DETERMINANTS OF PERFORMANCE IN INDONESIAN BANKING: A CROSS-SECTIONAL AND DYNAMIC PANEL DATA ANALYSIS

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─**Abstract** ─

This paper examines determinants of bank performance in Indonesia for the period of 1994-1999. It was pooled cross-sectional time series and dynamic panel data models. This research incorporates the traditional Structure-Conduct-Performance (SCP) and Relative Efficiency (RE) hypotheses. The estimation results show that bank performance industry is competitive, and implies that market structure in Indonesian banking sector is nearly perfect competition. However, no evidence has been found in this study in support of the traditional SCP, while RE is otherwise. The negative relationship between loans to business groups and bank performance, which is likely due to the high loans provided to them, thus supporting the moral hazard hypothesis. The negative relationship between market share loan and return on assets, the negative relationship between debt-to-total assets and bank performance is likely because of the high level of debt. The negative relationship between debt-to-total assets and bank performance in a scenario of high interest rates indicates that banks acted responsibly by paying high interest charges prevailing at that time. This also results in the negative relationship between capital adequacy ratio and bank performance.

Key Words: *Structure-Conduct-Performance Theory, Morald Hazard, Bank Performance, Indonesian Banking, Cross-sectional and Dynamic panel data Analysis*

JEL Classification: E5

1. INTRODUCTION

This study aims to investigate the determinants of bank performance in Indonesia and assess the degree of convergence in terms of local banks' behaviors. The bank function as financial intermediation is essential for economic development in a country, and some authors have even provided evidence of a causal link between the degree of financial intermediation and subsequent economic growth. (Levine and Zervos, 1998)

The issue is of particular importance for the Indonesia economic development for decades of 1980s and 1990s, where the income source from oil and gas sectors is no longer become the major source for government because the price of oil decreased (Kuncoro & Suharjono, 2002). The decrease of gas and oil prices caused difficulties for the government to implement development policies. Thus, the government had to collect funds from society through banking institutions. To gather funds from society, the government firstly conducted banking liberalization in year 1983 with the aim of vanishing limitation of credit and deposit interest rate (Nasution, 1993). The second liberalization aims to decrease reserve requirement from 15 to 2 percent and gave opportunities for the founding of private bank.

The liberalization of banking in Indonesia has caused change of banking structure; the number of banks increased from 111 in 1988 to 240 in 1996 (Indonesia Bank, 1997). This intensified the competition in the banking industry. This also resulted in high-risk bank operation like credit risk, deviation risk of loss, moral hazard in the entrepreneur circle, and asymmetric information between borrower and lender (Siamat, 1993).

Banks' weak performance in economic transition is, to some extent, due to economic and regulatory constraints. An essential feature in banking transition is that large asymmetry exists between borrowers and intermediaries, leading to adverse-selection, moral hazard, and weak monitoring incentives (Piloff & Rhoades, 2002).

Indonesian government has change banking regulations to improve bank performance of which one is to merge several banks, such as BBD, BDN, Bapindo, and Bank Exim became Bank Mandiri, to increase efficiency. However, this policy has not proven to improve bank performance, and still many banks go bankrupt (Indonesia Bank, 1998). Inefficiency of bank operations results in them being incapable of competition. Efficiency of banking institution especially in management will be able to increase profit maximum (Berger, Hunter, & Timme, 1993).

Studies of the relationship between market structure and bank performance in rich countries in America and Europe, as done by Smirlock (1985) using Structure-Conduct-Performance paradigm (SCP) and Relative efficiency (RE), found that bank performance is determined by market share and efficient operations, but market concentration showed negative relationship.

Lack of studies on the relationship between market structure and bank performance in developing countries have been conducted. This study will fill the gap by focusing on the relationship between market structure, relative efficiency and moral hazard and bank performance in Indonesia. The occurrence of moral hazard is caused by basic conditions unique to banking industry in Indonesia where most local banks are owned by business groups , which is expected to be important variable in Neuberger (1998) revised SCP theory.

2. INSTITUTION STRUCTURE OF BANKING IN INDONESIA

Institutional structure of banking in Indonesia in Table 1 provides information of market share assets in mid 1990s. The banking sectors dominated financial system in Indonesia. Banking deregulation has decreased market shares of government banks, on one side, and on the other side increased those of private banks accumulating properties and channeling of fund gathering and credit on the other side.

Table-1: Indonesian banking system: Total bank assets

Institutions	Billion (Rp)			Percentage of share		
	1995	1997	1999	1995	1997	1999
State-owned banks	75.920	133.042	312.179	35.35	37.20	47.93
National private banks	117.451	177.193	252.880	54.69	49.55	38.82
Regional government's banks	7.812	8.798	14.017	03.64	02.46	02.15
Foreign & joint venture banks	13.581	38.582	72.294	06.32	10.79	11.10
Total Banking System	214.764	357.613	651.370	100	100	100

Source: Bank Indonesia (2000), and Kuncoro & Suharjono (2002)

The composition of market share dominations changed in early 1999 caused the liquidation of 16 private national banks in November 1997, following monetary crises. After the liquidation of some national private banks, public's trust in national private banks decreased drastically as indicated by the fund redemptions and rush in the national private banks. Most of the people transferred their funds

to regional government banks and Foreign & joint venture banks for deposit safety reason.

Due to big scale fund transferring from 1997 to1999, market shares of national private banks decreased from 49.55% to 38.82%. In the same periods, government banks' increased from 37. 20% to 47. 93%, making them leading the assets of market shares. Foreign and joint venture banks increased substantially, while the regional government banks' decreased.

3. THE SCP THEORY, EFFICIENCY HYPOTHESIS, AND MORAL HAZARD

At the beginning, the SCP paradigm was for the industrial organization structure theory developed by Bain (1951) and just applied for manufacturing industry in America. After then, the SCP theory started to be used in banking industry to know the correlation between market structures and bank achievement. Further, research and observations of some bank mergers in 1960 in the America impacted on the increase in market concentrations because banks might dominate the market potential to increase the profitability level of banks (Gilbert, 1984).

Mora, Villarreal, and Benitez (2005) assume that banks will gain big profits by controlling the price. Price controlling observed through the SCP hypothesis approach states that high costs of market penetrations in industry permits the collusions of bank to increase the price causing market uncertainty and this will increase the profit of the bank.

The Relative efficiency (RE) theory appears to give alternative explanations of the SCP traditional paradigm. The SCP paradigm states that the market concentration level has a direct impact on competitions in banking industries to increase their achievements. On the other hand, the RE theory states that banking achievement is reached because of the efficiency in operations, the domination in production factors, and the use of scarce resources (Demsetz, 1973; Peltzman 1977).

Smirlock *et al*. (1986) states that in general, the efficiency achieved by the bank due to very low cost used in operations and thus increase the market share. Therefore, the more market shares of a bank the higher profit level it gets. However, in Fu & Hefferman's (2005) perspective, banking operations in optimum economic scale will yield higher market shares because of low of operational cost, which then results in higher profit.

Moral hazard is the ethic impression of the economic agents in their efforts to maximize their interest, while other parties probably suffer. Unfortunately, these economic agents do not care about or take responsibility for their behaviors that

sometimes can cause unwanted problems (Hausman & McPherson, 1998). Moral Hazard also happens because economic agents face uncertainty (Arnott& Stiglitz, 1988). Further, government guarantee on people's bank deposits causes an increase in moral hazard (Pangestu, 2002).

Neuberger (1998) has revised the SCP model by adding the new factors: basic conditions and public policy. Basic conditions give the pressure to the imperfect banking market such as uncertainty condition, asymmetric information, and transaction cost. This will finally influence banks' activities, and hence, banks' performance.

Moral hazard in this research is the basic condition that can be defined as the correlation between the variables, such as loan to business groups that will influence bank performance. This kind of analysis has been done by Laffont (2003) and Laffont & Rey (2001).

Chowdhury (2005) has developed a simple model where loan to business groups based on loan allocation control through a systematic financing. This will be successful although there is no common responsible, and the tariffs level of repayment will be lower. However, the loan controlling might lowered profitability because of high cost.

4. DATA AND METHODOLOGY

Following the model using dynamic panel data (Goddord, Molyneux, & Wilson, 2004) that adds the lagged time in the performance variable, the analysis model becomes the equation as follows:

$$\pi_{it} = \alpha_0 + \delta\pi_{i,t-1} + \beta_1 MC_{it} + \beta_2 MSD_{it} + \beta_3 LTGB_{it} + \beta_4 MSL_{it} + \beta_5 LDR_{it} + \beta_6 LTTA_{it} + \beta_7 TDTA_{it} + \beta_8 CAR_{it} + \beta_{10} LTA_{it} + \mu_{it}$$
$$i = 1,........ \quad N, t = 2,........ \quad T$$

Where $\pi_{i,t-1}$ (the one-period) is lagged profitability and δ is the speed of adjustment to equilibrium. A value of δ between 0 and 1 implies that profits persist, but they will eventually return to their normal (average) level. A value close to 0 means that the industry is fairly competitive (high speed of adjustment) while a value of δ close to 1 implies less competitive structure (very slow adjustment).

5. DETERMINANT OF BANK PERFORMANCE

Table 2 lists the variables used in this study. The bank performance variable is represented by two alternative measures: the return on assets (ROA) and net interest margin (NIM). In principle, ROA reflects the ability of efficiency a bank

management to generate profit from the bank's assets, although it possible biased due to off-balance-sheet activities (Athanasoglou, Barisimis, & Delis, 2005). On the other hand, return on assets may also show the level size of bank in industry.

Net interest margin (NIM) is the measurement that defines as net interest income divided by total earning asset. NIM can monitor the loans traditionally and the banks' activity in giving the credit. Further net interest margin is the achievement of the bank from deposit and loan services if the bank is able to gather interest rate and increase the level of loans interest rate.

Market structure is the measurement to the market concentrations (MC) that is used as the measurement in SCP theory using the assumption that the market behavior in term of oligopoly is often stated as the agreement hypothesis, meaning the performance of the unions dominates the market industry.; we call this an imperfect oligopoly theory in the competitions. (Church & Ware, 2000)

In general, the measurement of market concentrations use Herfindahl Index (HHI) by predicting the multiplier of 2 deposit of market domination of each bank in a markets and then totaling the multiplier of 2 deposits of market domination (Athanasoglou, Brissimis, & Delis, 2005). If Herfindahl Index is lower than 1000, there is no market sportiness. If it is between 1000 and 1800, there is a simple market sportiness, share changes in a bank is the results from the competition in banking industry that might give the implications to the potential profitability of a institution. (Guru *et al*., 2000)

The market share domination is better than the market concentration, because the efficiency of some banks in running its business will maximize the profits over the normal (Smirlock,1985; Chirwa, 2001). On the other hand Mora, Villarreal, and Benitez (2005), view that profits is achieved due to bank's efficiency function.

Moral hazard is the proxy of the loans to business groups (LTGB). Moral hazards happen because credit valuation is against the rules. In addition, the agreement of optimal loan allocations between the bank and the business group occurs when the banks use invalid credit valuations (Laffont, 2003). Further, if the bank is one of the business units of a business group, the big moral threaten is potential, because the credit allocations are not based on the interest of credit, hence the bank faces the risk return that will influence the bank's performance (Husnan, 2001).

Markets share loan **(MSL)** is the important function in banking business and become the main profit achievement and most of the fund sources of bank circles in the activity of loan allocations(Mahmood, 1998). This is supported by

Neuberger (1998) who argues that the credit allocation is an effective banking product and indirectly determines the bank performance.

Loan to deposit ratio (LDR) is the bank capability valuations in repaying the funds redemption that is done by the depositors by depending on the credits that is allocated as liquidity sources (Dendawijaya, 2001). The higher the ratio, the lower the ability of bank liquidity. This will make the funds that are needed for the credit financing bigger (Sinkey, 1983).

Loan to total assets **(LTTA)** is the valuations of the bank's performance for fulfilling the credit demands by using its the total assets. Due to increase in this ratio, the level of the liquidity will be lower, because the total assets needed to finance the credit will be bigger (Dendawijaya, 2001).

Basir (2000) stated that the credit allocations to the customer is mainly the sources of profits to the bank and indirectly will influence the positive profits. On other side, banks also needed the big amount of credit demands, for considering its total assets, because it needs guarantee to all customers.

Total debt to total assets **(TDTA)** is defined as the measurement of the risk level of the banking operations. If this ratio is high it decrease the capital, because of the amount of total liability is equivalent with total assets.

When the total liability is equal to total assets of a bank, this means the capital is limited, and this might impact on the negative or positive relations to its performance, but the ratio will increase if the capital is small. So, when the debt increases, the bank should actuate the assets management (Goldberg and Rai, 1996).

Capital to adequacy ratio **(CAR)** is basic to measure the ability of bank to cover the decrease in its assets impacted by the bank loss resulted from the decrease of risks assets (Dendawijaya, 2001).

Traditionally, low CAR will have the high risk for a bank. But when the capital is available, bank will use some investment possibilities, such as getting customers by providing portfolio of profitable loans , to increase the profits (Molyneux & Forbes, 1995). And when the correlation of capital increases but the total assets are weak, the risks will increase (Guru, *et al*. 2000; Chirwa, 2001).

Log total assets (LTA) is the measurement of the bank size that is often said as the assets that is used to monitor the cost differences. If the size a bank is big, the bank can solve the investment that the total assets will have the correlations with

economics scale, and investment portfolio can decrease the risk level and the profit (Basir, 2000).

6. EMPIRICAL RESULTS

6.1 Econometric methodology

The present study uses an unbalanced panel data of Indonesian banks during the period of 1994-1999 (the summary of descriptive statistics of the variables used have been presented in Table 2). The econometric analysis of model (3) and (4) confronts the following issues. First, we test for stationary of the panel, using a unit root test for unbalanced panels. Second, we examine whether individual effects are fixed or random. Third, we use techniques for dynamic panel estimation that deal with the bias and inconsistency of our estimates.

The second issue is the choice between the fixed effect (FE) and the random effect (RE) models. As indicated by the Hausman test on model (3) (see Table 4), the difference in coefficients between FE and RE is systematic, providing evidence in favor of the FE model. Furthermore, the estimation results show that individual effects are present, since the relevant F-statistic is significant at the 1% level. However, as mentioned above, the least squares estimator of the FE model in the presence of a lagged dependent variable among the repressors is both biased and inconsistent.

6.2 Results

Table 4 reports the empirical results of the estimation of model (6) using return on assets (ROA) and net interest margin (NIM) as the profitability variable. The highly significant coefficient of the lagged profitability variable confirms the dynamic character of the model specification. In the present study, Π_{t-1} takes a value of approximately -0.59, which means that profits seem to persist tend down, and implies that departures from a perfectly competitive market structure in the Indonesian banking sectors may not be that large. If the value isapproximately .08, it means that profit seems to persist, and implies near perfectly competitive market structure. This finding is close to Goddard *et al*. (2004) findings indicating the statistical evidence for profit persistence in Indonesia banks was weak.

The negative relationship between loans-to- businesses group (LTGB) and bank performance means that the larger the loans to business groups, the lower the bank performance in Indonesian banking. This finding supports the moral hazard hypothesis.

Surprising that Indonesian banks had very high non-performing loans during the financial crisis period when almost 50% of the banks were bankrupt or taken over by the Government (Daruri & Edward, 2004).

The relationship between the debt-to-total assets (TDTA) and bank performance is negative. This shows that high debt weakens the capital because total debt is higher than total assets owned because   cost of interest rate becomes bigger that subsequently lowers bank performance. A big number of banks operating in Indonesia were not able to place debt as capital to be used as investments that most of the funds were stuck in unproductive investments.. Therefore, bank debt risk increases while bank performance drops.

The results of the statistical analysis show a negative relationship between bank performance and capital to adequacy ratio (CAR), even though this study hypothesized a positive relationship. The findings show that bank performance was achieved not because of capital from the banks themselves, but from society's funds that represent bank debt because debt-to-total assets also exhibits a negative relationship.

The relationship between bank size, as measured by the log of total assets (LTA) and bank performance is positive. This shows that, as a whole, bank size increases bank performance because banks in Indonesia have different economic scale due to a very high customer competition as shown by the results of the study from 1994 to 1999.

This finding is very interesting due to its connection with moral hazard problems in Indonesian banks where banks   share a decline in performance because a large part of society's funds are channeled to business groups causing higher bank debt but lower return on both assets (ROA) and net interest margin (NIM).

On the other hand, the larger capital adequacy ratio also reduced bank performance as big part of the capital used by banks was obtain from debt making bank performance fragile. On the other hand, total bank assets, as a measure of economic scale, increased bank performance due to the difference in economic scale used by Indonesian banks.

7. CONCLUSIONS

The findings of this study show that bank performance persists to a moderate extent, indicating that departures from perfect competitive market structure may not be that large in the Indonesian banking sector. Additionally, the findings also show a negative relationship between loans to business groups and bank

performance because of the high loans provided to business groups during the periods of the study.

The negative relationship between debt to total assets and bank performance is caused by high level of debt for the periods of the study, the negative relationship between debt to total assets and bank performance in a scenario of high interest rates indicate that banks acted responsibly by paying high interest charges prevailing at that time. This also results in the negative relationship between capital adequacy ratio and bank performance for the periods of study because the bulk of bank capital came from debt resulting in bank performance being brittle. The positive relationship between total assets and bank performance is due to different economic scale of existing banks in Indonesia.

Future research is recommended to add two independent variables: Non-performing Loan and Loan Loss Provision as the portfolio shifting for bank efficiency.

BIBLIOGRAPHY

Arnott, R., & Stiglitz, J.E. (1988). The basic analytic of moral hazard. NBER Working Paper Series, 24 (82), 1 – 55

Athanasoglou, P. P., Brissimis, S.N., & Delis, M. D. (2005). Bank-specific, industry-specific and macroecomonic determinant of bank profitability. *Working Paper , Bank of Greece* 25, 1-37.

Bain, J.S. (1951). Relation of profit to industry concentration: American manufacturing, 1936 – 1940. The Quarterly Journal of Economics, 65 (3), 293 - 324.

Bank Indonesia. (1988). Himpunan Peraturan Perundang-Undangan Paket Kebijaksaan Keuangan, Moneter and Perbankan 27 October

Basir, A.H.M. (2000). Determinants of profitability and rate of return margins in Islamic bank: some evidence from the middle est.-mail: Bashirah@aplha0.gram.edu, Prepared for the ERF's Seventh Annual Conference, October. Amman Jordan.

Berger, A.N., Hunter, W.C., & Timme, S.G. (1993). The efficiency of financial institutions: A Review & Preview old Research Past Present and Feature. Journal of Banking and Finance, 17, 221-249.

Chirwa, E.W.T.(2001). Market Structure, liberalization and performance in the Malawian banking industry. AERC Research Paper, 108, 1-55.

Church, J. & Ware, R. (2000). Industrial Organization: A strategic approach, Publisher McGraw-Hill, Singapore

Chowdhury, P.R. (2005). Group-lending: sequential financing, lender monitoring and joint liability. Journal of Development Economics, 77, 415 – 439.

Daruri, A.D., Edward, D. (2004). BPPN Garbage In Garbage Out. Center for banking crisis (CBC). Jakarta- Indonesia

Demsetz, H. (1973). Industry structure, market rivalry, and public policy. Journal of Low and Economics, 16, 1 - 9.

Dendawijaya, L. (2001). Manajemen perbankan. Jakarta, Ghalia Indonesia.

Fu, X., & Hefferman, S. (2005). China: The effects of bank reform on structure and performance. Working Paper Cass Business School, City University, London

Gilbert, R.A. (1984). Studies of bank market structure and condition: A review and evaluation. Journal of Money, Credit & Banking, 16, 617-644.

Goddord, J., Molyneux, P.,&Wilson, J.O.S.(2004). The profitability of European banks: A cross-sectional and dynamic panel analysis, The Manchester School, 72, (3), 363-381.

Goldberg & Rai.(1996). The structure-performance relationship for European banking. Journal of Banking & Finance, 20, 745-771.

Guru, B. K., Staunton, J., & Shanmugam, B. (2000) Determinants of commercial bank profitability in Malaysia. Asian Academy of Management Journal, 5, (2), 1 - 22

Hausman, D.M., & McPherson, M.(1988). Economic analysis and moral philosophy. Cambridge University Press.

Husnan, S.(2001). Indonesia in corporate governance and finance in East Asia: A study of Indonesia, Republic of Korea, Malaysia, Philippines and Thailand. Volume two, edited by : Zhung J, David Edwards and Virginia A. Coupling, Asian Development Bank.

Kuncono, M., & Suharjono. (2002). Manajemen Perbankan. Teori dan aplikasi, Edisi pertama, BPFE Yogyakarta.

Laffont, J.J. (2003). Collusion and group lending with adverse selection. Journal Of Development Economic, 70, 329 - 348

Laffont, J.J., & Rey, P. (2001). Collusion and group lending with moral hazard. Mimeo, IDEI, 1 - 17.

Laporan Bank Indonesia. (1997)

Laporan Bank Indonesia. (2000)

Levine, R., & Zervos, S. (1998). "Stock markets, banks, and economic growth," American Economic Review, 88, 537-558.

Mahmood, R.(1998). Perbankan dan pemberian pinjaman. (Siri pengurusan dan perniagaan Utusan). Percetakan Cergas (M) SDN. BHD. Kuala Lumpur.

Molyneux, P., & Forbes, W. (1995). Market structure and performance in European banking. Applied Economics, 27, 155-159

Mora, R. G., Villarreal, E. S., & Benitez, M.V. (2005). Profitability, concentration and efficiency in the Mexican banking industry. 1-24. Google. Ernesto, Sepulveda, ernesto_sepulveda@banxico.org.mx.

Nasution, A. (1993). Reforms of the Financial sector in Indonesia, 1983-1991. The Indonesian Quarterly, XXI, (3), 284 - 310.

Neuberger, D. (1998). Industrial organization of banking: A review. International Journal of the Economics of Business, 5, (1), 97-118.

Pangestu, M. (2002) The unfinished story of the Indonesia bank restructuring: in search of a happy ending?. Mimeo at The Technical Group Meeting, G24, Beirut, March 1-2.

Peltzman, S, (1997). The gains and losses from industrial concentration. Journal of law and economics, 20, 229-263.

Piloff, S.J., & Rhoades, S.A (2002). Structure and profitability in banking markets. Review of Industrial Organization,20, 88-98.

Siamat, D. (1993). Manajemen Bank Umum, Intermedia, Jakarta.

Smirlock, M. (1985). Evidence of (non) relationship between concentration and profitability in banking. Journal of Money and Banking, 17, 69 - 83.

Smirlock, M., Gilligan, T., & Marshall, W. (1986). Tobin's q and the structure-performance relationship: Reply, The American Economic Review, 76 (5), pp. 1211-1213.

Sinkey, J.F. Jr (1983). Commercial bank financial management,. Macmillan Publishing Co. Inc. 866 Third avenue, New York.

Table 2

Definitions, notation and the expected effect of the explanatory variable of model on bank performances

Variable		Measure	Notation	Expected effect
Dependent Variables	Return on assets	Net profits after tax to total assets	ROA	
	Net interest margin	Net interest income divided by total earning Assets	NIM	
Independent Variable	Market concentration	Market concentration is squared of market share of deposit (Herfindahl-Hirschman index)	MC	Positive
	Market Share deposit	Market share is total deposit divided total deposits of all banks in industry	MSD	Positive
	Loan to group business	Loan to affiliation to capital is loan to group business dividend capital	LTGB	Negative
	Market share loan	Market share loan is total loan divided total loan od all banks in industry	MSL	Positive
	Loan to deposit ratio	Loan to deposit ratio is total loan divided by total deposit	LDR	Negative
	Loan to total	Loan to asset ration is total loan	LTTA	Positive

assets	divided by total assets		
Total debt to total assets	Total debt to total assets is total debt divided by total assets	TDTA	Negative
Capital adequacy ratio	Capital adequacy ratio is capital divided average risk assets	CAR	Positive
Log to total assets	Log total assets	LTA	Positive

Table 4

Hadri Z-stat panel unit root test

Variable	Statistic	Prob.**	Cross-sectional	Obs
ROA	11.6414	0.000	117	702
NIM	15.0812	0.000	117	702
MC	19.8545	0.000	117	702
MSD	13.7272	0.000	117	702
LTGB	11.5667	0.000	117	702
MSL	23.7069	0.000	117	702
LDR	18.6006	0.000	117	702
LTTA	16.1694	0.000	117	702
TDTA	15.1544	0.000	117	702
CAR	14.5189	0.000	117	702
LTA	16.3677	0.000	117	702

** Probabilities for Fisher tests are computed using an asymptotic

Chi-square distribution. All other tests assume asymptotic normality

Table 4

FE and RE estimation and specification tests – Dep. Variable ROA and NIM

Variable	ROA				NIM			
	FE		RE		FE		RE	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Intercept	.6076	.0000	.6185	.0000	.0447	.4758	.2152	.0000
Π_{t-1}	-.5909***	.0000	-.4340***	.0000	.0800**	.0577	.3219***	.0000
MC	0.0007	.1596	-.0001	.6272	-.0001	.7258	-3.69E-	.7832
MSD	-.0510***	.0001	-.0192***	.0003	.0003	.9678	-.0015	.6291
LTGB	-.0086*	.0568	-.0045	.2548	-.0045*	.0906	-.0036	.1230
MSL	-.0007	.8785	.0076***	.0056	-.0051*	.0501	1.09E-	.9947
LDR	-.0141***	.0000	-.0066***	.0020	.0012	.4646	.0029**	.0185
LTTA	.0241	.2077	-.0420***	.0015	.0124	.2667	-.0209***	.0075
TDTA	-.7990***	.0000	-.7422***	.0000	-.1946***	.0000	-.1698***	.0000
CAR	-.7207***	.0000	-.5603***	.0000	-.1022***	.0000	-.1034***	.0000
LTA	.0161**	.0428	.0106***	.0001	.0140***	.0028	-.0006	.6882
R-squared		.8425		.7294		.6789		.5180
Adjusted R-sq.		.7990		.7247		.5905		.5096
F-statistic		19.4439		154.7435		7.6841		61.6902
Prob(F-stat.)		.0000		.0000		.0000		.0000
Hausman test	χ^2 (10) =236.186744, P – Value = 0.0000				χ^2 (10) =184.186751, P – Value = 0.0000			

*** Value significant at the 1% level

** Value significant at the 5% level

* Value significant at the 10% level