

THE INFLUENCE OF THE 1998 ASIAN BANKING CRISIS  
AND THE 2008 GLOBAL FINANCIAL CRISIS TO  
GROWTH OF THE THIRD PARTY FUNDS OF BANKING  
SECTOR IN INDONESIA

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*Abstract*

*The purpose of this research is to investigate the influence of macroeconomic fundamentals such as real GDP growth, deposit rate, and return of composite stock price index, and the influence of bank performance such as the growth of secondary reserve and Non Performing Loans to Third Party Funds. The growth of the banking sector in Indonesia in the 1998 Asian Banking Crisis and the 2008 Global Financial Crisis and also to analyze the different influence of independent variables to Third Party Funds growth in both crises. The data used are secondary data with the research object of 101 banks which were established in both crises consistently.*

*The method which is used in this study is the pooled EGLS (Cross-Section Weight) and fixed effect method. The results show that macroeconomic fundamentals such as real GDP growth, deposit rate, and return of IHSG have significant effect to growth of Third Party Funds, and bank performance such as the growth of secondary reserve has a significant effect while NPL has no significant effect to growth of Third Party Funds in both crises. Besides that, there is a different effect of each independent variable in both crisis periods where all the independent variables in the period of the 1998 Asian Banking Crisis is not according to the theory, while all of the independent variables in the period of the 2008 Global Financial Crisis is according to the theory.*

**JEL Classification:** E50, G01, G21

**Keywords:** Banking Performance, Crisis, Cross-Section Weight, Macroeconomic Fundamentals Third Party Funds Growth

## 1. INTRODUCTION

Banks are intermediation institutions which function to collect and distribute the funds of society. For supporting that function a good bank management is needed, one of the indicators can be seen from the total of third party funds which grow stably each period. So, the key of bank management success is how banks are able to win the heart of society and their role as intermediation institutions are able to function well because bank management activities cover planning, implementation, and control to collecting funds from society (Nurdiana, 2008).

The performance and health of a bank is influenced by the domestic economic situation. A national economy which tends to be stable such as a

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positive economic growth, a stable interest rate, and a stable composite share price index level will create a healthy banking system and able to be seen from several indicators such as a positive secondary reserve growth and a low Non Performing Loan value. But if an economy experiences shock it will influence the banking system performance and health. McCandless, F. Gabrieli, & J. Rouillet, (2003) used individual bank data and a dynamic data panel model to find the determinant of the Argentine bank crisis in 2001, and the result shows that one of the bank crisis determinants in Argentina is macroeconomic shock.

Indonesia has experienced that shock in mid-1997. This crisis is especially triggered by the rupiah exchange rate crisis which caused the rupiah to depreciate severely, in the end of 1997 the rupiah exchange rate to the US dollar is noted at Rp. 4,850/dollar and continues to depreciate in 1998 penetrating Rp. 17,000/dollar. This rupiah depreciation is from a contagious factor of the Thai Baht exchange rate crisis which also spreads to other Asian countries such as Malaysia, Philippines, and South Korea. This crisis which opens macroeconomic fundamental fragility impacts several economic sectors including the banking sector. In the money market, the Bank Indonesia Certificate interest rate increase to 70.8 percent and money market securities to 60 percent in July 1998 (from 10.87 percent and 14.75 percent each early in the crisis) caused bank difficulties to peak.

Ten years later, the world experienced a shock again which is caused by financial crisis in the United States and some European countries. This crisis began in August 2007 with the primary cause of bad housing credit (subprime mortgage). The peak is when international financial institutions fall in the west, especially in the United States and Britain. Learning from the previous crisis, Asian countries seem to already have a stronger economic fundamental foundation in facing the shock especially the banking sector. Although it is not very severe, this global financial crisis provides an impact to the economic condition of Indonesia, among others in the stock market, where the stock trade volume and composite share price index experienced strong pressure until a trade stop (blackout) occurred in October 2008. The composite share price index decreased drastically from 2,830 early in the year to 1,355 in the end of 2008. In the money market or banking, this uncertain situation because of this crisis has created a perception of liquidation tightness and pushes the banking to tend to hold their liquidation.

External shock is able to influence bank function as intermediation institutions. The 1998 Asian Banking Crisis and the 2008 Global Financial Crisis already impacts to the decrease of macroeconomic performance such as the economic growth rate decrease, increasing interest rates, and composite share price index decreasing return levels and impact the Indonesian banking sector, one of which is able to be seen from the growth of third party funds through banking performance indicators such as secondary reserves and Non Performing Loan (NPL). So the external shock which is reflected in those two crisis periods is able to influence bank function as intermediation institutions, one of which is as a collector of society funds which are involved in the growth of third party funds.

## **2. LITERATURE STUDY**

### **2.1 Theoretic Study**

Based on the Loanable Funds theory, a high deposit interest rate level causes credit tender to increase because of a high tendency of people to save funds in banks as a cause of higher opportunity funds to hold money. So, the higher the deposit interest rate the third party funds of banking will also be higher.

The composite stock price index is a composite index from all types of stock recorded in the stock exchange (Samsul, 2006:185). Investment in stock bears a larger risk than deposit or interest rates, so the investment is expected to provide a larger return than deposit interest/interest rates levels or what is usually named premium risk (Samsul, 2006:294-295). If the composite stock price index return increases it will cause some stock to return, so people will be more interested in investing their funds in the capital market than the money market (deposit) consequently collection and growth of third party funds will decrease.

Based on the CAMEL'S concept, liquid assets become one of the indicators in assessing the health of a bank, the higher the liquid assets, the health of a bank is able to be stated as good. Where the liquid assets are able to be seen from the total or growth of secondary reserves, so the higher the growth of secondary reserves of a bank the more interested people are to save their funds in the bank because it has a good health.

Based on the CAMEL'S concept, the development of troubled productive assets (such as bad credit) becomes an indicator in assessing the health of a bank, the lower the troubled productive asset values the health of a bank is able to be stated as good. Where the troubled productive assets are able to be seen from Non Performing Loan (NPL) values, so the lower the Non Performing Loans (NPL) of a bank the lower the default risk so people will be interested to save their funds in the bank because it has a good health.

### **2.2 Empirical Study**

Simorangkir (2011) in his research result, it is known that bank performance variables such as CAR, ROA, ROE, LIQ, LDR, credit growth and NPL have significant influences to third party funds. While from the macroeconomic condition, economic growth, exchange rate, and money supply growth M2 significantly and positively influences third party funds. Haron, Azmi, & Safie (2005) in their research found that profit levels in sharia bank, deposit interest rate levels, interest rate credit, Composite Index of Malaysian Bourse, consumer price index, the money supply (M3), and significant GDP influences the number of savings. Kim (2010) implemented this research with the purpose for testing determinants from personal savings in the United States by using internal and external determinants. The result shows that the level of personal savings very much depends on income, tax, credit, and employment status, while dependency ratio, housing credit, real interest, and other economic performance indicators are unable to determine personal saving levels. Tkalec (2012) implemented this research with the purpose to know determinants and movement dynamics from Deposit Euroization (DE) in twelve European countries post economic transition, by using the Threshold VAR model. The result shows that exchange rate depreciation has a stronger effect to DE than exchange rate appreciation. While the influence of interest rate levels are more spread after domestic currencies depreciated than after domestic currencies

appreciated. DE changed rapidly after interest rate differentials increased than after interest rate differentials decreased. Wibowo and Suhendra implemented this research with the purpose to know the presence of correlation between the variables of rupiah to dollar exchange rate value, inflation levels, and interest rate levels with third party funds in foreign exchange banks in Indonesia. The result is that the variables of exchange rate value, inflation, and Bank Indonesia interest rate have weak influences to Foreign Exchange Banks in Indonesia. There are only some banks which the third party funds are influenced by those variables such as, Bank Permata, Bank PAN Indonesia, and Bank UOB Buana. The inflation and exchange rate value have positive influences to third party funds, meaning the higher the inflation level, third party funds will also experience increase and if the exchange rate decreases (depreciation) the third party funds also experience decrease. While the Bank Indonesia interest rate levels variable influences negatively to third party funds, meaning the higher the Bank Indonesia interest rate level the third party funds will decrease, and the reverse.

### **2.3 Research Hypothesis**

Based on the theoretical and empirical study which is already presented above, the hypothesis from this research is:

1. There is a fundamental influence of macroeconomics and bank performance to third party fund growth in the 1998 Asian Banking Crisis.
2. There is a fundamental influence of macroeconomics and bank performance to third party fund growth in the 2008 Global Financial Crisis.
3. There is a difference of fundamental influence of macroeconomics and bank performance to third party fund growth in the 1998 Asian Banking Crisis and 2008 Global Financial Crisis.

## **3. RESEARCH METHODOLOGY**

This research has a purpose for observing the influence of macroeconomic indicators and bank performance indicators to third party fund growth in the 1998 crisis period and 2008 crisis, it also analyzes how is the difference of impact from the 1998 crisis and 2008 crisis to third party fund growth of the banking sector. The research objects are all banks which consistently stand in the 1998 crisis period and 2008 crisis period by excluding banks which implement mergers for avoiding the presence of outliers which causes the data of those banks to be too high or too low. The research period focuses in the 1998 Asian Banking Crisis Period and 2008 Global Financial Crisis. For the 1998 Asian Banking Crisis, the periods used are the early crisis period (Semester II 1997) and closing period (Semester I 1999), the selection of these periods is based as a cause of the crisis influence which was felt since mid-1997 observed from the decrease of economic growth and depreciation of the rupiah exchange rate and the recovery of the economic condition in mid-1999. While for the 2008 Global Financial Crisis the periods used are the early crisis period (Semester II 2007) and crisis close (Semester I 2009), the selection of these periods is based on the increase of bad housing credit in the United States which appeared since August 2007. Therefore the research period is determined at 4 semesters in every crisis. The data used is secondary data and is panel data from 101 observed banks (cross section) and semester time series data from each crisis period. The data gathering is based on searching, recording, and categorizing the forms of dependent and independent variables which are from the

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Indonesian Statistical and Financial Economic documents, Indonesian Banking Statistics, and Bank Publication Reports, which are sourced from Bank Indonesia.

In this research a data processing with the Panel Data Regression Model is used. This panel data analysis is used because the data which will be processed is a cross section observation and pooling of time series. For estimating the model parameter with the panel data, there are some techniques which can be used, which are:

1. Common Effect/Pooled Effect

This technique is unchanged from making regression with cross section or time series data. But for panel data, before making a regression we have to combine cross section with time series data (pool data). Then this combined data is treated as an observation unit for model estimation. This method is known as the Common Effect/Pooled Effect estimation. By combining data, we are not able to see the difference between individuals and between times. Or in other words, in this approach there is no dimension of individual or time. It is assumed that the data behavior between companies are the same in several time periods.

2. Fixed Effect

The Fixed Effect Model assumes the presence of variables which not all are entered in the model equation which enables the presence of intercept which is not constant. Or in other words, this intercept might change for each individual and time.

3. Random Effect

If in the Fixed Effect Model, the difference between individuals and or time is reflected through intercept, in the Random Effect Model, the difference is accommodated through error. This technique also considers that error might correlate through the time series and cross section.

Modified from the research implemented by Iskandar Simorangkir (2011) in this research the following econometric model is used.

$$LOG(DPK)_{it} = \alpha + \gamma_1 LOG(PDBR)_{it} + \gamma_2 BDEP_{it} + \gamma_3 TPIHSG_{it} + \delta_1 LOG(CADS)_{it} + \delta_2 NPL_{it} + \epsilon_{it} \quad \dots\dots\dots(1)$$

Remarks:

$LOG(DPK)_{it}$  = Semester growth of Third Party Funds which is counted from the logarithm  
 $LOG(PDBR)_{it}$  = Economic growth which is counted from the logarithm.

PDB riil  $BDEP_{it}$  = Deposit interest rate

$TPIHSG_{it}$  = return rate from composite stock price index

$LOG(CADS)_{it}$  = Growth of secondary reserve which is counted from secondary reserve logarithm.

$NPL_{it}$  = Ratio between total performing loans with total credit

$\alpha$  = intercept

$\gamma, \delta$  = Parameter

$\epsilon_{it}$  = Error term

$i$  = Bank  $i$

$t$  = Observation Semester

For observing the validity from the model used or model estimation results, several statistical tests are implemented among others (1) T-statistic test (2) F-statistic test; and (3) Determination Coefficient Count (R<sup>2</sup>), Other than that tests for classic assumptions are also implemented which are, (1) Multicollinearity test; (2) Heteroscedascity test, and (3) Autocorrelation Test. In this research the Effort to Minimalize Heteroscedascity and Autocorrelation Problems is also implemented by using the Generalized Least Square (GLS) which is by providing weight in variables in the model. There are 4 variant structures which might occur in the panel data and able to be minimalized by GLS (Eviews 6 User's Guide II 457-576), which are:

1. Cross-Section Heteroscedascity, where there is heteroscedascity between individuals (cross-section). This problem can be minimalized with Cross Section Weight.
2. Period heteroscedascity, where there is heteroscedascity between time (period). This problem can be minimalized with Period Weight.
3. Cross-Section Heteroscedascity and contemporaneous correlation, where there is correlation and heteroscedascity between individuals (cross-section). This problem can be minimalized by using cross-section SUR.
4. Period heteroscedascity and serial correlation, where there is a presence of correlation and heteroscedascity in between data in a certain time period but there is no residual correlation between cross-sections. ). This problem can be minimalized by using period SUR.

#### **4. RESULTS**

The method used in this research is the pooled EGLS (Cross-Section Weight) (the consideration to use this method will be explained in the problem test part in the linear regression) and fixed effect. The following is the chow test result as a base of fixed effect use.

Table 1 Chow Test Result

Model	Cross-section F		
	Statistic	d.f	Probability
<b>Model 1 (1998 Crisis)</b>	299.155797	(100,298)	0.0000
<b>Model 2 (2008 Crisis)</b>	583.629324	(100,297)	0.0000

*Source: Data Processing Results*

From the table above it is able to be seen the probability from model 1 and 2 each as large as 0.0000. That value is less than the significance level ( $\alpha = 0.05$ ). So based on the Chow test criteria  $H_0$  is rejected in model 1 and 2. Because of that, the panel model estimation will be better if it uses the fixed effect method (FEM) approach. By using the FEM approach, count results of the regression equation for this research is obtained such as seen in the following table 2 and table 3:

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Table 2 Model 1 Estimation Test Result (1998 Crisis)

<b>Dependent Variable: LOG(DPK)</b>				
<b>Independent Variable</b>	<b>Coefficient</b>	<b>Std.Error</b>	<b>t-stat</b>	<b>Prob</b>
<b>C</b>	30.92511	1.243716	24.86509	0.0000
<b>LOG(PDBR)</b>	-1.470412	0.102930	-	0.0000
			14.28556	
<b>BDEP</b>	-0.007406	0.001596	-	0.0000
			4.640760	
<b>TPIHSG</b>	0.001633	0.000424	3.849702	0.0001
<b>LOG(CADS)</b>	-0.020461	0.005178	-	0.0001
			3.951657	
<b>NPL</b>	0.000140	0.000167	0.836796	0.4034
<b>R<sup>2</sup></b>	0.993401			
<b>Adj R<sup>2</sup></b>	0.991076			
<b>F-stat</b>	427.2707			
<b>DW-stat</b>	2.376049			

*Source: Data Processing Results*

Table 3 Model 2 Estimation Test Result (2008 Crisis)

<b>Variabel Dependen: LOG(DPK)</b>				
<b>Independent Variable</b>	<b>Coefficient</b>	<b>Std.Error</b>	<b>t-stat</b>	<b>Prob</b>
<b>C</b>	10.12259	1.497358	6.760297	0.0000
<b>LOG(PDBR)</b>	0.268449	0.104180	2.576779	0.0105
<b>BDEP</b>	0.008358	0.001286	6.500353	0.0000
<b>TPIHSG</b>	-0.001031	0.000191	-	0.0000
			5.404328	
<b>LOG(CADS)</b>	0.047819	0.008117	5.891544	0.0000
<b>NPL</b>	-0.000280	0.002401	-	0.9073
			0.116595	
<b>R<sup>2</sup></b>	0.998078			
<b>Adj R<sup>2</sup></b>	0.997401			
<b>F-stat</b>	1473.979			
<b>DW-stat</b>	2.332103			

*Source: Data Processing Results*

**Statistic Tests**

**a. T-statistic test**

The t-stat is used for observing the independent variable influence to the dependent variable partially in certain significance levels

- **Model 1 : 1998 Asian Banking Crisis**

For the t-stat test of the 1998 Asian Banking Crisis it is as the following.

Table 4 Model 1 t-statistic Test Result (1998 Crisis)

Variable	t-statistic	H <sub>0</sub>	Remarks
C	24.86509	H <sub>0</sub> rejected	Significant in every significance level
LOG(PDBR)	- 14.28556	H <sub>0</sub> rejected	Significant in every significance level
BDEP	- 4.640760	H <sub>0</sub> rejected	Significant in every significance level
TPIHSG	3.849702	H <sub>0</sub> rejected	Significant in every significance level
LOG(CADS)	- 3.951657	H <sub>0</sub> rejected	Significant in every significance level
NPL	0.836796	H <sub>0</sub> unable to be rejected	Not significant

*Source: Data Processing Results*

From the table above it is able to be seen that constants and composite stock price index return levels have positive and significant influences to third party fund growth in significance levels of 1%, 5%, and 10%. Real GDP growth, deposit interest rates, and secondary reserve growth have negative and significant influences to third party fund growth in significance levels of 1%, 5%, and 10%. While Non-Performing Loan (NPL) does not influence positively and significantly to third party fund growth.

- **Model 2 2008 Global Financial Crisis**

For the t-stat test of the 2008 Global Financial Crisis is as the following.

Table 5 Model 2 t-statistic Test Result (2008 Crisis)

Variable	t-statistic	H <sub>0</sub>	Remarks
C	6.760297	H <sub>0</sub> rejected	Significant in every significance level
LOG(PDBR)	2.576779	H <sub>0</sub> rejected	Significant in significance levels 5% and 10%
BDEP	6.500353	H <sub>0</sub> rejected	Significant in every significance level
TPIHSG	- 5.404328	H <sub>0</sub> rejected	Significant in every significance level
LOG(CADS)	5.891544	H <sub>0</sub> rejected	Significant in every significance level
NPL	- 0.116595	H <sub>0</sub> is unable to be rejected	Not significant

*Source: Data Processing Results*

From the table above it is able to be seen that constants, deposit interest rate and secondary reserve growth have positive and significant influences to third party fund growth in significance levels of 1%, 5%, and 10%. Real GDP growth, deposit interest rates, and secondary reserve growth have positive and significant influences to third party fund growth in significance levels of 5%, and 10%. While Non-Performing Loan (NPL) does not influence negatively and significantly to third party fund growth.

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**b. F-statistic test**

The f-stat test is implemented for observing the influence of independent variables to dependent variables simultaneously in certain significance levels. Table 6 shows the critical limit value for the F test.

Table 6 F-test Critical Limit Value

N <sub>1</sub>	N <sub>2</sub>	F-table		
		α = 0,01	α = 0,05	α = 0,1
5	403	3.063	2.236	1.862

N<sub>1</sub> = df numerator (parameter without constant)  
N<sub>2</sub> = df denominator (n-k)

*Source: Microsoft Excel Processing*

For the F-stat test results of the 1998 Asian Banking Crisis and 2008 Global Financial Crisis are as the following.

Table 7 F-statistic Test Results

Model	F-statistic	H <sub>0</sub>	Remarks
Model 1 (1998 Asian Banking Crisis)	427.2707	H <sub>0</sub> rejected	Significant in every significance level
Model 2 (2008 Global Financial Crisis)	1473.979	H <sub>0</sub> rejected	Significant in every significance level

*Source: Data Processing Results*

From estimation results in table 4.8 it is known that model 1 (1998 Asian Banking Crisis) has an F-statistic value as large as 427.2707. That value is larger than the F-table value in the significance levels of 1%, 5%, and 10% so H<sub>0</sub> is rejected, this shows that simultaneously the independent variable has a significant influence to the dependent variable. While in model 2 (2008 Global Financial Crisis) the f-statistic is as large as 1473.979. That value is large than the F-table value in significance levels of 1%, 5%, and 10%, so H<sub>0</sub> is rejected, this shows that simultaneously the independent variable has a significant influence to the dependent variable.

**c. Determination Coefficient (R<sup>2</sup>) Count**

The determination coefficient is used to measure the level of success of a regression model which is used in predicting the dependent variable value, the closer the R<sup>2</sup> value is to one, the better the model.

Table 8 Determination Coefficient (R<sup>2</sup>) Count Results

Model	R <sup>2</sup> Value
Model 1 (1998 Crisis)	0.993401
Model 2 (2008 Crisis)	0.998078

*Source: Data Processing Results*

From the table above it is able to be seen that the R<sup>2</sup> value for model 1 (1998 Asian Banking Crisis) shows a value of 0.993401, this shows that as large as 99.34% dependent variable variations are able to be explained by independent variables while the rest as large as 0.66% are explained by other variables outside of the model. While the R<sup>2</sup> value in model 2 (2008 Global

Financial Crisis) shows a value of 0.998078, this shows that as large as 99.81% dependent variable variations are explained by independent variables while the rest as large as 0.19% are explained by other variables outside of the model.

### Problem Test in Linear Regression

#### a. Multicollinearity

Multicollinearity detection is able to be implemented by using a correlation coefficient matrix between the independent variables (Gujarati, 2009). If the correlation coefficient value is larger than 0.8 it shows that there is a multicollinearity problem.

- **Model 1 1998 Asian Banking Crisis**

For observing the correlation between independent variables for the equation in the 1998 Asian Banking crisis model it is able to be seen in the following table:

Table 9 Model 1 Correlation Matrix Test Results (1998 Crisis)

	LOG(PDBR)	BDEP	TPIHSG	LOG(CADS)	NPL
LOG(PDBR)	1.000000	0.094872	-0.482072	-0.003621	0.030190
BDEP	0.094872	1.000000	0.693240	-0.028029	-0.092402
TPIHSG	-0.482072	0.693240	1.000000	-0.049401	-0.059427
LOG(CADS)	-0.003621	-0.028029	-0.049401	1.000000	-0.060993
NPL	0.030190	-0.092402	-0.059427	-0.060993	1.000000

*Source: Data Processing Results*

Based on the correlation matrix in the table above it is known that the correlation coefficient in each independent variable does not show value of more than 0.8, so this model does not have a multicollinearity problem.

- **Model 2 2008 Global Financial Crisis**

For observing the correlation between independent variables for the equation in the 2008 Global Financial crisis model it is able to be seen in the following table:

Table 10 Model 2 Correlation Matrix Test Results (2008 Crisis)

Variable	t-statistic	H <sub>0</sub>	Keterangan
C	6.760297	H <sub>0</sub> rejected	Significant in every significance level
LOG(PDBR)	2.576779	H <sub>0</sub> rejected	Significant in significance levels 5% and 10%
BDEP	6.500353	H <sub>0</sub> rejected	Significant in every significance level
TPIHSG	-5.404328	H <sub>0</sub> rejected	Significant in every significance level
LOG(CADS)	5.891544	H <sub>0</sub> rejected	Significant in every significance level
NPL	-0.116595	H <sub>0</sub> is unable to be rejected	Not Significant

*Source: Data Processing Results*

Based on the correlation matrix in the table above it is known that the correlation coefficient in each independent variable does not show value of more than 0.8, so this model does not have a multicollinearity problem.

#### b. Heteroscedascity

Heteroscedascity shows that the variant from interference factor  $u_1$  is not constant, the consequence is that the assessment is not efficient anymore because it has a variant which is not minimal anymore. The Breusch-Pagan-

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Godfrey test is used as an instrument for observing the presence of heteroscedascity in this research model.

Table 11 Breusch-Pagan-Godfrey Test Results

Model	$\Theta$	Chi-Square Value			$H_0$	Remarks
		$(\chi^2)$				
		$\alpha = 0,01$	$\alpha = 0,05$	$\alpha = 0,1$		
Model 1 (1998 Crisis)	32.7009	15.0863	11.0705	9.23635	$H_0$ rejected	Heteroscedascity
Model 2 (2008 Crisis)	20.8731	15.0863	11.0705	9.23635	$H_0$ rejected	Heteroscedascity

*Source: Data Processing Results*

From the table above the  $\Theta$  value in model 1 and model 2 are 32.7009 and 20.8731. That value is larger than the  $X^2$  critical value in every significance. So it is able to be concluded that in model 1 and model 2 there is a heteroscedascity problem.

**c. Autocorrelation**

Autocorrelation shows that there are relationships between error terms, the consequence is that the parameter which will be estimated becomes inefficient. The Durbin-Watson test is used as an instrument for observing the presence of autocorrelation problems in this research model.

Table 12 Durbin-Watson Test Results

Model	DW-table value in 5% significance level					Remarks
	DW-stat	$D_L$	$D_U$	4- $D_L$	4- $D_U$	
Model 1 (1998 Crisis)	2.376049	1.718	1.82	2.282	2.18	Negative autocorrelation
Model 2 (2008 Crisis)	2.332103	1.718	1.82	2.282	2.18	Negative autocorrelation
Remarks:	k <sup>2</sup> = number of independent variables not including constant (5) n = number of observations (404)					

*Source: Data Processing Results and Gujarati, 2009:L-114*

From the table above it is able to be seen in model 1 and model 2 that there are negative autocorrelation problems because the DW-stat value is in the region of  $4-D_L < DW-stat < 4$  which in model 1 ( $2.282 < 2.376049 < 4$ ) and model 2 ( $2.282 < 2.332103 < 4$ ).

**Effort for Minimizing Heteroscedascity and Autocorrelation**

Based on the test results of the linear regression models above, it is known that in the research models, in model 1 (1998 Asian Banking Crisis) and model 2 (2008 Global Financial Crisis) have heteroscedascity problems and autocorrelation problems which can cause the estimation model to be inefficient

and not accurate. Some improvement steps are needed in minimalizing those problems which are by the EGLS (Estimated Generalized Least Square) method which are Cross Section Weight and Cross Section PCSE (Panel Corrected Standard Errors). So by using that method, the problems of heteroscedascity and autocorrelation are able to be minimalized, such as the estimation results seen in the previous discussion.

## **5. DISCUSSION**

In the analysis the influence of the 1998 Asian banking crisis there are some matters which are able to be observed. Real GDP has a negative influence to third party fund growth, this is caused by the snowball effect of the crisis which occurs where the crisis previously began from the baht exchange rate crisis in Thailand rapidly develops into an economic crisis, continuing into a social crisis, then a political crisis in Indonesia (Suruji et al, 1998) This crisis which spreads creates an anomaly condition and makes the monetary instrument not able to work for stabilizing the rupiah and the economy, and the fiscal sector which is expected to be the motor of the economy is also under pressure as a cause of decreasing income. So the economic situation is unpredictable and causes uncertainty to society including customer expectations to the banking sector.

The real Bank Indonesia interest rate variable has a negative influence to third party fund growth percentage because the higher the interest rate, the ability of customers to repay/pay off credit will decrease and tend to increase bad credit. So, the interest of customers for saving their funds in the bank decreases because of high risks. Meanwhile for the composite stock price index return level it has a positive influence to third party fund growth because the relation between the money market and the capital market is an imperfect substitution (Simorangkir, 2011). When the composite stock price index return increases, people use profit from the stock to be saved in banks so it will increase the number of bank deposits. For the bank performance, the growth of secondary reserve has a negative influence to third party funds, this is not in line with the theory because of the problem of limited information from customers about bank performance (asymmetric information) (Simorangkir, 2011). As well as the Non-performing loan (NPL) variable which has a positive influence to third party fund growth, this is not in line with the theory because of the limited information from customers about bank performance (asymmetric information) (Simorangkir, 2011).

While in the 2008 global financial crisis influence analysis the matters which are able to be observed are as the following. The real GDP variable has a positive influence to third party fund growth and in line with the research results of Simorangkir (2011) that the higher the economic growth the higher the interest of obtaining funds in banks and the smoother the credit payment, and also able to decrease the chance of bad credit. Because of that, customers are not worried for saving their funds in banks so the number of banking third party funds are able to increase. The real Bank Indonesia interest rate has a positive influence and in line with the loanable funds and liquidity presence theories which states that the higher the interest rate level the higher the credit offers or in other words the tendency of customers for saving their money in banks are high because the opportunity cost from holding money is higher. This composite stock price index level which has a negative influence is in line with

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the modern theory from Friedman which states that a person is able to hold their wealth in several forms of assets including in the form of stock, when the return level to stock increases the return level is relative from money decreases and causes the number of bank savings of people to decrease. This is in line with the research of Haron, Azmi, and Safie (2005) that the level of composite stock price index return has a negative and significant influence to the number of savings.

For the bank performance variable, the secondary reserve growth variable which has a positive influence is in line with the CAMEL'S concept where the liquid assets which are reflected by the secondary reserve becomes a health assessment of a bank. The higher the number of secondary reserve the health of a bank is able to be stated as good. This CAMEL'S concept is supported by the Multiple Deposit Creation Theory where when banks choose to use their reserve funds for purchasing securities which are able to impact the increase of customer savings in the bank. Although not significant this negative influence is in line with the CAMEL'S concept where the development of problematic productive assets is reflected by the Non-Performing Loan (NPL) to be an assessment of the health of a bank. The lower the NPL value the health of a bank is able to be stated as good. So the trust of customers to a bank increases and the number of deposits in a bank will increase. This is supported by the research results of Simorangkir (2011) that the smaller the NPL the smaller the customer funds which are restrained in bad credit, so it will decrease the vulnerability of a bank to default (failure to pay).

## **6. CONCLUSIONS**

Based on the qualitative and quantitative analysis which are implemented in previous chapters, several results below are able to be concluded:

1. For the 1998 Asian banking crisis, the fundamental macroeconomic variables which significantly influences the growth of third party funds are the real GDP growth with a negative influence, deposit interest rate with a negative influence, and composite stock price index return rate with a positive influence. While the bank performance variable which is significant which influences the growth of third party funds of the banking sector with a negative influence, while NPL does not influence significantly. Yet, all those variables which are significant and not significant have opposite coefficient signs theoretically and empirically. This shows the presence of influence deviation from those variables in the crisis period.
2. For the 2008 Global Financial Crisis Period the fundamental macroeconomic variables which significantly influences the growth of third party funds are the real GDP growth with a positive influence, deposit interest rate with a positive influence, and composite stock price index return rate with a negative influence. While the bank performance variable which is significant which influences the growth of third party funds of the banking sector with a positive influence, while NPL does not influence significantly. All those variables which are significant and not significant have coefficient signs which are corresponding theoretically and empirically.
3. There is a difference of influence from each independent variable in both crisis periods where all variables in the 1998 Asian Banking Crisis are opposite with what it should be based on theory and empirical, the cause is

that the crisis which occurs becomes a crisis which develops into an economic crisis, social crisis, and political crisis in Indonesia which impacts into uncertainty to society including the expectations of customers and causes a deviation of macroeconomic variable influence and bank performance to the banking sector. While all variables in the 2008 Global Financial Crisis period are corresponding with what it should be based on theory and empirical, this shows that in the 2008 crisis the economy functions normally and there is no deviation of macroeconomic variable and bank performance to the banking sector.

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