CHAPTER 4
RESEARCH METHODOLOGY

4.1 Research Framework

This research framework established from the analysis of global financial crisis (subprime mortgage) impact on Indonesian banking performance. There are two results as the output of this research which were interbank connection and bank to evolving environment correlation. The interbank connection research perform the analysis of connection between state owned banks performance and national private banks performance during 2006 – 2009 in term of CAMELS ratios (CAR, APYD, APB, NPL, PPAPAP, PPAP, ROA, ROE, NIM, BOPO, LDR). In this research, statistical test of difference will be used. Another output is analysis of the correlation between state owned bank and national private bank non performing earning assets (NPEA) ratio as an indicator of impact, during 2007 – 2009, with the evolving environment represented by Indonesia Government Securities (SUN) rates and Jakarta Composite Index (JCI) during 2007 – 2009. In this research, Regression Logistic test will be used.

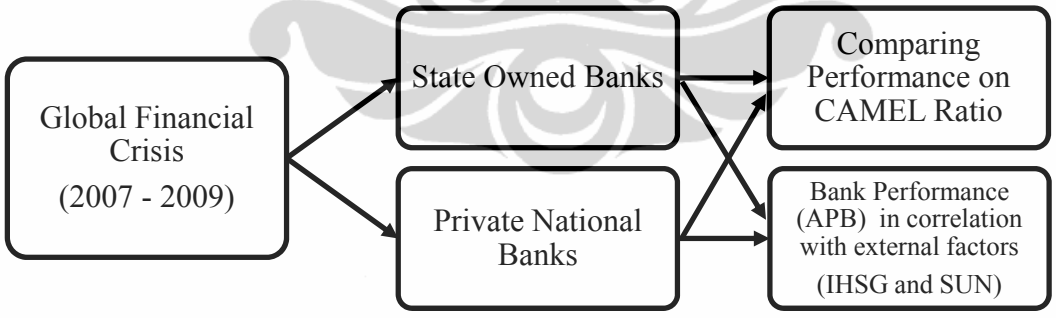

Figure 4.1 Research framework

4.2 Hypothesis Development

4.2.1 Comparing State Owned Banks and Private National Banks

As explained before that the global crisis in the financial sector during 2007 - 2009 related directly or indirectly with the various activities commonly conducted by

the financial sector industry, and the banking industry, which includes commercial banks and rural banks, continued to dominate the financial system in terms of assets with approximately an 80% share of total financial sector assets (Bank Indonesia, 2007 – 2009). In general, the ongoing global crisis that continues to overshadow the global financial sector directly or indirectly contributed detrimental impacts on the banking sector in Indonesia. State owned bank which consist of 4 banks and private national bank which consist of 117 banks were two major category in banking sector both contributed three-quarter of total bank asset during 2006 – 2009.

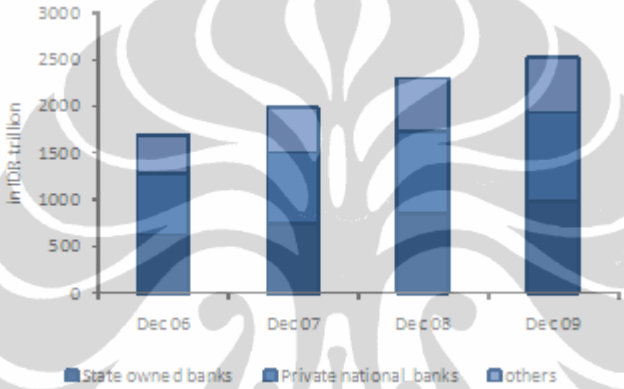

Figure 4.2 Indonesian banking asset growth

Source: Bank Indonesia

According to this assumption, the first research will be testing the hypothesis of :

$H0_A$: There is no significant different in state owned banks performance and private national banks performance in term of 11 CAMELS financial ratio (CAR, APYD, APB, NPL, PPAPAP, PPAP, ROA, ROE, NIM, BOPO, LDR)

And the alternative hypothesis will be:

$H1_A$: There is a significant different in state owned banks performance and private national banks performance in term of 11 CAMELS financial ratio (CAR, APYD, APB, NPL, PPAPAP, PPAP, ROA, ROE, NIM, BOPO, LDR)

4.2.2 Correlating Bank Performance in APB with SUN and IHSG

The second hypothesis was established from pressures on the stock market and domestic bonds market during semester II of 2008 which were more intense due

to the deteriorating global financial market turmoil. One impact of the crisis was a significant slide in the prices of government bonds in October. Nevertheless, by the end of 2008 bond prices had begun to rebound. Such developments dramatically affected the banks balance sheets as well as profit and loss statements because most banks used SUN in their portfolio of earning assets.

To curtail higher loss, on 9 October 2008, Bank Indonesia, the government (through the Capital Market and Financial Institution Supervisory Agency or BAPEPAMLK) and Indonesian Accountant Association issued a joint decree allowing banks to postpone the implementation of marking-to-market in setting a fair SUN value. In addition, banks were also permitted to shift SUN ownership from Trading and Available for Sale (AFS) to Hold to Maturity (HTM). This alleviated much of the pressure on the banks balance sheets and profit and loss statements; as indicated by the net unrealized loss on the balance sheet and net loss on the profit and loss statement, both of which decreased in December 2008 after spiking in October 2008.

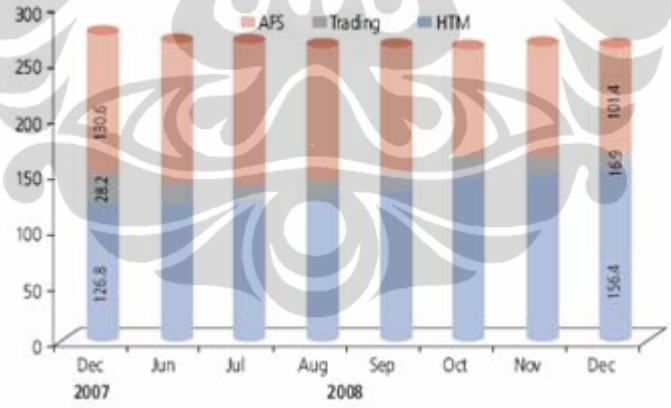

Figure 4.3 Performance of SUN owned by banks (in IDR trillion)

Source: Bank Indonesia and Ministry Of Finance

During semester II 2008, the global stock market was corrected downwards due to negative sentiment surrounding the bankruptcy of top investment banks and increasing reports of losses posted by international financial institutions. The Dow Jones plummeted 23% reaching its lowest level of 7,552.2 (mid November 2008).

The prospect of a deteriorating global economy and the expectations of a recession in the U.S. as well as several countries in Europe have seriously undermined the performance of Asian regional markets. Against this unpropitious backdrop, the JCI nose-dived 42.3% to 1,355.41 (December 2008), reaching its lowest of 1,111.39 on 28 October 2008. With such poor performance, the average JCI during semester II 2008 was approximately 1,723.06; much lower than the average for the previous semester of 2,485.47.

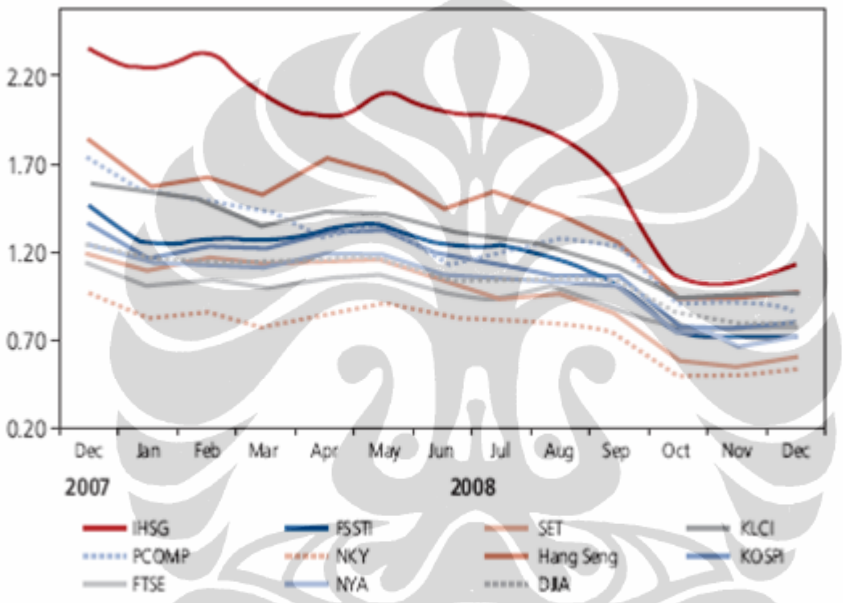

Figure 4.4 Performance of JCI, Global and Regional Index

Source: Bloomberg

Start with the information above the second research will test the hypothesis of:

$H0_B$: Presumably IHSG movement and Indonesia's Government Debts (SUN) can explain bank's performance through APB ratio

And the alternative hypothesis will be:

$H0_B$: Presumably IHSG movement and Indonesia's Government Debts (SUN) can't explain bank's performance through APB ratio

4.3 Research Model

The main idea of this research was to compared the performance between stated owned banks and private national banks during 2007 – 2009 (the crisis era for Indonesia). For the purposes, two main model were formed. The first model was to measured the performance between those two banks using 11 CAMELS ratios which were CAR, APB, NPL, PPAPAP, PPAP, ROA, ROE, NIM, BOPO, LDR and APYD. Those criteria was compared between those banks group to find the differences between them.

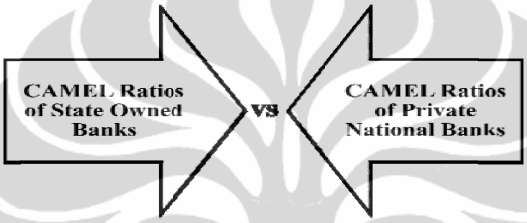

Figure 4.5 Comparison performance framework

After find the differences, the ratios of each banks group ratio were compared with the industry's (banking) ratios to find the gap of each group with the industry.

After calculate the gap between the industry ratios with each group, the ratios were ranked to measured scoring valuation. The group with the score higher than the industry was considered performed better compared with the less one.

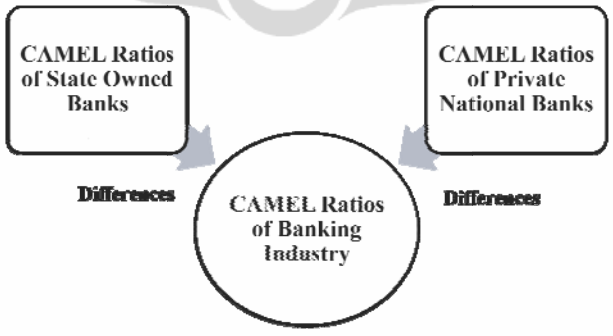

Figure 4.6 Scoring performance framework

After comparing the performance, the next model was to find the correlation between private national banks, state owned banks and industry performance with the external economic factors occured in 2007 – 2009. The performance of banks was represented by APB (Non performing earning asets) ratios with the assumption that this ratios include the proportion of non performing marketable securities assets. As explained before, the external economic factor was represented by balance of SUN (national government debt) balance and Jakarta Composite Index (IHSG).

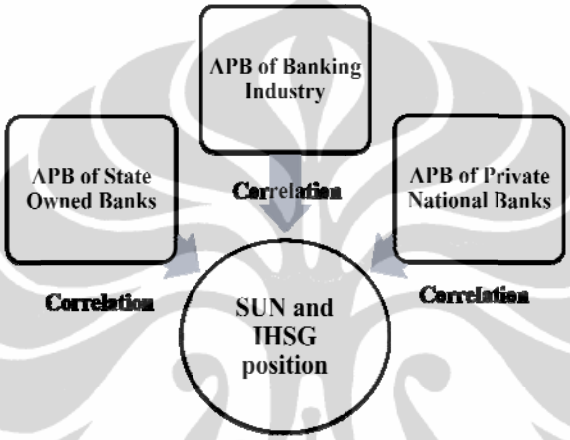

Figure 4.7 Industry comparison framework

Model 1

$$Score_{(banks)} = \beta + \beta_1 CAR + \beta_2 APB + \beta_3 NPL + \beta_4 PPAPAP + \beta_5 PPAP + \beta_6 ROA$$
$$\beta_7 ROE + \beta_8 NIM + \beta_9 BOPO + \beta_{10} LDR + \beta_{11} APYD + \varepsilon$$

Model 2

$$APB_{(banks)} = \beta + \beta_1 SUN + \beta_2\ IHSG + \varepsilon$$

- CAR (Capital Adequacy Ratio) is the ratio that shows how large the total assets of banks that contain risks (credit, investments, securities, bills of other banks) participate financed from owned capital beside funds from sources outside the bank.
- Classified Earning Assets to Total Earning Assets (APYD). This ratio measures the ability of bank management in determining the amount earning assets that do not, or have the potential to not provide a profit or could even incur a loss to total

earning assets. The higher this ratio, means higher risk for bank, so that the possibility of a bank under conditions problem will be even greater.

- Non Performing Earning Assets Ratio (APB). This ratio is to show management capability of banks in managing non performing assets to total earning assets. The higher this ratio means more worse quality of earning assets that are available that cause greater provision allowances. then the probability of a bank in error will increases. Earning assets are the assets with substandard, doubtful and loss.
- Non Performing Loans (NPL). This ratio is to show management capability of banks in managing non performing loans granted by banks. The higher this ratio means more worse quality of loans that are available that cause greater loan provision allowances. then the probability of a bank in error will increases. Non performing loans are the loans with substandard, doubtful and loss.
- PPAPAP ratio (Allowance for Earning Assets to Earning Assets). PPAPAP ratio indicates the ability of bank management in maintain the quality of earning assets so that the amount of provisioning can be managed with good. The bigger the ratio, means the possibility of a bank in problem increases. Coverage of earning assets and the provisioning component that has been formed in accordance with the provisions of the applicable Earning Assets Quality.
- PPAP compliance ratio. This ratio indicates the ability of bank management in determining the PPAP amount that has been formed PPAP amount shall be created. The greater this ratio, means higher the possibility of banks in problematic condition.
- ROA (Return on Assets). This ratio is used to measure the ability bank management in gain a profit (profit before tax) which generated from average total assets of the bank concerned. The greater the ROA, the greater the level of profit achieved by the bank so the possibility of a bank problematic conditions is less. Profit before tax is net income from operations before taxes.While the average total assets is the average volume of business or assets.

- ROE (Return on Equity). This ratio is used to measure performance manage the bank management in capital available to produce profit after tax. The greater the ROE, the greater the profit rate achieved by the bank so the possibility of a bank under problematic conditions is less. Profit after tax is net income from activities operations, net of taxes while the average total shareholders' equity is average core capital owned banks, the calculation of core capital is obligations under the provisions of the applicable minimum capital.
- NIM (Net Interest Margin). This ratio is used to measure the ability of bank management in managing earning assets to generate net interest income. Net interest income derived from interest income minus interest expenses. The greater this ratio will increase interest income on earning assets managed by the bank so the possibility of a bank in problematic conditions is less.
- BOPO (ratio of Operating Expenses to Operating Income). Ratio often called the efficiency ratio was used to measure the ability of bank management in controlling operating costs to operational revenue. The smaller this ratio the more efficient means of operational costs spent by banks, so the possibility of a bank in the problematic conditions is less. The operational cost is calculated based on the sum of total interest expense and total operating expenses. Operating income is the sum of total interest income and other operating income.
- LDR (Loan to Deposit Ratio). This ratio is used to assess liquidity of a bank by dividing the number of loans disbursed by banks to third-party funds. The higher this ratio, means less liquid in banks funds condition, so that the probability of a banks in error could be greater. Loans excluding loans to other banks, while for third-party funds are savings, current account, time deposits and certificates of deposit.

4.4 Variable Definition

a. Dependent variable used for the first model of valuation of banks was the score which was the calculation of scoring model. The dependent variable for

the second model was the APB (Non Performing Assets) ratios of state owned banks, private national banks and banking industry overall.

b. Independent variable used in this research were the 11 financial ratios of CAMELS, include :

CAR (Capital Adequacy Ratio) is the ratio that shows how large the total assets of banks that contain risks (credit, investments, securities, bills of other banks) participate financed from owned capital beside funds from sources outside the bank.

$$CAR = \frac{Capital}{Risk\ Weighted\ Assets} \times 100\% \quad (4.1)$$

Capital for the Bank with head office in Indonesia consists of:

- Core capital (tier 1);
- Supplementary capital (tier 2); and
- Additional supplementary capital (tier 3).

After taking into account certain factors that a reduction of capital referred to in Article 13 and Article 20 of Regulation No. 10/ 15/PBI/2008.

Capital for foreign bank branch office is Net Head Office Fund consisting of:

- Operating Funds (Net Inter Office Fund);
- Retained earnings and profit last year after removed the influence of the factors referred to in Article 10 paragraph (2) at No. PBI. 10/15/PBI/ 2008;
- Profit for the year amounted to 50% after removed the influence of the factors referred to in Article 10 paragraph (2) Regulation No. 10/15/PBI/ 2008;
- General reserves;
- Designated reserves;
- Revaluation of fixed assets in the scope and calculation referred to in Article 16 (1) letter c PBI No. 10/15/PBI/ 2008

- General reserve asset allowance (PPA) of productive assets in the calculation referred to in paragraph Article 16 paragraph (1) letter d PBI No. 10/15/ PBI/2008.

After taking into account certain factors that a reduction of capital components as provided for in Article 10 paragraph (1) letter b, Article 13 and Article 20 of Regulation No. 10/15/PBI/2008.

For Risk Weighted Average Assets (RWA) consist of:

- RWA for credit risk;
- RWA for operational risk;
- RWA for market risk.

Each Bank shall calculate RWA for credit risk and risk weighted assets for operational risk. RWA for market risk shall be calculated only by banks that meet certain criteria as stipulated in Article 25 Regulation No. 10/15/PBI/2008.

- Classified Earning Assets to Total Earning Assets (APYD). This ratio measures the ability of bank management in determining the amount earning assets that do not, or have the potential to not provide a profit or could even incur a loss to total earning assets.

$$APYD = \frac{Classified\ Earning\ Assets}{Total\ Earning\ Assets} \times 100\% \qquad (4.2)$$

Source: Bank Indonesia (pursuant to Circular Letter No. 6/23/DPNP dated May 31, 2004)

- Non Performing Earning Assets Ratio (APB). This ratio is to show management capability of banks in managing non performing assets to total earning assets. Non performing Assets includes earning assets that are sub-standard, doubtful and loss category.

$$APB = \frac{Non\ Performing\ Earning\ Assets}{Total\ Earning\ Assets} \times 100\% \quad (4.3)$$

Source: Bank Indonesia (pursuant to Circular Letter No. 6/23/DPNP dated May 31, 2004)

- Non Performing Loans (NPL). This ratio is to show management capability of banks in managing non performing loans granted by banks. Non performing Loans includes loans that are sub-standard, doubtful and loss category.

$$NPL = \frac{Non\ Performing\ Loans}{Total\ Loan} \times 100\% \quad (4.4)$$

Source: Bank Indonesia (pursuant to Circular Letter No. 6/23/DPNP dated May 31, 2004)

- PPAPAP ratio (Allowance for Earning Assets to Earning Assets). PPAPAP ratio indicates the ability of bank management in maintain the quality of earning assets so that the amount of provisioning can be managed with good.

$$PPAP = \frac{Earning\ Assets\ Provision\ Allowances\ Made}{Total\ Earning\ Assets} \times 100\% \quad (4.5)$$

Source: Bank Indonesia (pursuant to Circular Letter No. 6/23/DPNP dated May 31, 2004)

- PPAP compliance ratio. This ratio indicates the ability of bank management in determining the PPAP amount that has been formed PPAP amount shall be created.

$$PPAPAP = \frac{Earning\ Assets\ Provision\ Allowances\ Made}{Mandatory\ Earning\ Assets\ Provision\ Allowances} \times 100\% \qquad (4.6)$$

Source: Bank Indonesia (pursuant to Circular Letter No. 6/23/DPNP dated May 31, 2004)

- ROA (Return on Assets). This ratio is used to measure the ability bank management in gain a profit (profit before tax) which generated from average total assets of the bank concerned.

$$ROA = \frac{Profit\ Before\ Tax}{Average\ Total\ Assets} \times 100\% \qquad (4.7)$$

Source: Bank Indonesia (pursuant to Circular Letter No. 6/23/DPNP dated May 31, 2004)

- ROE (Return on Equity). This ratio is used to measure performance manage the bank management in capital available to produce profit after tax.

$$ROE = \frac{Net\ Income}{Average\ Total\ Equity} \times 100\% \qquad (4.8)$$

Source: Bank Indonesia (pursuant to Circular Letter No. 6/23/DPNP dated May 31, 2004)

- NIM (Net Interest Margin). This ratio is used to measure the ability of bank management in managing earning assets to generate net interest income. Net Interest Income = Interest Income minus Interest charges Annual net interest income is used for the calculation of NIM.

$$NIM = \frac{Net\ Interest\ Income}{Earning\ Assets} \times 100\% \quad (4.9)$$

Source: Bank Indonesia (pursuant to Circular Letter No. 6/23/DPNP dated May 31, 2004)

- BOPO (ratio of Operating Expenses to Operating Income). Ratio often called the efficiency ratio was used to measure the ability of bank management in controlling operating costs to operational revenue.

$$CER = \frac{Operating\ Expenses}{Total\ Income} \times 100\% \quad (4.10)$$

Source: Bank Indonesia (pursuant to Circular Letter No. 6/23/DPNP dated May 31, 2004)

- LDR (Loan to Deposit Ratio). This ratio is used to assess liquidity of a bank by dividing the number of loans disbursed by banks to third-party funds. Third Party Funds consist of Demand deposit, savings deposit and time deposits (not including interbank). Total Credit is total credit to third party and other bank. Collection of fund, consist of :
  - third party deposit
  - Bank Indonesia
  - ABP more than three months
  - Loan received with maturity of more than three months
  - Loan Capital

  (pursuant to Circular Letter No. 30/12/KEP/DIR dated April 30,1997 - on BPR)

$$LDR = \frac{Total\ Loans}{Total\ Third\ Party\ Funds} \times 100\% \quad (4.11)$$

Source: Bank Indonesia (pursuant to Circular Letter No. 6/23/DPNP dated May 31, 2004)

4.5 Statistical Analysis

To measures the analysis, some statistical tools were performed in this research. As explained before, there are two main model in this research, to compared the performance of stated owned bank and private national banks and to find the correlation between banks performance and external economic factor. Generally, there are several statistical tools used in this research, whereas:

4.5.1 Regression Analysis

In statistics, regression analysis includes any techniques for modeling and analyzing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables. More specifically, regression analysis helps us understand how the typical value of the dependent variable changes when any one of the independent variables is varied, while the other independent variables are held fixed. Most commonly, regression analysis estimates the conditional expectation of the dependent variable given the independent variables - that is, the average value of the dependent variable when the independent variables are held fixed. Less commonly, the focus is on a quantile, or other location parameter of the conditional distribution of the dependent variable given the independent variables. In all cases, the estimation target is a function of the independent variables called the regression function. In regression analysis, it is also of interest to characterize the variation of the dependent variable around the regression function, which can be described by a probability distribution.

4.5.2 Hypothesis Testing Of The Difference

When two samples are "dependent" (correlated or linked), then each data point in one sample can be associated in some natural, nonarbitrary way with each data point in the second sample. For example, one of the most common applications of

dependent samples is "pretest" vs. "posttest." A male sample and a female sample where each male has one sister in the female sample is another example.

4.5.2.1 Classical Assumption Test

Multiple linear regression model can be referred as a good model if the model meets the criterion of BLUE (Best Linear Unbiased Estimator). BLUE can be achieved when fulfilling the classical assumptions. At least there are four tests that must be performed on the assumption of a regression model, namely:

- *Normality Test*

  In statistics, normality tests are used to determine whether a data set is well-modeled by a normal distribution or not, or to compute how likely an underlying random variable is to be normally distributed. More precisely, they are a form of model selection, and can be interpreted several ways, depending on one's interpretations of probability:

  - In descriptive statistics terms, one measures a goodness of fit of a normal model to the data – if the fit is poor then the data is not well modeled in that respect by a normal distribution, without making a judgment on any underlying variable.
  - In frequentist statistics statistical hypothesis testing, one tests the data against the null hypothesis that it is normally distributed.
  - In Bayesian statistics, one does not "test normality" per se, but rather computes the likelihood that the data comes from a normal distribution with given parameters μ,σ (for all μ,σ), and compares that with the likelihood that the data comes from other distributions under consideration, most simply using Bayes factors (giving the relatively likelihood of seeing the data given different models), or more finely taking a prior distribution on possible models and parameters and computing a posterior distribution given the computed likelihoods.

  In the research, frequentist statistics statistical hypothesis testing is used with Kolmogorov – Smirnov normality test. The Kolmogorov-Smirnov test is used to

decide if a sample comes from a population with a specific distribution. An attractive feature of this test is that the distribution of the K-S test statistic itself does not depend on the underlying cumulative distribution function being tested. Another advantage is that it is an exact test (the chi-square goodness-of-fit test depends on an adequate sample size for the approximations to be valid). Despite these advantages, the K-S test has several important limitations:

- It only applies to continuous distributions.
- It tends to be more sensitive near the center of the distribution than at the tails.
- Perhaps the most serious limitation is that the distribution must be fully specified. That is, if location, scale, and shape parameters are estimated from the data, the critical region of the K-S test is no longer valid. It typically must be determined by simulation. The Kolmogorov-Smirnov test is defined by:

  H_0: The data follow a specified distribution

- *Autocorrelation Test*

Autocorrelation is the correlation between members of a series of observations sorted by time or space (Gujarati, 1999: 201). Guidance on number DW (Durbin-Watson) to detect the autocorrelation can be seen in Durbin Watson table, with the following decision:

- If the value of d is less than dl or higher than the 4-d_L, then there is significant autocorrelation;
- If the value of d is greater than or less than the $d_L - 4d_U$, means there is no autocorrelation;
- If the value of d is between du and dl or be between 4-d_U and 4-d_L, then expressed as the area can't be retrieved conclusions or hesitate

- *Multicollinearity Test*

Multicollinearity tests aim to examine whether the model of regress found a perfect correlation between independent variables. It shouldn't occur perfect correlation between independent variables in proper regression model. One way

to detect multicollinearity is by looking at tolerance or the variance inflation factor (VIF). If tolerance smaller than 0.1 or VIF values above 10, then multicollinearity exist.

- *Heteroskedasticity Test*

  In statistics, a sequence of random variables is heteroscedastic, or heteroskedastic, if the random variables have different variances. In contrast, a sequence of random variables is called homoscedastic if it has constant variance. The Glejser test attempts to determine whether as the independent variable increases in size, the variance of the observed dependent variable increases. This is done by regressing the error term of the predicted model against the independent variables. A high t-statistic for the estimated coefficient of the independent variable(s) would indicate the presence of heteroskedasticity.In this research, Glejser test is used which notated as follows:

$$|e| = b_1 + b_2 X_2 + \mathrm{v}$$

| e | : Absolute value of model regression residual

X_2 : Explanatory variables

4.5.2.2 Validity and Reliability Test

- *Validity Test*

  There are several types of validity that contribute to the overall validity of a study. The two main dimensions are Internal and External validity.

  - *Internal Validity*

    Is concerned with the degree of certainty that observed effects in an experiment are actually the result of the experimental treatment or condition (the cause), rather than intervening, extraneous or confounding variables. Internal validity is enhanced by increasing the control of these other variables.

  - *External Validity*

    Is concerned with the degree to which research findings can be applied to the real world, beyond the controlled setting of the research. This is the

issue of generalisability. Attempts to increase internal validity are likely to reduce external validity as the study is conducted in a manner that is increasingly unlike the real world.

Instrument is valid if the instrument is capable of measuring any measurement dimension, able to express what it wanted disclosed. the size of r variables each statement can be seen from the analysis program on the items total corrected column correlation.

- *Reliability Test*

  Reliability is the correlation between the observed variable and the true score when the variable is an inexact or imprecise indicator of the true score (Cohen and Cohen, 1983). Inexact measures may come from random inattentiveness, guessing, differential perception, recording errors, etc. On the part of the observers. These measurement errors are assumed to be random in classical test theory. Under such conditions, the reliability is the ratio of the true score to the observed score variance (Pedhazur and Schmelkin, 1991). In the event of inexact measurement, the correlation between two constructs is often corrected for attenuation (unreliability or imprecise measurement). The correction is computed by dividing the correlation between the measures by of the square root of the product of the reliabilities of the two variables. Reliability is a necessary but not a sufficient condition for validity (Pedhazur & Schmelkin, 1991). The question of measurement of reliability becomes important. Reliability test was conducted only on the general point is valid, which is obtained through the test of validity. Furthermore, to see the level of reliability of data, statistical program provides the facility to determine the reliability, the Cronbach Alpha.

4.6 Population and Samples

The population of this research are overall banks listed in Bank Indonesia directory, noted that the banking sector in Indonesia in 2007 - 2009 consists of commercial banks (124) and regional/local credit banks (1897). Data of commercial bank divided into state owned bank (5) and private national bank (119) in 2007 -

2009. In this research also take samples from population of SUN balance and IHSG index from 2007 – 2009.

Sampling method used is purposive sampling, where certain number of samples taken from emiten population with certain consideration or criteria (Sugiyono, 1999). Criteria of sample choosen are:

- Banks with monthly listed reports in Bank Indonesia directory from 2007 to 2009
- Banks classified as state owned bank with listed monthly reports in Bank Indonesia directory from 2007 to 2009
- Banks classified as private national bank with listed monthly reports in Bank Indonesia directory from 2007 to 2009
- SUN balance position monthly from 2007 to 2009 taken from Indonesia Financial and Economic Statistic reports issued by Bank Indonesia
- IHSG index position monthly from 2007 to 2009 taken from bloomberg related sites

CHAPTER 5
RESULT ANALYSIS

5.1 Research Samples Description

With the fulfillment of the sample criteria described in Chapter 4, the result for the total sample of 130 banks. Research using purposive sampling data by sample period during 2007 - 2009. The process of setting the sample shown in table 5.1 below:

Table 5.1 Banks Sample Description

Description	No of banks		
	2007	2008	2009
Total banks listed in Bank Indonesia directory	130	124	121
Total state owned banks listed in Bank Indonesia directory	5	5	4
Total private national banks listed in Bank Indonesia directory	35	35	34

5.2 Comparison In CAMELS Ratio Performance Between State Owned Banks and Private National Banks

In comparing CAMELS ratio performance between state owned banks and private national banks, 11 CAMELS ratio are classified into Capital, Asset, Earnings and Liquidity.

5.2.1 Capital

In capital, the ratio include are the ratio with quantitative assessment on the capital requirement. In this research CAR is considered in this group.

5.2.1.1 Descriptive Statistics

Descriptive statistics aimed at describing the operational characteristics of each variable. Based on descriptive statistics data, state owned banks CAR is higher at maximum compared with private national banks CAR during 2007 – 2009 with 23.0%. However, private national banks minimum CAR is still higher than state owned banks minimum CAR at 14.8%. On average, private national banks CAR is

17.7% or higher than state owned banks average CAR of 17.2% in period 2007 – 2009. Private national banks CAR considered relatively more stable than state owned banks CAR with standard deviation only 2.0%. Descriptive statistical results are presented in Table 5.2 as follows:

Table 5.2 Capital Descriptive Statistics

Variables	N	Minimum	Maximum	Mean	Std. Deviation
S-CAR	36	0.1280	0.2300	0.1720	0.0318
P-CAR	36	0.1480	0.2130	0.1766	0.0197

S-CAR is the CAR ratio of state owned banks during 2007-2009; P-CAR is the CAR ratio of private national banks during 2007-2009
Source: SPSS data output

5.2.1.2 Normality Test

To observe the normality of the data, this research is using Kolmogorov – Smirnov normality test. When the significant of the test is lower than α or 0.05, then the data is normally distributed. The H_0 hypothesis of Kolmogorov-Smirnov test is as follows:

H_0: The data follow a specified distribution

Table 5.3 Kolmogorov - Smirnov Test Output on Capital

Variables	Statistics	N	Sig.
S-CAR	0.209	36	0.000
P-CAR	0.178	36	0.005

Source : SPSS data output process

Based on the output of K-S test, the significant of both S-CAR and P-CAR were below α or 0.05, it means that the data were not normally distributed because H_0 was rejected and means the data are not follow specific distribution.

5.2.1.3 Hypothesis Of Difference Test

This test aims to test the difference between two mean of sample. Since the normality test data output were not normally distributed, then the nonparametric Wilcoxon test is used. The H_0 hypothesis of Wilcoxon test is as follows:

H_0 : There are no significant differences in paired CAR during 2007-2009 ($\theta = 0$)

By examining the final test statistics table above we can discover whether there is a different in paired data or not. It led overall to a statistically significant difference in CAR performance between state owned banks and private national banks. We are looking for the P value, which in this case is 0.108. This is the significance value for the test. In statistics, the Wilcoxon Signed Ranks Test is denoted by the test statistic t although we can report the Z statistic instead.

Table 5.4 Wilcoxon Sign Test Output on Capital

Variables	N	Z value	P value	H_0
Paired CAR (P and S)	36	-1.608[a]	0.108	Accepted

a = based on positive ranks of Wilcoxon test

Source : SPSS data output process

A Wilcoxon Signed Ranks Test showed that during the time frame from 2007 - 2009 there is no different in CAR ratio performance between state owned banks and private national banks (Z = -1.608, P = 0.108 (>0.05)) and H_0 was accepted.

Given the absence of differences in financial performance of the two groups of banks during 2007-2009 based on capital adecuacy which is indicated by the CAR, it can be said that these two groups of banks have the ability to more or less equally well in anticipating the needs of the availability of their own funds for business growth and bear the risk of losses in conducting business.

Thus, for potential customers who pay attention or priority to select the bank that has a decent number of CAR, the candidate customers can choose a bank from one group of the banks whether it is a private national banks or state owned banks.

5.2.2 Assets Quality

In assets quality, the ratio include are the ratio with quantitative assessment on the asstes quality. In this research APB, NPL, PPAPAP, PPAP and APYD are considered in this group.

5.2.2.1 Descriptive Statistics

Descriptive statistics aimed at describing the operational characteristics of each variable. Descriptive statistical results are presented in Table 5.5 as follows:

Table 5.5 Assets Quality Descriptive Statistics

Variables	N	Minimum	Maximum	Mean	Std. Deviation
S-APB	36	0.0220	0.0570	0.0377	0.0107
P-APB	36	0.0150	0.0300	0.0214	0.0051
S-NPL	36	0.0350	0.1110	0.0651	0.0247
P-NPL	36	0.0230	0.0390	0.0315	0.0055
S-PPAPAP	36	0.0270	0.0530	0.0426	0.0060
P-PPAPAP	36	0.0140	0.0300	0.0215	0.0054
S-PPAP	36	1.1360	4.8780	1.7648	0.8126
P-PPAP	36	1.0770	2.2300	1.3581	0.2408
S-APYD	36	0.0300	0.0690	0.0464	0.0111
P-APYD	36	0.0200	0.0340	0.0259	0.0049

S-APB is the APB ratio of state owned banks during 2007-2009; P-APB is the APB ratio of private national banks during 2007-2009; S-NPL is the NPL ratio of state owned banks during 2007-2009; P-NPL is the NPL ratio of private national banks during 2007-2009;S-PPAPAP is the PPAPAP ratio of state owned banks during 2007-2009; P-PPAPAP is the PPAPAP ratio of private national banks during 2007-2009; S-PPAP is the PPAP ratio of state owned banks during 2007-2009; P-PPAP is the PPAP ratio of private national banks during 2007-2009; S-APYD is the APYD ratio of state owned banks during 2007-2009; P-APYD is the APYD ratio of private national banks during 2007-2009;
Source : SPSS data output process

Based on descriptive statistics data, state owned banks APB is higher at maximum compared with private national banks APB during 2007 - 2009 with 5.7%. On average, private national banks APB is 2.1% or lower than state owned banks average APB of 3.8% in period 2007 – 2009. Private national banks APB considered relatively more stable than state owned banks APB with standard deviation only 2.0%. On NPL ratio, state owned banks NPL is higher at maximum compared with private national banks NPL during 2007 - 2009 with 11.1%. On average, private national banks NPL is 3.2% or lower than state owned banks average NPL of 6.5% in period of 2007 - 2009. Private national banks NPL considered relatively more stable than state owned banks NPL with standard deviation only 0.6%. On PPAPAP ratio,

state owned banks PPAPAP is higher at maximum compared with private national banks PPAPAP during 2007 - 2009 with 5.3%. On average, private national banks PPAPAP is 4.3% or higher than state owned banks average PPAPAP of 2.2% in period of 2007 - 2009. Private national banks PPAPAP considered relatively more stable than state owned banks PPAPAP with standard deviation only 0.5%. On PPAP ratio, state owned banks PPAP is higher at maximum compared with private national banks PPAP during 2007 - 2009 with 487.8%. On average, private national banks PPAP is 135.8% or lower than state owned banks average PPAP of 176.5% in period of 2007 - 2009. However, private national banks PPAP considered relatively more stable than state owned banks PPAP with standard deviation only 24.1%. On APYD ratio, state owned banks APYD is higher at maximum compared with private national banks APYD during 2007 - 2009 with 6.9%. On average, private national banks APYD is 2.6% or lower than state owned banks average APYD of 4.6% in period of 2007 - 2009. Indeed, private national banks APYD considered relatively more stable than state owned banks APYD with standard deviation only 0.5%.

5.2.2.2 Normality Test

To observe the normality of the data, this research is using Kolmogorov – Smirnov normality test.

Table 5.6 Kolmogorov - Smirnov Test Output on Asset Quality

Variables	Statistics	N	Sig.
S-APB	0.2470	36	0.0000
P-APB	0.1700	36	0.0100
S-NPL	0.2400	36	0.0000
P-NPL	0.2100	36	0.0000
S-PPAPAP	0.1810	36	0.0040
P-PPAPAP	0.2890	36	0.0000
S-PPAP	0.2840	36	0.0000
P-PPAP	0.2310	36	0.0000
S-APYD	0.2440	36	0.0000
P-APYD	0.1570	36	0.0250

Source : SPSS data output process

When the significant of the test is lower than α or 0.05, then the data is normally distributed. The H_0 hypothesis of Kolmogorov-Smirnov test is as follows:

H_0: The data follow a specified distribution

Based on the output of K-S test, the significant of both all paired data were below α or 0.05, it means that the data were not normally distributed because H_0 was rejected and means the data are not follow specific distribution.

5.2.2.3 Hypothesis Of Difference Test

This test aims to test the difference between two mean of sample. Since the normality test data output were not normally distributed, then the nonparametric Wilcoxon test is used. The H_0 hypothesis of Wilcoxon test is as follows:

H_{0a} : There are no significant differences in paired APB during 2007-2009 ($\theta = 0$)

H_{0b} : There are no significant differences in paired NPL during 2007-2009 ($\theta = 0$)

H_{0c} : There are no significant differences in paired PPAPAP during 2007-2009 ($\theta=0$)

H_{0d} : There are no significant differences in paired PPAP during 2007-2009 ($\theta = 0$)

H_{0e} : There are no significant differences in paired APYD during 2007-2009 ($\theta = 0$)

The output of Wolcoxon test is as follows:

Table 5.7 Wilcoxon Sign Test Output on Asset Quality

Variables	N	Z value	P value	H_0
Paired APB (P and S)	36	-5.121[b]	0.0000	Rejected
Paired NPL (P and S)	36	-5.233[b]	0.0000	Rejected
Paired PPAPAP (P and S)	36	-5.235[b]	0.0000	Rejected
Paired PPAP (P and S)	36	-3.064[b]	0.0000	Rejected
Paired APYD (P and S)	36	-5.234[b]	0.0000	Rejected

b = based on positive ranks of Wilcoxon test

Source : SPSS data output process

By examining the final test statistics table above we can discover whether there is a different in paired data or not. It led overall to a statistically significant difference in APB, NPL, PPAPAP, PPAP and APYD performance between state owned banks and private national banks. We are looking for the P value, which in

this case is 0.000 in all paired ratio. This is the significance value for the test. In statistics, the Wilcoxon Signed Ranks Test is denoted by the test statistic t although we can report the Z statistic instead.

A Wilcoxon Signed Ranks Test showed that during the time frame from 2007 - 2009 there is a significant different in APB, NPL, PPAPAP, PPAP and APYD ratio performance between state owned banks and private national banks because the P value of all ratio is lower than 0.05 or H_0 were rejected.

The differences in assets quality performances indicated that assets quality of each banks were unique, each banks has it own strategy to enhance the assets quality performance. Assets Quality have an effect on the level of profitability due to investments made by banks is on productive assets, so the firm should be retained in the current circumstances. The better the quality of productive assets of a bank, the smaller the non performing loans at these banks end to the better the overall profitability. From the mean distribution of assets quality consist of NPL, APB, APYD of sate owned banks were higher compared to private national banks, this was due to higher exposure on risk of state owned banks especially on credit risk exposure, since the total loan disbursed by state owned banks takes the majority in total Indonesia banks loan disbursed during 2007-2009. However, state owned banks minimize the credit risk exposure better than private national banks with higher mean on PPAPAP and PPAP to maintain the assets quality during 2007-2009.

5.2.3 Earnings

In earnings, the ratio include are the ratio with quantitative assessment on the profitability. In this research ROA, ROE, NIM, and BOPO are considered in this group.

5.2.3.1 Descriptive Statistics

Descriptive statistics aimed at describing the operational characteristics of each variable. Descriptive statistical results are presented in Table 5.8 as follows:

Based on descriptive statistics data, state owned banks ROA is slightly higher at maximum compared with private national banks ROA during 2007 - 2009 with 3.0%. On average, private national banks ROA is 2.3% or lower than state owned banks average ROA of 2.7% in period 2007 - 2009.

Table 5.8 Earnings Descriptive Statistics

Variables	N	Minimum	Maximum	Mean	Std. Deviation
S-ROA	36	0.0200	0.0300	0.0273	0.0019
P-ROA	36	0.0130	0.0290	0.0229	0.0028
S-ROE	36	0.1780	0.2560	0.2088	0.0221
P-ROE	36	0.0600	0.2010	0.1701	0.0216
S-NIM	36	0.0570	0.0660	0.0602	0.0018
P-NIM	36	0.0520	0.0570	0.0546	0.0015
S-BOPO	36	0.8700	1.5000	0.9587	0.1175
P-BOPO	36	0.8040	0.9560	0.8581	0.0435

S-ROA is the ROA ratio of state owned banks during 2007-2009; P-ROA is the ROA ratio of private national banks during 2007-2009; S-ROE is the ROE ratio of state owned banks during 2007-2009; P-ROE is the ROE ratio of private national banks during 2007-2009;S-NIM is the NIM ratio of state owned banks during 2007-2009; P-NIM is the NIM ratio of private national banks during 2007-2009; S-BOPO is the BOPO ratio of state owned banks during 2007-2009; P-BOPO is the BOPO ratio of private national banks during 2007-2009;
Source : SPSS data output process

State owned banks ROA considered relatively more stable than state owned banks ROA with standard deviation only 0.2%. On ROE, state owned banks ROE is higher at maximum compared with private national banks ROE during 2007 - 2009 with 25.6%. On average, private national banks ROE is 17.0% or lower than state owned banks average ROE of 20.9% in period of 2007 - 2009. Private national banks ROE considered same in stability with state owned banks ROE with standard deviation of 2.2%. On NIM ratio, state owned banks NIM is higher at maximum compared with private national banks NIM during 2007 - 2009 with 6.6%. On average, private national banks NIM is 5.5% or lower than state owned banks average NIM of 6.0% in period of 2007 - 2009. Private national banks NIM considered same in stability with state owned banks NIM with standard deviation of 0.2%. On BOPO ratio, state owned banks BOPO is higher at maximum compared with private national banks BOPO during 2007 - 2009 with 150.0%. On average, private national banks

BOPO is 85.8% or lower than state owned banks average BOPO of 95.9% in period of 2007 - 2009. However, private national banks BOPO considered relatively more stable than state owned banks BOPO with standard deviation only 4.4%.

5. 2. 3. 2 Normality Test

To observe the normality of the data, this research is using Kolmogorov – Smirnov normality test. When the significant of the test is lower than α or 0.05, then the data is normally distributed. The H_0 hypothesis of Kolmogorov-Smirnov test is as follows:

H_0: The data follow a specified distribution

Table 5.9 Kolmogorov - Smirnov Test Output

Variables	Statistics	N	Sig.
S-ROA	0.3480	36	0.0000
P-ROA	0.1230	36	0.1900
S-ROE	0.1930	36	0.0020
P-ROE	0.3220	36	0.0000
S-NIM	0.1390	36	0.0760
P-NIM	0.2160	36	0.0000
S-BOPO	0.2790	36	0.0000
P-BOPO	0.1300	36	0.1280

Source : SPSS data output process

Based on the output of K-S test, the significant of P-BOPO, P-ROA and S-NIM were above 0.05, means the data were normally distributed. While the other variables were below 0.05, means the data weren't normally distributed. Since the variables condition were paired than for the paired data the H_0 are considered rejected and means the data are not follow specific distribution.

5.2.3.3 Hypothesis Of Difference Test

This test aims to test the difference between two mean of sample. Since the normality test data output were not normally distributed, then the nonparametric Wilcoxon test is used. The H_0 hypothesis of Wilcoxon test is as follows:

H_{0f} : There are no significant differences in paired ROA during 2007-2009 ($\theta = 0$)

H_{0g} : There are no significant differences in paired ROE during 2007-2009 ($\theta = 0$)

H_{0h} : There are no significant differences in paired NIM during 2007-2009 ($\theta = 0$)

H_{0i} : There are no significant differences in paired BOPO during 2007-2009 ($\theta = 0$)

The output of Wolcoxon test is as follows:

Table 5.10 Wilcoxon Sign Test Output

Variables	N	Z value	P value	H_0
Paired ROA (P and S)	36	-5.173[b]	0.0000	Rejected
Paired ROE (P and S)	36	-5.013[b]	0.0000	Rejected
Paired NIM (P and S)	36	-5.244[b]	0.0000	Rejected
Paired BOPO (P and S)	36	-5.078[b]	0.0000	Rejected

b = based on positive ranks of Wilcoxon test

Source : SPSS data output process

By examining the final test statistics table above we can discover whether there is a different in paired data or not. It led overall to a statistically significant difference in ROA, ROE, NIM and BOPO performance between state owned banks and private national banks. We are looking for the P value, which in this case is 0.000 in all paired ratio. This is the significance value for the test. In statistics, the Wilcoxon Signed Ranks Test is denoted by the test statistic t although we can report the Z statistic instead.

A Wilcoxon Signed Ranks Test showed that during the time frame from 2007 - 2009 there is a significant different in ROA, ROE, NIM and BOPO ratio performance between state owned banks and private national banks because the P value of all ratio is lower than 0.05 or H_0 were rejected.

Profitability is important aspect of the operational of the banks and it will be different on strategy in each banks to be more profitable than others. By brief analysis, the customers or investors will see on these variables to set their investments actions. By the mean distributions, state owned banks profitability ratios were higher compared to private national banks. This condition become possible since the assets

of state owned banks drive the majority of the Indonesia banks total assets during 2007-2009.

5.2.4 Liquidity

In liquidity, the ratio include are the ratio with quantitative assessment on the liquidity position. In this research LDR is considered in this group.

5.2.4.1 Descriptive Statistics

Descriptive statistics aimed at describing the operational characteristics of each variable. Descriptive statistical results are presented in Table 5.11 as follows:

Table 5.11 Capital Descriptive Statistics

Variables	N	Minimum	Maximum	Mean	Std. Deviation
P-LDR	36	0.5830	0.7760	0.6915	0.0518
S-LDR	36	0.5900	0.7900	0.6926	0.0598

S-LDR is the LDR ratio of state owned banks during 2007-2009; P-LDR is the LDR ratio of private national banks during 2007-2009
Source : SPSS data output process

Based on descriptive statistics data, state owned banks LDR is higher at maximum compared with private national banks LDR during 2007 – 2009 with 79.0%. Beside that, private national banks minimum LDR also lower than state owned banks minimum LDR. On average, private national banks LDR is 69.2% or slightly higher than state owned banks average LDR of 69.3% in period 2007 – 2009. Private national banks LDR considered relatively more stable than state owned banks LDR with standard deviation only 5.2%.

5.2.4.2 Normality Test

To observe the normality of the data, this research is using Kolmogorov – Smirnov normality test. When the significant of the test is lower than α or 0.05, then the data is normally distributed. The H_0 hypothesis of Kolmogorov-Smirnov test is as follows:

H_0: The data follow a specified distribution

Table 5.12 Kolmogorov - Smirnov Test Output on Liquidity

Variables	Statistics	N	Sig.
P-LDR	0.1760	36	0.0060
S-LDR	0.1560	36	0.0270

Source : SPSS data output process

Based on the output of K-S test, the significant of both S-LDR and P-LDR were below α or 0.05, it means that the data were not normally distributed because H_0 was rejected and means the data are not follow specific distribution.

5.2.4.3 Hypothesis Of Difference Test

This test aims to test the difference between two mean of sample. Since the normality test data output were not normally distributed, then the nonparametric Wilcoxon test is used. The H_0 hypothesis of Wilcoxon test is as follows:

H_0 : There are no significant differences in paired LDR during 2007-2009 ($\theta = 0$)

The output of Wolcoxon test is as follows:

Table 5.13 Wilcoxon Sign Test Output on Liquidity

Variables	N	Z value	P value	H_0
Paired LDR (P and S)	36	-0.189[a]	0.8500	Accepted

a = based on positive ranks of Wilcoxon test

Source : SPSS data output process

By examining the final test statistics table above we can discover whether there is a different in paired data or not. It led overall to a statistically significant difference in LDR performance between state owned banks and private national banks. We are looking for the P value, which in this case is 0.85. This is the significance value for the test. In statistics, the Wilcoxon Signed Ranks Test is denoted by the test statistic t although we can report the Z statistic instead.

A Wilcoxon Signed Ranks Test showed that during the time frame from 2007 - 2009 there is no different in LDR ratio performance between state owned banks and private national banks (Z = -0.189, P = 0.850) and H_0 was accepted.

Given the absence of differences in financial performance of the two groups of banks based on liquidity which is indicated by the LDR, it can be said that these two groups of banks have the ability to more or less equally well in anticipating the liquidity of their own funds for business growth and bear the risk of losses in conducting business.

Thus, for potential customers who pay attention or priority to select the bank that has a decent number of LDR, the candidate customers can choose a bank from one group of the banks whether it is a private national banks or state owned banks.

5.2.5 Scoring Performance Between State Owned Banks and Private National Banks

After finding the difference in CAMELS ratio performance between state owned banks and private national banks, to observe which sector perform better, assessment of the performance can be evaluated by scoring. In this research, scoring performance of state owned banks and private national banks are relative to overall banking industry. All the CAMELS ratio are compared with overall banking ratio. This comparison will create new variables consist of difference between state owned banks and industry and the difference between private national banks and industry.

Table 5.14 Variables description

Variables	Description
Sd	Difference between state owned banks and industry
Pd	Difference between private national banks and industry

5.2.5.1 Descriptive Statistics

Descriptive statistics aimed at describing the operational characteristics of each variable. Descriptive statistical results are presented in Table 5.15 as follows:

Table 5.15 Banks Descriptive Statistics

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Sd-CAR	36	-0.0449	0.0170	-0.0191	0.0140
Sd-APB	36	-0.0012	0.0238	0.0109	0.0079
Sd-NPL	36	0.0015	0.0485	0.0215	0.0153
Sd-PPAPAP	36	0.0051	0.0367	0.0139	0.0061

Table 5.15 Banks Descriptive Statistics (continue)

Sd-PPAP	36	-0.0742	2.9303	0.3177	0.5970
Sd-ROA	36	-0.0047	0.0039	-0.0003	0.0017
Sd-ROE	36	-0.0301	0.0569	0.0163	0.0146
Sd-NIM	36	0.0006	0.0052	0.0036	0.0010
Sd-BOPO	36	0.0133	0.4746	0.0865	0.0798
Sd-LDR	36	-0.0431	0.0159	-0.0109	0.0156
Sd-APYD	36	0.0020	0.0280	0.0138	0.0077
Pd-CAR	36	-0.0310	-0.0029	-0.0144	0.0059
Pd-APB	36	-0.0120	0.0017	-0.0054	0.0049
Pd-NPL	36	-0.0238	-0.0030	-0.0121	0.0073
Pd-PPAPAP	36	-0.0138	0.0119	-0.0073	0.0052
Pd-PPAP	36	-0.7517	0.6547	-0.0890	0.2680
Pd-ROA	36	-0.0108	-0.0020	-0.0047	0.0019
Pd-ROE	36	-0.0829	-0.0018	-0.0224	0.0182
Pd-NIM	36	-0.0042	0.0014	-0.0020	0.0017
Pd-BOPO	36	-0.2060	0.0517	-0.0142	0.0432
Pd-LDR	36	-0.0394	0.0088	-0.0121	0.0148
Pd-APYD	36	-0.0149	0.0005	-0.0069	0.0053
CAR	36	0.1700	0.2300	0.1911	0.0202
APB	36	0.0200	0.0300	0.0268	0.0039
NPL	36	0.0300	0.0600	0.0436	0.0100
PPAPAP	36	0.0000	0.0300	0.0289	0.0053
PPAP	36	1.1300	2.4400	1.4471	0.2552
ROA	36	0.0200	0.0300	0.0276	0.0019
ROE	36	0.1400	0.2300	0.1926	0.0172
NIM	36	0.0500	0.0600	0.0567	0.0013
BOPO	36	0.8300	1.0300	0.8723	0.0453
LDR	36	0.6100	0.7900	0.7036	0.0539
APYD	36	0.0300	0.0400	0.0327	0.0043

Source : SPSS data output

5.2.5.2 Normality Test

To observe the normality of the data, this research is using Kolmogorov – Smirnov normality test. When the significant of the test is lower than α or 0.05, then the data is normally distributed.

Table 5.16 Kolmogorov - Smirnov Test Output State Owned Banks - Industry

Variables	Statistics	N	Sig.
Sd-CAR	0.0840	36	0.2000
Sd-APB	0.1410	36	0.0690
Sd-NPL	0.1830	36	0.0040
Sd-PPAPAP	0.1470	36	0.0490
Sd-PPAP	0.2610	36	0.0000
Sd-ROA	0.1660	36	0.0140
Sd-ROE	0.1720	36	0.0090
Sd-NIM	0.1180	36	0.2000
Sd-BOPO	0.2840	36	0.0000
Sd-LDR	0.0920	36	0.2000
Sd-APYD	0.1330	36	0.1080

Source : SPSS data output

Table 5.17 Kolmogorov - Smirnov Test Output Private National Banks-Industry

Variables	Statistics	N	Sig.
Pd-CAR	0.1230	36	0.1840
Pd-APB	0.2170	36	0.0000
Pd-NPL	0.1960	36	0.0010
Pd-PPAPAP	0.1750	36	0.0070
Pd-PPAP	0.1290	36	0.1370
Pd-ROA	0.2040	36	0.0010
Pd-ROE	0.2010	36	0.0010
Pd-NIM	0.1530	36	0.0320
Pd-BOPO	0.1980	36	0.0010
Pd-LDR	0.1580	36	0.0240
Pd-APYD	0.1880	36	0.0030

Source : SPSS data output

Table 5.18 Kolmogorov - Smirnov Test Output of Banking Industry

Variables	Statistics	N	Sig.
CAR	0.2110	36	0.0000
APB	0.1510	36	0.0370
NPL	0.2560	36	0.0000
PPAPAP	0.2750	36	0.0000
PPAP	0.1820	36	0.0040
ROA	0.2030	36	0.0010

Table 5.18 Kolmogorov - Smirnov Test Output of Banking Industry (continue)

Variables	Statistics	N	Sig.
ROE	0.1330	36	0.1100
NIM	0.1570	36	0.0240
BOPO	0.2290	36	0.0000
LDR	0.2300	36	0.0000
APYD	0.1960	36	0.0010

Source : SPSS data output

Based on the output of K-S test, the significant of both Sd-CAR and Pd-CAR were above α or 0.05, it means that the data were not normally distributed because H_0 was rejected. While for the other paired data the significant were mostly below α or 0.05, means that the data were normally distributed.

5.2.5.3 Validity And Reliability Analysis

To make scoring measurement, all the industry's ratio in time series from 2007-2009 were scaled in new 5 range f value, from minimum to maximum value. The minimum value of the range scored 1 until 5 for the maximum value. The output were describes in Table 5.19 below.

Table 5.19 Performance Scaling

Year	Month	CAR	APB	NPL	PPAPAP	PPAP	ROA	ROE	NIM	BOPO	LDR	APYD
2007	Jan	5	5	5	5	1	5	4	5	5	1	5
	Feb	5	5	5	5	1	4	3	4	3	1	5
	Mar	5	5	5	5	2	4	3	4	2	1	5
	Apr	5	5	5	5	1	3	3	4	1	1	5
	May	5	5	5	5	1	4	3	4	1	1	5
	Jun	4	5	5	5	1	3	3	3	1	1	5
	Jul	4	5	5	5	1	3	3	4	1	1	5
	Aug	4	5	5	5	1	3	3	3	1	1	5
	Sep	4	4	4	4	5	3	3	3	1	2	3
	Oct	3	4	4	5	2	3	3	3	1	2	3
	Nov	3	3	3	5	1	3	3	3	1	2	3
	Dec	3	2	2	4	4	3	2	3	1	2	2

Table 5.19 Performance Scaling (continue)

Year	Month	CAR	APB	NPL	PPAPAP	PPAP	ROA	ROE	NIM	BOPO	LDR	APYD
2008	Jan	4	2	2	4	1	5	5	3	2	2	2
	Feb	4	2	2	4	1	3	4	2	1	3	2
	Mar	4	1	1	1	2	2	3	2	1	3	1
	Apr	3	2	2	4	4	2	2	2	1	4	2
	May	2	1	1	4	1	2	2	2	1	4	2
	Jun	1	1	1	4	1	2	3	3	1	4	1
	Jul	1	1	1	4	2	2	3	3	1	5	1
	Aug	1	1	1	5	2	2	3	3	1	5	1
	Sep	1	1	1	4	2	2	3	3	1	5	1
	Oct	1	1	1	4	1	2	3	3	1	5	1
	Nov	1	1	1	5	1	2	2	3	1	5	2
2009	Jan	1	3	1	5	1	2	5	2	5	4	3
	Feb	2	3	1	5	2	2	5	1	4	4	3
	Mar	2	3	2	5	2	3	5	2	2	4	3
	Apr	1	3	2	5	2	2	5	2	2	4	3
	May	1	3	2	5	1	2	4	2	2	4	3
	Jun	2	3	2	5	1	2	4	2	2	4	3
	Jul	1	3	2	5	3	2	4	2	2	4	3
	Aug	1	3	2	5	3	2	4	2	2	4	3
	Sep	1	3	2	5	1	2	4	1	2	4	3
	Oct	1	3	2	5	1	2	4	2	1	4	3
	Nov	1	3	2	5	1	2	4	2	1	4	3
	Dec	1	1	1	5	2	2	4	2	1	4	1

Source : SPSS data output

After classified as new range, the validity analysis of the data has to perform to validate the predictors of the scoring model. From the validity test, the output was presented in Table 5.19 below.

Since the validity of PPAPAP, PPAP, ROE, BOPO and LDR from the results are not valid, then predictors used to model scoring are CAR, APB, NPL, ROA, NIM and APYD. For the reliability test, the results are present in Table 5.20 below.

Table 5.20 Validity Test Results

Variables	Corrected Item-Total Correlation	r Table	Validity
CAR	0.556	0.419	Valid
APB	0.887	0.419	Valid
NPL	0.804	0.419	Valid
PPAPAP	0.352	0.419	Not Valid
PPAP	-0.242	0.419	Not Valid
ROA	0.682	0.419	Valid
ROE	0.061	0.419	Not Valid
NIM	0.451	0.419	Valid
BOPO	0.282	0.419	Not Valid
LDR	-0.865	0.419	Not Valid
APYD	0.854	0.419	Valid

Source : SPSS data output

Table 5.21 Reliability Test Results

Cronbach's Alpha	N of Items
0.928	6

Source : SPSS data output

Since the Cronbach's Alpha is 0.928, based on criteria (Imam Ghozali, 2002) this value is higher than 0.6, means the scoring criteria have an acceptable reliability level or can be trusted.

5.2.5.4 Regression Analysis

Regression Analysis performed with the Goodness of Fit Test. This test is to test how much the ability of the independent variables together in explaining the dependent variable in the regression model. This is shown by the coefficient of multiple determination (R^2) as well as simultaneous testing of regression coefficients (test-F).

R^2 value of 0.988 means that the testing model is used where the independent variables such as CAR, PPAPAP, NIM, BOPO and APYD can affect the Score of 98.8%. So that it can be said that the independent variables used in this regression

jointly dependent variables can explain 99% and the rest 1% influenced by other variables not included in the regression model variables. Probability value F-stat significant at 95% confidence level (α = 5%). Based on these values is said regression model used in this test is good enough.

From the regression analysis output showed that;

Table 5.22 Regression Analysis Output on Score

$$Z_{(score)} = -14.686 + 19.948CAR + 15.13PPAPAP + 165.688NIM - 1.477BOPO + 153.304APYD$$

Variables	Regression coefficients	t-statistics	Sig.
Constants	-14.686	-11.414	0.000***
CAR	19.948	7.862	0.000***
PPAPAP	15.130	2.424	0.022**
NIM	165.688	6.968	0.000***
BOPO	-1.477	-2.781	0.009***
APYD/AP	153.304	12.597	0.000***
Observation	36		
R^2	0.988		
F-statistics	485.090		
Sig (F-stat)	0.000***		

*** Correlation is significant at the 1% (1-tailed)
** Correlation is significant at the 5% (1-tailed)
Source : SPSS data output

5.2.5.5 Classical Assumption Test

- *Normality Test*

Based on the output of K-S test, the significant of all variables was below α or 0.05, it means that the data were normally distributed because H_0 was accepted. While for the other paired data the significant were mostly below α or 0.05, means that the data were normally distributed.

Table 5.23 Normality Analysis Output on Score

Variables	Statistics	N	Sig.
CAR	0.2110	36	0.0000
APB	0.1510	36	0.0370
NPL	0.2560	36	0.0000
ROA	0.2030	36	0.0010
NIM	0.1570	36	0.0240
APYD	0.1960	36	0.0010

Source : SPSS data output

- *Multicollinearity Test*

Multicollinearity problems occur when there is perfect linear relationship or a near-perfect among the independent variables. This should be avoided in regression testing. The test results of non multicolinearity assumption can be presented in Table below.

Table 5.24 Multicollinearity Analysis Output on Score

Model	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
CAR	0.201	4.979
PPAPAP	0.464	2.157
NIM	0.513	1.95
BOPO	0.902	1.108
APYD/AP	0.207	4.82
Dependent Variable: Score		

Source : SPSS data output

Multicollinearity test is done by examining the value of tolerance and inflation factor (VIF). Hair et al, (1992) cited from Priyanto (2009) states that a variable with tolerance values smaller than 0.1 and VIF values greater than 10 resulted in multicollinearity. Table 5.24 shows the value of tolerance all the independent variables more than 0.1 and VIF value all less than 10 independent variables. Therefore we can conclude there is no multicollinearity problem among the independent variables.

- *Autocorrelation Test*

Table 5.25 Autocorrelation Analysis Output on Score

Model	Durbin-Watson	d_L	d_U	4-d_L	4-d_U	H_0
Score	2.112	1.175	1.799	2.825	2.201	accepted (no autocorrelation)

Source : SPSS data output

From Durbin Watson test, there is no autocorrelation exist between the independent variables since the Durbin Watson number is between d_U and 4-d_U or the H_0 is accepted.

- *Heteroscedasticity Test*

Table 5.26 Heteroscedaticity Test Output on Score

Model		Unstandardized Coefficients		T	Sig.
		B	Std. Error		
1	(Constant)	8.71E-16	1.287	0.000	1.000
	CAR	0.000	2.537	0.000	1.000
	PPAPAP	0.000	6.241	0.000	1.000
	NIM	0.000	23.778	0.000	1.000
	BOPO	0.000	0.531	0.000	1.000
	APYD/AP	0.000	12.169	0.000	1.000
Dependent Variable: Unstandardized Residual					

Source : SPSS data output

The Glejser test attempts to determine whether as the independent variable increases in size, the variance of the observed dependent variable increases. This is done by regressing the error term of the predicted model against the independent variables. From the test the significance level were 1.000 > 0.05. A high t-statistic for the estimated coefficient of the independent variable(s) would indicate the presence of heteroscedasticity, since the t-statistic value were 0.000 the model has no problem of heteroscedasticity.

5.2.5.6 Scoring Comparison

After the predictors and the model were accepted, to compare the score performance of the banks, we have to decide the cutoff, upper limit and lower limit value of the industry model. This value were derived from the difference between average valid predictors and actual fit score from the model. The value were as follows:

Table 5.27 Score Deviation

Year	Month	Average Predictors Score	Fitted Score	Deviation
2007	Jan	5.0000	4.9815	0.0185
	Feb	4.6667	4.9160	-0.2490
	Mar	4.6667	4.6242	0.0428
	Apr	4.5000	4.6343	-0.1343
	May	4.6667	4.5505	0.1165
	Jun	4.1667	4.2402	-0.0732
	Jul	4.3333	4.1771	0.1559
	Aug	4.1667	4.0393	0.1277
	Sep	3.5000	3.4832	0.0168
	Oct	3.3333	3.2403	0.0927
	Nov	3.0000	3.0680	-0.0680
	Dec	2.5000	2.4125	0.0875
2008	Jan	3.0000	2.8512	0.1488
	Feb	2.5000	2.5434	-0.0434
	Mar	1.8333	1.8852	-0.0522
	Apr	2.1667	2.1262	0.0408
	May	1.6667	1.8567	-0.1897
	Jun	1.5000	1.4386	0.0614
	Jul	1.5000	1.5914	-0.0914
	Aug	1.5000	1.7120	-0.2120
	Sep	1.5000	1.5020	-0.0020
	Oct	1.5000	1.2347	0.2653
	Nov	1.6667	1.6472	0.0198
	Dec	1.6667	1.6816	-0.0146

Table 5.27 Score Deviation (continue)

2009	Jan	2.0000	2.0435	-0.0435
	Feb	2.0000	1.8619	0.1382
	Mar	2.5000	2.2518	0.2482
	Apr	2.1667	2.2064	-0.0394
	May	2.1667	2.2769	-0.1099
	Jun	2.3333	2.2659	0.0671
	Jul	2.1667	2.2133	-0.0463
	Aug	2.1667	2.1529	0.0141
	Sep	2.0000	2.1954	-0.1954
	Oct	2.1667	2.1698	-0.0028
	Nov	2.1667	2.0588	0.1083
	Dec	1.3333	1.5364	-0.2034

Source : SPSS data output

Table 5.28 Refference Score

Cutoff Value	2.6575
Upper Value	0.26531
Lower Value	-0.24903

Source : SPSS data output

After finding the reference score, the score judgement is performed, with the results :

Table 5.29 State Owned Banks Score Results

Month	2007		2008		2009	
	Score	Judgement	Score	Judgement	Score	Judgement
Jan	9.357	Higher	5.259	Higher	2.967	Higher
Feb	9.750	Higher	5.504	Higher	3.073	Higher
Mar	9.179	Higher	4.670	Higher	3.701	Higher
Apr	9.098	Higher	4.865	Higher	3.589	Higher
May	8.692	Higher	4.594	Higher	3.478	Higher
Jun	8.289	Higher	3.383	Higher	3.103	Higher
Jul	8.422	Higher	3.865	Higher	3.084	Higher
Aug	8.544	Higher	4.238	Higher	2.941	Higher
Sep	7.613	Higher	3.417	Higher	2.688	In Average
Oct	6.929	Higher	3.154	Higher	2.885	In Average
Nov	6.445	Higher	3.592	Higher	2.509	In Average
Dec	5.176	Higher	2.535	In Average	1.546	Lower

Table 5.30 Private National Banks Score Results

Month	2007		2008		2009	
	Score	Judgement	Score	Judgement	Score	Judgement
Jan	1.776	Lower	0.794	Lower	1.232	Lower
Feb	1.683	Lower	0.032	Lower	1.110	Lower
Mar	1.660	Lower	-0.091	Lower	1.387	Lower
Apr	1.826	Lower	-0.183	Lower	1.469	Lower
May	1.828	Lower	-0.526	Lower	1.955	Lower
Jun	1.537	Lower	-0.641	Lower	1.810	Lower
Jul	1.373	Lower	-0.602	Lower	1.822	Lower
Aug	1.128	Lower	-0.583	Lower	1.619	Lower
Sep	0.775	Lower	-0.509	Lower	2.014	Lower
Oct	0.804	Lower	-0.688	Lower	1.927	Lower
Nov	0.771	Lower	-0.117	Lower	1.926	Lower
Dec	0.091	Lower	0.646	Lower	1.311	Lower

Based on the refference score we can compared the model value of each banks in each period of time to observed whether the score is higher or lower.The results then indicated the score of the banks performance towards the banking industry.

Based on the results, state owned banks considered perform better than private national banks with 31 period higher performance than banking industry. While for private national banks, the score were lower than banking industry in all period during 2007-2009.

5.3 Finding Correlation Between APB Ratio with IHSG and SUN balance

The second hypothesis was to found the correlation between macroeconomic factors, in this research were represented by IHSG movement and SUN balance during 2007-2009. There are three scope of analysis, which are:

- Stated owned banks APB to SUN and IHSG
- Private national banks APB to SUN and IHSG
- Banking Industry APB to SUN and IHSG

Data use in this research were as follows:

Table 5.31 Variables Desription

Variables	Description
APB	Non performing earning assets of banks 2007-2009
IHSG	Jakarta Composite Index month end position 2007-2009
SUN	Indonesia's Government Securities balance 2007-2009

5.3.1 Correlation Between State Owned Banks APB Ratio with IHSG and SUN balance

Regression Analysis performed with the Goodness of Fit Test. This test is to test how much the ability of the independent variables together in explaining the dependent variable in the regression model. This is shown by the coefficient of multiple determination (R^2) as well as simultaneous testing of regression coefficients (test-F).

R^2 value of 0.857 means that the testing model is used where the independent variables such as CAR, PPAPAP, NIM, BOPO and APYD can affect the Score of 85.7%. So that it can be said that the independent variables used in this regression jointly dependent variables can explain 86% and the rest 14% influenced by other variables not included in the regression model variables. Probability value F-stat significant at 95% confidence level ($\alpha = 5\%$). Based on these values is said regression model used in this test is good enough.

Table 5.32 Regression Analysis Output on State Owned Bank

Variables	Regression coefficients	t-statistics	Sig.
Constants	0.15	16.545	0.000***
SUN	-2.23E-07	-13.977	0.000***
IHSG	8.53E-08	0.054	0.957
Observation	36		
R^2	0.857		
Adjusted R^2	0.849		
F-statistics	99.019		
Sig (F-stat)	0.000***		

*** Correlation is significant at the 1%
Source : SPSS data output

- *Normality Test*

Based on the ratio of skewness and kurtosis which can be used as guidance if there is a normal distribution of data or not, the skewness ratio and kurtosis ratio are between -2 and +2 then the data considered normally distributed.

Table 5.33 Normality Analysis Output on State Owned Bank

Model	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Unstandardized Residual	-0.59	0.39	-0.45	0.77
Ratio	-1.50		-0.59	

Source : SPSS data output

- *Multicollinearity Test*

Table 5.34 Multicollinearity Analysis Output on State Owned Banks

Model	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
SUN	0.987	1.013
IHSG	0.987	1.013
Dependent Variable : S-APB		

Source : SPSS data output

Multicollinearity problems occur when there is perfect linear relationship or a near-perfect among the independent variables. This should be avoided in regression testing. The test results of non multicolinearity assumption can be presented in Table above.

Multicollinearity test is done by examining the value of tolerance and inflation factor (VIF). Hair et al, (1992) cited from Priyanto (2009) states that a variable with tolerance values smaller than 0.1 and VIF values greater than 10 resulted in multicollinearity. Table 5.34 shows the value of tolerance all the independent variables more than 0.1 and VIF value all less than 10 independent variables. Therefore we can conclude there is no multicollinearity problem among the independent variables.

- *Autocorrelation Test*

Table 5.35 Autocorrelation Analysis Output on State Owned Banks

Model	Durbin-Watson	d_L	d_U	4-d_L	4-d_U	H_0
S-APB	2.493	1.153	1.376	2.847	2.624	accepted (no autocorrelation)

Source : SPSS data output

From Durbin Watson test, there is no autocorrelation exist between the independent variables since the Durbin Watson number is between d_U and 4-d_U or the H_0 is accepted.

- *Heteroscedasticity Test*

The Glejser test attempts to determine whether as the independent variable increases in size, the variance of the observed dependent variable increases. This is done by regressing the error term of the predicted model against the independent variables. From the test the significance level were 1.000 > 0.05. A high t-statistic for the estimated coefficient of the independent variable(s) would indicate the presence of heteroscedasticity, since the t-statistic value were 0.000 the model has no problem of heteroscedasticity.

Table 5.36 Heteroscedaticity Test Output on State Owned Banks

Model		Unstandardized Coefficients		t	Sig.
		B	Std. Error		
S-APB	(Constant)	8.71E-16	1.287	0.000	1.000
	SUN	0.000	2.537	0.000	1.000
	IHSG	0.000	6.241	0.000	1.000
Dependent Variable: Unstandardized Residual					

Source : SPSS data output

5.3.2 Correlation Between Private National Banks APB Ratio with IHSG and SUN balance

Regression Analysis performed with the Goodness of Fit Test. This test is to test how much the ability of the independent variables together in explaining the dependent variable in the regression model. This is shown by the coefficient of multiple determination (R^2) as well as simultaneous testing of regression coefficients (test-F).

Table 5.37 Regression Analysis Output on Private National Banks

Variables	Regression coefficients	t-statistics	Sig.
Constants	0.005	0.523	0.605**
SUN	4.34E-08	2.507	0.017***
IHSG	-2.74E-06	-1.612	0.116
Observation	36		
R^2	0.231		
Adjusted R^2	0.185		
F-statistics	4.959		
Sig (F-stat)	0.013***		

*** Correlation is significant at the 5%
** Correlation is significant at the 10%
Source : SPSS data output

R^2 value of 0.231 means that the testing model is used where the independent variables such as CAR, PPAPAP, NIM, BOPO and APYD can affect the Score of 23.1%. So that it can be said that the independent variables used in this regression jointly dependent variables can explain 23% and the rest 77% influenced by other variables not included in the regression model variables. Probability value F-stat significant at 95% confidence level ($\alpha = 5\%$). Based on these values is said regression model used in this test is good enough.

- *Normality Test*

Based on the ratio of skewness and kurtosis which can be used as guidance if there is a normal distribution of data or not, the skewness ratio and kurtosis ratio are between -2 and +2 then the data considered normally distributed.

Table 5.38 Normality Analysis Output on Private National Banks

Model	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Unstandardized Residual	-0.63	0.39	-0.78	0.77
Ratio	-1.60		-1.01	

Source : SPSS data output

- *Multicollinearity Test*

Multicollinearity problems occur when there is perfect linear relationship or a near-perfect among the independent variables. This should be avoided in regression testing.

Table 5.39 Multicollinearity Analysis Output on Private National Banks

Model	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
SUN	0.987	1.013
IHSG	0.987	1.013
Dependent Variable : P-APB		

Source : SPSS data output

The test results of non multicolinearity assumption can be presented in Table above. Multicollinearity test is done by examining the value of tolerance and inflation factor (VIF). Hair et al, (1992) cited from Priyanto (2009) states that a variable with tolerance values smaller than 0.1 and VIF values greater than 10 resulted in multicollinearity. Table 5.39 shows the value of tolerance all the independent variables more than 0.1 and VIF value all less than 10 independent variables. Therefore we can conclude there is no multicollinearity problem among the independent variables.

- *Autocorrelation Test*

Table 5.40 Autocorrelation Analysis Output

Model	Durbin-Watson	d_L	d_U	4-d_L	4-d_U	H_0
P-APB	2.341	1.153	1.376	2.847	2.624	accepted (no autocorrelation)

Source : SPSS data output

From Durbin Watson test, there is no autocorrelation exist between the independent variables since the Durbin Watson number is between d_U and 4-d_U or the H_0 is accepted.

- *Heteroscedasticity Test*

The Glejser test attempts to determine whether as the independent variable increases in size, the variance of the observed dependent variable increases.

Table 5.41 Heteroscedaticity Test Output

Model		Unstandardized Coefficients		t	Sig.
		B	Std. Error		
P-APB	(Constant)	4.74E-19	0.010	0.000	1.000
	SUN	0.000	0.000	0.000	1.000
	IHSG	0.000	0.000	0.000	1.000
Dependent Variable: Unstandardized Residual					

Source : SPSS data output

This is done by regressing the error term of the predicted model against the independent variables. From the test the significance level were 1.000 > 0.05. A high t-statistic for the estimated coefficient of the independent variable(s) would indicate the presence of heteroscedasticity, since the t-statistic value were 0.000 the model has no problem of heteroscedasticity.

5.3.3 Correlation Between Overall Banking Industry APB Ratio with IHSG and SUN balance

Regression Analysis performed with the Goodness of Fit Test. This test is to test how much the ability of the independent variables together in explaining the dependent variable in the regression model. This is shown by the coefficient of multiple determination (R^2) as well as simultaneous testing of regression coefficients (test-F).

R^2 value of 0.385 means that the testing model is used where the independent variables such as CAR, PPAPAP, NIM, BOPO and APYD can affect the Score of 38.5%. So that it can be said that the independent variables used in this regression jointly dependent variables can explain 39% and the rest 61% influenced by other variables not included in the regression model variables. Probability value F-stat significant at 95% confidence level ($\alpha = 5\%$). Based on these values is said regression model used in this test is good enough.

Table 5.42 Regression Analysis Output

Variables	Regression coefficients	T-statistics	Sig.
Constants	0.057	8.232	0.000***
SUN	-5.47E-08	-4.532	0.000***
IHSG	-1.01E-06	-0.853	0.400**
Observation	36		
R^2	0.385		
Adjusted R^2	0.348		
F-statistics	10.33		
Sig (F-stat)	0.000***		

*** Correlation is significant at the 1%
** Correlation is significant at the 10%
Source : SPSS data output

- *Normality Test*

  Based on the ratio of skewness and kurtosis which can be used as guidance if there is a normal distribution of data or not, the skewness ratio and kurtosis ratio are between -2 and +2 then the data considered normally distributed.

Table 5.43 Normality Analysis Output

Model	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Unstandardized Residual	-0.29	0.39	-1.54	0.77
Ratio	-0.75		-2.00	

Source : SPSS data output

- *Multicollinearity Test*

Multicollinearity problems occur when there is perfect linear relationship or a near-perfect among the independent variables. This should be avoided in regression testing. The test results of non multicolinearity assumption can be presented in Table below.

Table 5.44 Multicollinearity Analysis Output

Model	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
SUN	0.987	1.013
IHSG	0.987	1.013
Dependent Variable : APB		

Source : SPSS data output

Multicollinearity test is done by examining the value of tolerance and inflation factor (VIF). Hair et al, (1992) cited from Priyanto (2009) states that a variable with tolerance values smaller than 0.1 and VIF values greater than 10 resulted in multicollinearity. Table 5.44 shows the value of tolerance all the independent variables more than 0.1 and VIF value all less than 10 independent variables. Therefore we can conclude there is no multicollinearity problem among the independent variables.

- *Autocorrelation Test*

From Durbin Watson test, there is no autocorrelation exist between the independent variables since the Durbin Watson number is between d_U and 4-d_U or the H_0 is accepted.

Table 5.45 Autocorrelation Analysis Output

Model	Durbin-Watson	d_L	d_U	4-d_L	4-d_U	H_0
Score	2.498	1.153	1.376	2.847	2.624	accepted (no autocorrelation)

Source : SPSS data output

- *Heteroscedasticity Test*

Table 5.46 Heteroscedaticity Test Output

Model		Unstandardized Coefficients		T	Sig.
		B	Std. Error		
APB	(Constant)	-1.17E-17	0.007	0.000	1.000
	SUN	0.000	0.000	0.000	1.000
	IHSG	0.000	0.000	0.000	1.000
Dependent Variable: Unstandardized Residual					

Source : SPSS data output

The Glejser test attempts to determine whether as the independent variable increases in size, the variance of the observed dependent variable increases. This is done by regressing the error term of the predicted model against the independent variables. From the test the significance level were 1.000 > 0.05. A high t-statistic for the estimated coefficient of the independent variable(s) would indicate the presence of heteroscedasticity, since the t-statistic value were 0.000 the model has no problem of heteroscedasticity.