate governance of banks, which takes the decision-making rights and supervisory rights to banks. The researches on this aspect are mainly centralized in the influences of independent characters, behavior characters and encouragement character of board of directors to bank performance. Cao, Tingqiu (2004) thought the size of board of directors had positive influences to bank performance (Cao, 2004, p.35-40), Weihua and Liu, Jinyan (2005) found that the size of exterior directors had positive correlation relation with bank performance through research (Wei, 2005, p.77-82), and Zhu, Jianwu (2005) got the conclusion that the proportion of executive directors had positive correlation relation with bank performance (Zhu, 2007, p.33-40), in addition, both Zhu, Jianwu (2005) and Sun, Yuejing (2006) thought the factors such as the size of board of directors and meeting times and so on had no influences to bank performance. These opposite opinions may be related with different selected bank performance indexes and sample zones, All Cao, Tingqiu, Weihua and Liu, Jinyan, Sun, Yuejing adopted ROA and ROE as bank performances, but Zhu, Jianwu selected EVA return ratio as bank performance.

2.3 Board of supervisors and bank performance

Because the Britain and US mode doesn't weaken the board of supervisors and its functions, so there are few researches on the board of supervisors. Theoretically, the board of supervisors with big size could find problems existed in banks and implement effective supervision because it has more persons with different professional knowledge backgrounds, and more meetings of the board of supervisors indicate it exerts strong actions and isn't the form department of bank any more, which should actively influence bank performance. But in fact, the practices educed different conclusions. Zhu, Jianwu's researches found that the size of board of supervisors and meeting times had no influences to bank performance, and Sun, Yuejing (2006) also got the same conclusion (Sun, 2006, p.29-34).

2.4 Senior managers' salary and bank performance

Because the salary of senior manager can harmonize the agent friction between owner and manager, so it is regarded as one of most important corporate governance mechanisms (Shleifer, 1986). Through encouraging managers with professional bank management knowledge, the salary of senior manager makes their actions accord with stockholders' benefits, their aims accord with stockholders' aims to reduce agent costs and enhance bank performance. Ang, Lauterbach and Schreiber (2000) studied 166 US banks during 1993 to 1996 year, and they found that the salary structure of commercial bank CEO had large differences with CEO of other industries, and the salary of commercial bank CEO was not only higher, but the salary structure embodied more obvious encouragement effects (Ang, Lauterbach, 2000).

3. Design of researches

3.1 Research variables and sample data

3.1.1 Bank performance variables

Because the traditional single earning capacity index may induces accountant's operation and its preconditions are not mature, so in this article, we select accountant comprehensive index (IOAP) to measure the level of bank performance.

According to the particularity of commercial bank, when we consider the productiveness of commercial bank, we bring

into security and fluidity of bank index, select ROE, ROA, earnings per share (EPS), average return (AR), assets utilization (FU) as the earning capacity index of bank, choose loan-to deposit ratio (CD) and assets liquidity ratios (LD) as the fluidity index, use non performing loan (NPL), interest return ratio (LH), capital adequacy ratio (CAR), loan proportion of single largest client (OP) and loan proportion of ten largest clients (SP) to reflect bank security, and the definitions of various original indexes are seen in Table 1.

We utilize the analysis technology of main component through the software SPSS to integrate information indicated by above indexes into a single index, accountant comprehensive index (IOAP), and this index fully reflect three characters of commercial banks including productiveness, fluidity and security. The practical operation process includes three steps. First, implement "unitization" processing to above 12 indexes respectively. Second, choose five main components through main component analysis which can explain 85% variance changes together. Third, compute the weighted average of those five main components by taking eigenvalue as the weight and obtain annual observation values of every bank.

3.1.2 Bank corporate governance variables

According to the research frame of corporate governance of commercial bank, this article implements empirical analysis to the influences of bank performance from four aspects including shareholding structure, board of directors, board of supervisors and the salary encouragement of senior manager.

(1) Shareholding structure. Adopt the stockholding proportion of the first largest stockholder (SI) and the stock-controlling proportion of the first largest stockholder (HC) to reflect the control power of the first largest stockholder to the bank, and if the value of HC is bigger than 1, so it indicates that the first stockholder in that bank has absolute control power. Use the sum of stockholding proportions from the second to the tenth largest stockholder (CST) to measure the concentration degree of shareholding structure of commercial bank and these stockholders' balance power, and use the virtual variable whether state-owned stock-controlling to measure the government's potential influences to the bank corporate governance mechanism.

(2) Board of directors. The governance of board of directors is embodied mainly through the independent character, action character and encouragement character of board of directors. So we select independent director proportion (IDP) and the virtual variable which reflects duty status of board chairman (deputy) and bank president to represent the independence of the board of directors, use the members of board of directors (SIZE) to represent the size of the board of directors, and use the annual meeting times of the board of directors (N) to represent the action character of the board of directors. We use the quantity of directors who don't draw salaries (NPA) to reflect the situation of bank exterior governance, because these directors generally are appointed by governmental department or holding stockholders, who have few contacts with the operation of the corporation, and the characters of exterior.

(3) Board of supervisors. The members of the board of supervisors (TP) represent the size of the board of supervisors, and the annual meeting times of the board of supervisors (JC) represent the action characters that the board of supervisors operates its functions.

(4) Salary of senior manager. Because the senior managers of China commercial banks possess few stock ownerships and the information is not clear, so we select one third of the salary gross of three senior managers who have the highest salaries (PAY) to measure the encouragement character of corporate governance of commercial banks.

3.1.3 Control variables

The bank scale reflects the capacities that bank obtain resources and implement investment opportunities, so we select the bank scale (TB) as the control variable. The specific variable definitions are seen in Table 2.

3.1.4 Sample data

The unclear information of commercial bank and the relative research data which are difficult to obtain are the main obstacles to implement empirical researches. To China, this problem is more notable, and because of the influences of system transform and total environment, the data issuances of China commercial bank are fewer than state-owned banks of developed countries. But in recent years, the annual reports continually issued by various commercial banks make the actuality of the information issuance change apparently and offer opportunities for relative researches. Based on that, this article takes the collected annual reports of China commercial banks as the data resources to empirically analysis the corporate governance and governance performance of China commercial banks. Considering that the commercial banks selected should have enough representations, so this article chooses sample data from three layers. The first layer is the solely state-owned commercial banks, and we select two years' data from 2005 to 2006 of Bank of China, China Construction Bank and Industrial and Commercial Bank of China which have comparatively abundant information issuances. The second layer is the shareholding commercial banks, and we select four years' data from 2003 to 2006 of China Merchants Bank, Huaxia Bank, China Minsheng Bank, Shenzhen Development Bank, Shanghai Pudong Development Bank and CITIC Industrial Bank, and two years' data from 2005 to 2006 of Bank of Communications. The third layer is the urban commercial banks, and we select two years' data from 2005 to 2006 of Nanjin Bank and Ningbo Bank just listed. We select 36 groups of sample data together to compose unbalanced panel data. The annual

reports of banks are obtained from the web of "http://www.cninfo.com.cn/" and the public web of various banks.

3.2 Descriptive statistical analysis

3.2.1 Corporate governance characters of state-owned commercial banks

We implement descriptive statistical analysis to the first layer in commercial banks, i.e. the corporate governance of state-owned commercial banks, and the results are seen in Table 3.

From Table 3, we can see the establishment and governance of corporate governance mechanism after the stockholding transform of state-owned commercial banks.

First, as viewed from shareholding structure, the mean of the first largest stockholder's holding proportion achieves more than 50% and the mean of the stock holding achieves 1.88, and the mean of the second largest to the tenth largest stockholders' holding proportion is 40.12%. Absolute stock holding of the country indicates the equity of state-owned commercial banks after stockholding transform is still centralized in the country, and though the second largest to the tenth largest stockholders have certain restrictions to the first largest stockholder, but under the absolute state-own stock holding condition, other stockholders are difficult to their restriction functions to the first largest stockholder.

Second, as viewed from the board of directors, the mean of the size of board of directors is 15.88 persons, the mean of proportion of independent directors is 25.81%, in 87.5% of banks, the board chairman and president are the same person, and the annual meeting times of board of directors is 8.6. From that, we can see that board of directors of China commercial banks has larger size and fewer independent directors.

Third, as viewed from the board of supervisors, the mean of members of the board of supervisor is 6.6, the annual meeting times are 4.5, and we can see that the board of supervisors has small size and weak action power.

Fourth, as viewed from the salary of senior manager, the average salary of the three senior managers who have the highest salaries is 1.1989 million Yuan.

3.2.2 Corporate governance characters of shareholding commercial banks

The corporate governance mechanism of shareholding commercial banks is comparatively perfect in China commercial banks. And we can obtain comparatively better corporate governance characters of commercial banks through descriptive statistical analysis to corporate governance variables of sample banks during 2003 to 2006. The results are seen in Table 4.

From Table 4, we can see following four aspects.

(1) Shareholding structure. The mean of the first largest stockholder's holding proportion is 15.26% and the mean of the stock holding achieves 0.899, and the mean of the second largest to the tenth largest stockholders' holding proportion is 32.74%. 70.83% of banks are held by the country. It indicates that the shareholding structure of China shareholding commercial banks is relatively centralized, the first largest stockholders has no absolute control power, the second to the tenth largest stockholders have strong balance function to the first largest stockholder, but most equities are centralized in the country.

(2) Board of directors. The mean of the size of board of directors is 16 persons, the mean of proportion of independent directors is 33%, only in 87.5% of banks, the board chairman and the president are the same person, and the annual meeting times of board of directors is 9.5. From that, we can see that board of directors of China commercial banks has larger size and fewer independent directors, but the leading structure has strong independence and the board of directors has strong action power.

(3) Board of supervisors. The mean of members of the board of supervisor is 8.63, the annual meeting times are 5, and we can see that the board of supervisors has comparatively reasonable size, but it has fewer annual meeting times and weak action power.

(4) Salary of senior manager. The average salary of the three senior managers who have the highest salaries is 1.248 million Yuan, but the maximum of 4.7167 million Yuan and the minimum of 0.2492 million Yuan have a large difference.

3.3 Multiple regression analysis

3.3.1 Research method and model enactment

The panel data is the data collection with two-dimensional structure which takes time list extend along space direction and takes section data extend along time direction. It can not only reflect the rules of various individual data in certain term, but also can describe the rule of every individual with the changes of time, and reflect mutual advantages of time list and section data.

The basic form of panel data model is:

$$y_{it} = \alpha_{it} + x_{it}^{'}\beta_{it} + \mu_{it}, \text{ i=1, 2 …, n, t= 1, 2…, T.} \quad (1)$$

Where, y_{it} is the attributive variable, x_{it} is the $K \times 1$ directional explanation variable with, T is the sum of observation terms of every section member. Parameter α_{it} represents the constant of the model, β_{it} is the coefficient vector corresponding to the regression vector x_{it}. Random errors μ_{it} are independent mutually and fulfill the hypothesis of zero mean and equal variance. On the member section, this model includes n section member equations together, and on the time section, this model includes T time section equations together.

In the model described in equation (1), the free degree (nT) is far smaller than the number of parameter ($nT(K+1)$, which is the number of parameter describing the distribution μ_{it}), which makes the model can not be estimated. To actualize the estimation of the model, we suppose that the parameter fulfill the coherence of time, i.e. the parameter values don't change with the difference of time. Therefore, the model can be simplified as:

$$y_{it} = \alpha_i + x_{it}^{'}\beta_i + \mu_{it} \tag{2}$$

Where, parameter α_i and β_i are the constants in the individual term, which values are influenced by different section units. According to different restriction requirements of intercept α_i and coefficient vector β_i, we can divide the panel data model described in equation (2) into three sorts including invariable coefficient model without individual influences, i.e. the mixed estimation model, invariable coefficient model with individual influences, and the variable coefficient model with individual influences. If the coefficient α_i is the definite variable, i.e. the omitted factors in the model have fixed influences to the individual differences, so the model is the fixed effect model, and if the coefficient α_i is the random variable, i.e. the omitted factors in the model have random influences to the individual differences, so this model is the random effect model (Gao, 2006, p.302-326).

This article studies the influences of corporate governance mechanism to bank performance, implements analysis by the samples themselves, doesn't deduce the individual differences of the collectivity by the samples, so the random effect model can be eliminated, and we adopt the test method of covariance to consider selecting the mixed estimation model or the fixed effect model.

H_0: To different section model, intercepts are same, i.e. we should establish the mixed estimation model.

H_1: To different section model, intercepts are different, i.e. we should establish the fixed estimation model.

The statistic F can be defined as:

$$F = \frac{(SSEr - SSEu)/(T+K-2)}{SSEu/(NT-T-K)} \sim F_{\alpha}(T-1,\ NT-T-K) \tag{3}$$

Where, $SSEr$ and $SSEu$ respectively represent the sum squared resid of the mixed estimation model and the individual fixed effect model, T is the time and K is the explanation variable.

Through the software of Eview5.1, we can obtain $SSEr$=1.735, $SSEu$=0.0783, T=4, K=13, and F=26.93 and we can get corresponding critical value through F distribution table:

$F_{0.05}(3,16)$=3.24.

Because F>3.24, so we reject the former hypothesis and should establish individual fixed effect model:

$$IOAP_{it} = b_0 + b_1 \times SI_{it} + b_2 \times HC_{it} + b_3 \times CST_{it} + b_4 \times DG_{it} + b_5 \times SIZE_{it}$$
$$+ b_6 \times IDP_{it} + b_7 \times NP_{it} + b_8 \times NPA_{it} + b_9 \times TP_{it} + b_{10} \times DN_{it} + b_{11} \times JN_{it} + b_{12} \times PAY_{it}$$
$$+ b_{13} \times TB_{it} + \varepsilon_{it} \tag{4}$$

Where, b_0 is the constant, b_j (j=1, 2, 3…) is the regression parameter of corresponding explanation variable, ε_{it} is the random error, i=1, 2…,12, which includes all samples from 12 banks, t represents four years' time from 2003 to 2006, SI_{it} is the first largest stockholder's holding proportion of the i th bank in the year of t, HC_{it} is the first largest stockholder's stock controlling proportion of the i th bank in the year of t, in this way, TB_{it} is the size of the i th bank in the year of t.

3.3.2 Regression result and analysis

Because of different perfect degrees of corporate governance mechanism of various commercial banks and great differences among bank scales, i.e. so-called cross section heteroscedasticity, so in the model estimation, we adopt the generalized least square method modified by section unit heteroscedasticity and the estimation software Eviews5.1.

The parameter estimation results and statistical test results of the model are seen in Table 5.

From the results of regression, both the value of R^2 and the value of R^2 after modification are higher and achieve above 99%, the value of F also achieves 1% of notable level, the value of D.W is reasonable, which indicates that the matching degree of the model is higher and the total of independent variable has strong explained powers for attributive variables. Especially the equation re-estimated after eliminating the corresponding explanation variables of statistical non-notable parameter estimation has better statistical effect, and every independent variable is notable on 1% of the level. The analysis of the regression results includes following four aspects.

(1) Shareholding structure. The first largest stockholder's holding proportion has positive correlation relation with bank performance on 1% of the notable level, which indicates that the equity concentration is propitious to correct stockholders' actions of "pick-up" and the rise of the first largest stockholder's holding proportion has positive influences to enhance bank performance. The first largest stockholder's controlling proportion has negative correlation relation with bank performance, but the statistical test is not notable, and the reason may be that the first largest stockholder's controlling proportion is higher, it has stronger control power to banks, which makes the first largest stockholder not only may erode other stockholders' benefits, but also has enthusiasms to try to enhance the management level of bank, and both functions would balance out, so the first largest stockholder has not obvious function to bank performance. The sum of the second to the tenth largest stockholder's holding proportion presents positive correlation relation with bank performance on 5% of the notable level, which indicates the second to the tenth largest stockholders of China commercial banks have equity balance function to the first largest stockholder and reduce the first largest stockholder's "tunneling effect" to bank performance. State-owned equity has notable positive correlation relation with bank performance, which may be the selected samples after 2003, and at that time, the banks reform has begun, and the state-owned shareholding banks can get great policy and capital supports of the government, accordingly the bank performance is enhanced to a certain extent.

(2) The governance of board of directors. The size of board of directors presents negative correlation level with bank performance on 1% of the notable level, which indicates huge size of board of directors may induce low efficiency of board of directors, accordingly influence the enhancement of bank performance. The independent director proportion (IDP) has notable negative correction relation with bank performance, which indicates the independent directors of China commercial banks have not exerted their own supervisory functions. The combination of both duties presents negative correlation relation with bank performance, but statistical test is not notable, which may be China commercial banks generally request both duties of board chairman and bank president are separated, so the differences among samples are not big and counteract functions to bank performance. The meeting times of board of directors present positive correction relation with bank performance, but the statistical test is not notable, which indicates the meeting of board of directors may stay on the form, can not exert its supervisory functions of manager and bank development strategy, can not enhance bank performance. The number of directors who don't draw salaries in the bank presents positive correlation relation with bank performance, but the statistical test is not notable, and these directors basically belong to exterior directors of the bank and come from main stockholder corporations of the bank, and theoretically they can exert supervisory functions to bank managers, but in practice the operation is difficult, because they represent different stockholders' corporate benefits and induce different opinions and influence bank decisions in the board of directors.

(3) The governance of board of supervisors. The size of board of supervisors presents positive correlation relation with bank performance on 1% of the notable level, which indicates that the number increase of board of supervisors increases the board of supervisors' ability and efficacy to supervise bank managers. The meeting times of board of supervisor present positive correlation relation with bank performance on !% of the notable level, which indicates that the board of supervisors in the bank is exerting its function, begins to supervise senior manager, harmonize board of directors and promote the developments of banks.

(4) The salary of senior manager. The average salary of senior manager presents positive correlation relation with bank performance, but the statistical test is not notable, which indicates the salary policy of China commercial banks has not exerted its function, and the encourage mechanism is absent. The reasons may come from two aspects. First, at present, most senior managers' salaries of China commercial banks have not related with bank performance, so the senior managers' higher salaries don't represent higher performance of banks. Second, the senior managers' salaries have not been related with their contributions to the future developments of banks, there are no long-term encouragements, and the real enhancements of bank performance are influenced.

4. Conclusions

This article selects 36 groups of sample data from 12 banks to compose unbalanced panel data and implements empirical analysis to the influences of corporate governance mechanism of China commercial banks to bank performance. The part empirical results include three following aspects.

First, sample data selected in this article are comparatively few, which reflect that the information issuance mechanism of China commercial banks is not perfect and needs further strengthen the transparence of China commercial banks.

Second, through descriptive statistical analysis, we find that whether former state-own commercial banks just listed or

shareholding commercial banks with comparatively perfect corporate governance all have many problems in the corporate governance mechanism. For example, the size of board of directors is too huge, the proportion of independent director is too low, the action power of board of supervisors is not strong, the encouragement mechanism is not perfect, and especially the problem that state-owned equity is too huge. The corporate governance of commercial banks is "similar in shape not in spirit", so it needs to be further optimized.

Third, through multiple regression analysis, we find the bank performance is intensely related with structure variables of corporate governance, especially those invariables which reflect equity structure such as the holding proportion of the first largest stockholder, the sum of holding proportion of the second to the tenth largest stockholder, whether state-owned holding equity and so on, and the size of board of directors and the independent director proportion which reflect the governance of board of directors, and the size of board of supervisors and the annual meeting times of board of supervisors which reflect the governance of board of supervisors. The results indicate the improvement of bank corporate governance is the essential approach to enhance the values of banks.

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Table 1. Definitions of original indexes

Index	AB. of index	Explanation of index
Earning Capacity	ROE	The ratio of retained profits and stockholder's share
	EPS	The ratio of net assets and ordinary stock gross at the end of the report term
	ROA	The ratio of net income and total assets
	AR	The ratio of total profits and employee quantity
	FU	The ratio of taking and average total assets
Fluidity	CD	The ratio of various loan gross at the end of the report term and deposit gross
	LD	The ratio of floating assets and floating debts
Security	NPL	The proportion of bad loans to total loans
	LH	The ratio of interests received at the end of term to total interests
	CAR	The proportion of net capitals to total capitals
	OP	The ratio of loan balances for same loan client to total capitals
	SP	The ratio of loan amount for ten largest clients to total capitals

Table 2. Definitions of various variables

Variable	Variable name	Explanation of variable name
IOAP	Accountant comprehensive index	The bank performance reflected by comprehensively considering productiveness, fluidity and risk
SI	Stockholding proportion of the first largest stockholder	The stockholding proportion of the first largest stockholder to total stocks
HC	Stock-controlling proportion of the first largest stockholder	The stockholding proportion of the first largest stockholder to the stockholding difference between the first largest stockholder with five former largest stockholders
CST	Stockholding concentration	The sum of stockholding proportions from the second to the tenth largest stockholder
Dg	Whether state-owned stock-controlling	Virtual variable, state-owned stock-controlling is 1, or else is 0
SIZE	The size of board of directors	The member quantity of board of directors in the report term
IDP	Independent directors proportion	The proportion of independent directors all directors
NP	Combination of two duties	Virtual variable, suppose that the bank president and (deputy) board chairman are one person, so the variable is 1, or else is 0
DN	Annual meeting of board of directors	The meeting times convened by board of directors in the same year (including communication meeting)
NPA	Directors who don't draw salaries from bank	The quantity of directors who don't draw salaries in the report term
TP	The size of board of supervisors	The member quantity of supervisors in the report term
JN	Meeting times of board of supervisors	The meeting times convened by board of directors in the report term
PAY	Average salaries of senior managers	One third of the salary gross of three senior managers who have the highest salaries
TB	The size of bank	The natural logarithm of total back assets at the end of the year

Table 3. Corporate governance variable statistics of state-owned commercial banks

Item	Mean	Median	Maximum	Minimum	Std. Dev.
SI	0.503325	0.5575	0.8315	0.2178	0.223
HC	1.88145	1.7226	4.9347	0.5347	1.525
CST	0.4012	0.4096	0.604	0.1685	0.1304
DG	1	1	1	1	0
SIZE	15.875	16	19	13	1.959
IDP	0.2581	0.2566	0.3125	0.2143	0.0299
NP	0.875	1	1	0	0.3535
NPA	6.625	6.5	8	6	0.744
TP	6.625	6	9	4	2.133
DN	8.625	9.5	12	3	3.622
JN	4.5	5	6	2	1.414
PAY	119.886	121.57	152.71	86.2	22.528

Table 4. Corporate governance variable statistics of stockholding commercial banks

Item	Mean	Median	Maximum	Minimum	Std. Dev.
SI	0.1526	0.1603	0.34	0.0598	0.0779
HC	0.899	0.591	2.548	0.2935	0.7648
CST	0.3274	0.3197	0.4895	0.088	0.1218
DG	0.7083	1	1	0	0.4643
SIZE	16.083	17	19	13	2.1653
IDP	0.3304	0.353	0.4117	0	0.083
NP	0.1667	0	1	0	0.3807
NPA	6.375	7	10	0	3.36
TP	8.625	9	11	7	1.096
DN	9.542	9	15	5	3.31
JN	5	4.5	13	2	2.246
PAY	124.8	83.31	471.67	24.92	108.79

Table 5. Multiple regression statistics

Explained variable (IAOP)			
Explanation variable		Equation (4)	Equation (5)
Stockholding structure	SI	1.903235* (3.805123)	1.476062* (18.65169)
	HC	-0.069879 (-1.537004)	--
	CST	0.736499** (2.736304)	0.574852* (9.101275)
	DG	0.534787* (7.244697)	0.712878* (9.028681)
Governance of board of directors	SIZE	-0.092372* (-6.098518)	-0.092908* (-32.75789)
	IDP	-0.726868* (-7.780650)	-0.625409* (-5.917374)
	NP	-0.014542 (-0.393882)	--
	NPA	0.013877 (1.629651)	--
	DN	0.001757 (0.279774)	--
Board of supervisors	TP	0.052169* (3.510236)	0.050185* (13.30411)
	JN	0.049715* (3.221976)	0.059679* (11.77652)
Salaries of senior managers	PAY	5.24E-05 (0.447106)	--
Control variable	TB	0.950638* (9.254706)	0.926314* (10571.35)
R^2		0.997696	0.999983
Adj. R^2		0.992670	0.999962
Statistic F		198.4873*	48410.70*
Value of D.W		2.25	2.14

Notice: Those values in the bracket are the T statistics of various variables, "*" denotes the notable level of 1%, "**" denotes the prominence level of 5%, and the equation (5) is obtained from equation (4) which is eliminated corresponding explanation variables of non-notable parameter evaluations.