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DETERMINANTS OF CAPITAL STRUCTURE: EVIDENCE FROM KOREAN BANKS

This paper examines empirically the determinants of capital structure of Korean banks. The results suggest there may be great similarities in the determinants of capital structure between banks and non-financial firms. Most determinants on bank capital structure appear to be very consistent with the estimates found for non-financial firms. Overall, we found that Korean banks' capital structure measured by debt-to-asset ratio is negatively related to bank profitability, loan ratio, and payout ratio for both periods of 1994-1996 (pre-crisis period) and 2001-2008 (post-financial crisis period). However, bank asset size shows a more complicated effect on debt ratio than it is hypothesized in literature. It is differently related to debt ratio depending on market environment and regulation in banking industry. Bank asset size is positively related to debt ratio before the financial crisis which is the same as the standard hypothesis in the literature, however, it is changed into a negative relation after the financial crisis. This result can be understood by considering that merger and acquisition of unhealthier and smaller banks by larger banks is one of the main instruments of Korean banking reforms to overcome the financial crisis. Under the period of 1997-2000, however, most variables are insignificant, suggesting that Korean banks did not have any meaningful mechanism for capital structure decision over this period.

Keywords: capital structure, debt ratio, banking industry, bank regulation, financial crisis.

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ЧИННИКИ, ЯКІ ВИЗНАЧАЮТЬ СТРУКТУРУ КАПІТАЛУ (ЗА ДАНИМИ КОРЕЙСЬКИХ БАНКІВ)

У статті емпірично вивчено детермінанти структури капіталу корейських банків. Результати вказують на те, що чинники, які визначають структуру капіталу банків і нефінансових компаній, схожі між собою. Виявлено, що структура капіталу корейських банків, виміряна як співвідношення боргу до активів, негативно впливає на прибутковість банку, кредитні стосунки і коефіцієнт дивідендних виплат за обидва періоди, 1994-1996 рр. (до фінансової кризи) і 2001-2008 рр. (після кризи). Проте розмір активів банку показує складніший вплив на рівень заборгованості, ніж це представляється в дослідженнях. Він по-різному впливає на рівень заборгованості залежно від кон'юнктури ринку і регулювання банківської галузі. Розмір активів банку знаходиться в прямій залежності від рівня заборгованості до початку фінансової кризи. Ця стандартна гіпотеза в літературі переходить проте в негативну залежність після фінансової кризи. Цей результат можна зрозуміти, враховуючи, що злиття і поглинання погано функціонуючих і дрібних банків більшими банками є одним із основних інструментів корейських банківських реформ з метою подолання фінансової кризи. В період 1997-2000 рр. більшість змінних незначні, що означає: корейські банки не мали значимого механізму для вирішення проблеми структури капіталу в цей період.

Ключові слова: структура капіталу, рівень заборгованості, банківський сектор, банківське регулювання, фінансова криза.

Фор. 1. Таб. 6. Літ. 21.

Сок Вон Ли

ФАКТОРЫ, ОПРЕДЕЛЯЮЩИЕ СТРУКТУРУ КАПИТАЛА (ПО ДАННЫМ КОРЕЙСКИХ БАНКОВ)

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В статье эмпирически изучены детерминанты структуры капитала корейских банков. Результаты этой статьи предполагают, что факторы, определяющие структуру капитала банков и нефинансовых компаний, схожи между собой. Обнаружено, что структура капитала корейских банков, измеренная как соотношение долга к активам, отрицательно влияет на доходность банка, кредитные отношения и коэффициент дивидендных выплат за оба периода, 1994-1996 гг. (до финансового кризиса) и 2001-2008 гг. (после кризиса). Тем не менее, размер активов банка показывает более сложное влияние на уровень задолженности, чем это представляется в исследованиях. Он по-разному влияет на уровень задолженности в зависимости от конъюнктуры рынка и регулирования банковской отрасли. Размер активов банка находится в прямой зависимости от уровня задолженности до начала финансового кризиса. Эта стандартная гипотеза в литературе переходит однако в отрицательную зависимость после финансового кризиса. Этот результат можно понять, учитывая, что слияния и поглощения плохо функционирующих и мелких банков более крупными банками является одним из основных инструментов корейских банковских реформ с целью преодоления финансового кризиса. В период 1997-2000 гг. большинство переменных незначительны, что означает: корейские банки не имели значимого механизма для решения проблемы структуры капитала в этот период.

Ключевые слова: *структура капитала, уровень задолженности, банковский сектор, банковское регулирование, финансовый кризис.*

I. Introduction. Since the pioneering publication of Modigliani and Miller irrelevance proposition of capital structure on firm value under certain conditions (1958), hundreds of theoretical and empirical studies have been carried out to understand the capital structure of firms. As a result, the literature has converged on some theoretical propositions on the issue of firms capital structure. The static trade-off theory of capital structure suggests that optimal capital structure is the solution of a trade-off relation between the advantage of tax shield and the costs associated with debt financing such as financial distress and bankruptcy costs. That is, the optimal capital structure is obtained where the marginal value of tax shield on additional debt is equal to its marginal costs (Altman, 1984, 2002; Myers, 1984; Titman and Wessels, 1988; and Rajan and Zingales, 1995). On the other hand, the pecking-order theory suggests there is no target optimal capital structure. When undertaking new investments, firms prefer internal financing by using retained earnings to external financing. When internal retained earnings are not sufficient, firms prefer debt issuance, and then finally equity issuance. There is no well-defined optimal capital structure (Myers, 1984; Myers and Majluf, 1984). The agency cost theory of capital structure suggests that optimal capital structure is obtained where agency costs resulting from the conflict of interests between shareholders and debtholders are minimized (Jensen and Meckling, 1976).

Though empirical evidences are rather mixed, some broad categories of standard determinants explaining the difference of firms' capital structures have emerged. Friend and Lang (1988), Crutchley and Hansen (1989), and Agrawal and Nagarajan (1990) found that the with larger asset size tend to use more debt, because larger firms have lower possibility of bankruptcy and lower costs of borrowing. Myers and Majluf (1984), Jensen, Solberg and Zorn (1992) found a nega-

tive relation between debt ratio and profitability based on the pecking order hypothesis. Firms with higher profitability would have more sufficient retained earnings for new investments, and therefore use less debt. Ravid (1988) found that firms tend to use more debt as the firms' management risk and future growth opportunity are lower focusing on the imperfections of market structure. He argued that as the firm has a more future growth opportunity, the agency cost of debt would be greater, resulting in less use of debt. Bradley, Jarrell and Kim (1984), Mehran (1992), and Crutchley and Hansen (1989) found that the variance of stock return and future earnings are negatively related to debt ratio, because creditors are less willing to provide funds to the firms with higher operation risk measured by the variance. Jensen, Solberg and Zorn (1992) found a negative relation between dividend payout ratio and debt ratio. They argued that the firms with higher dividend payout ratio would prefer equity financing to debt financing for new investments. Leland and Pyle (1977) found a positive relation between the proportion of insider shareholdings and debt ratio based on the signaling theory.

The objective of this paper is to identify empirically the determinants of capital structure of Korean banks. Some papers in Korea have examined the issue of Korean firms' capital structure decision. But most of them dealt with non-financial firms. In this paper we examine what similarities and differences exist in the determinants of capital structure between banks and non-financial firms in Korea. Specifically, this paper examines whether traditional, standard determinants of non-financial firms' capital structures also apply to the capital structure of Korean banks. Korean banking system experienced drastic changes at internal and external markets over the last decades. It went through severe Asian countries' financial crisis from the late of 1997, and subsequent regulatory reforms until the early 2000s. To overcome the financial crisis, various restrictions were imposed on Korean banks and the strict regulatory reforms were made during this period. In this process, strengthening bank capital structure was the main target by the bank regulator for the soundness and safety of the banking system. Therefore, identifying the determinants and understanding the mechanism of Korean banks' capital structure decision would be very important not only theoretically but also for a policy-making purpose for the soundness of banking system. Even though there are some differences in the signs and the statistical significances of regression coefficients, the broad summary of empirical studies on capital structure of non-financial firms in Korea suggests that the variables such as profitability, asset size, growth opportunity, default risk, dividend payout ratio, and ownership structure would play important roles in explaining differences in the capital structure of Korean firms. These studies include Lim (1982), Kim (1989), Yoon (1989), Sun (1990), Kim and Lee (1995), and Kim and Kim (2007) etc.

The structure of this paper is as follows. The next section describes the sample of the banks for this study. Section 3 describes the regression model and the hypotheses to be examined. Section 4 presents the empirical results, and Section 5 offers concluding remarks.

II. Data and Summary Statistics. The database for this study comes from the Statistics of Bank Management provided by the KFSS (Korean Financial Supervisory Service). We obtained the balance sheet and incomes statement data for each bank

over the sample period from 1994 to 2008. There were 24 banks in 1994, 25 in 1995-1996 and 26 in 1997. However, due to the financial crisis in Asian countries in the late 1997 through early 2000s, the number of banks decreased substantially after 1997, and 17 banks remained in 2000, and the total of 13 banks have existed in the industry after 2006.

Table 1 presents the sample descriptive statistics of the variables used in the study. For each year from 1994 to 2008, all the sample banks are partitioned into 2 groups at the median value of the debt ratio; higher debt ratio banks vs. lower debt ratio banks. Then some financial and operational characteristics of the 2 groups are compared by the t-test for the equality of mean values. All the values are year-end. Debt ratio and loan ratio are measured as the total debt and loans divided by the total asset, respectively. Payout ratio is measured as the total cash dividend divided by the net income. Outsider share is measured as the proportion of total equity owned by outside shareholders.

Table 1 shows significant differences in the mean values of ROA (return on asset), payout ratio, and outsider shares between higher debt ratio and lower debt ratio banks. It is shown that the banks with higher ROA and higher payout ratio tend to maintain lower debt ratio, while the banks with higher proportion of outsider shares tend to maintain higher debt ratio. The differences in the asset size and loan ratio between the 2 groups are insignificant.

III. Testing Model, Variables and Hypotheses. To examine the determinants of the capital structure of Korean banks, the cross-sectional and time-series data of the sample banks are pooled over the sample period 1994-2008, and the following multivariate panel regression equation is estimated. As in the most previous studies, capital structure of each bank, and therefore, the dependent variable of the regression, is defined as debt ratio (debt) measured by the total debt divided by total asset. As the explanatory variables affecting bank debt ratio, loan ratio (Loan), return on asset (ROA), asset size (LogAsset), payout ratio (Div) and the proportion of outsider shareholdings (Outshare) are used.

$$(\text{Debt})_{i,t} = \lambda_0 + \lambda_1 (\text{Loan})_{i,t} + \lambda_2 (\text{ROA})_{i,t} + \lambda_3 (LogAsset)_{i,t} \qquad (1)$$
$$+ \lambda_4 (Div)_{i,t} + \lambda_5 (\text{Outshare})i,t + \varepsilon_{i,t}$$

The expected signs and the hypotheses between each of the above explanatory variables and bank capital structure measured by debt ratio are as follows. Firstly, loan ratio is used as the proxy variable measuring the bank's overall risk status of asset portfolio composition. Other things being equal, the variability of return on asset of banks would be greater for the banks with higher loan-to-asset ratio. That is, the greater the loan-to-asset ratio, the more exposed the bank profitability and performance to future economic conditions. In fact, loans are considered the riskiest asset class, and most bank loans are assigned 100% risk-weight in the calculations of BIS (Bank for International Settlement) capital ratio. Thus, when setting up capital structure, the banks with higher loan ratio would have greater incentives to use less debt for the bank's optimal risk management. Therefore, loan ratio and debt ratio are expected to be negatively related.

ROA (return on asset) measuring bank profitability is also expected to be negatively related to debt ratio. The banks with higher ROA would have sufficient retained

earnings and resources of internal financing for new investments, and therefore, would not have great incentives for debt financing.

Table 1. **Sample descriptive statistics**

	Higher debt ratio banks	Lower debt ratio banks	T-statistics
Loan-to-asset ratio	0.4683	0.4785	-0.95
ROA (Return on asset)	-0.4806	0.1055	-2.34***
Asset size (in million Korean won)	370,690	440,910	-1.12
Div (Payout ratio)	0.1531	0.2148	-2.26***
Outshare (proportion of outsider shareholdings)	0.0771	0.0323	2.23***
Number of observations	264		

This table shows the sample descriptive statistics for the higher debt ratio banks and lower debt ratio banks, respectively, and t-statistics for the equality test of means over 1994-2008.
*, **, *** indicate statistical significance at the 10, 5, or 1% significance levels, respectively.

Asset size and debt ratio are expected to be positively related. Larger banks would have lower possibility of bankruptcy and lower marginal cost associated with bankruptcy. Also, larger banks would have superior operational and financing skills with better diversified asset portfolios. They would also have better ratings in credit evaluation. Thus, larger banks would face a lower cost of borrowing in external financing market. Other things being equal, therefore, taking these various advantageous positions at capital market, larger banks would have greater incentives to use more debt than smaller banks.

Payout ratio and debt ratio are expected to be negatively related. It is generally known in finance literature that the firms with higher payout ratio prefer equity financing to debt financing. Also, in terms of financial operation, the banks with higher payout ratio would have a greater need for current cash outlay due to dividend payment, and therefore, would be reluctant to use debt financing which is another item of cash outlay due to interest payment. Furthermore, dividend payment aggravates the capital structure of the firm, which induces the firms with higher payout ratio to decrease debt use for the financial risk management of the firm.

Finally, there is no general agreement in the literature on the relation between the proportion of insider shareholdings (or outsider shareholdings) and debt ratio. The main argument of the hypothesis expecting a positive (negative) relation between the proportion of insider shareholdings (outsider shareholdings) and debt ratio is as follows. The insiders or managerial owners themselves with a high proportion of insider shareholding have to incur substantial amount of bankruptcy costs, and therefore, they would be reluctant to accept decisions transferring debtholders' wealth into stockholders. That is, the agency cost of debt, and the consequent decrease of firm value would be less for the firms with a higher (lower) proportion of insider (outsider) shareholdings. Thus, the firms with a higher (lower) proportion of insider (outsider) shareholdings would have greater incentives for debt financing. On the other hand, the hypothesis expecting a negative (positive) relation between the proportion of insider shareholdings (outsider shareholdings) and debt ratio suggests that insiders or managerial owners who

want to minimize the risks of their undiversified human capital and employment have the incentives to avoid the use of debt to minimize the costs associated with bankruptcy.

Based on the above arguments, we hypothesize that:

H1: The relation between loan ratio and debt ratio is negative ($\lambda_1 < 0$).

H2: The relation between ROA and debt ratio is negative ($\lambda_2 < 0$).

H3: The relation between asset size and debt ratio is positive ($\lambda_3 > 0$).

H4: The relation between payout ratio and debt ratio is negative ($\lambda_4 < 0$).

H5: The relation between insider shareholdings and debt ratio is indeterminate.

IV. Empirical Results.

4.1. The Results for Full Sample Period. Before estimating the above panel regression model, we examine the correlation coefficients among the variables used in the study as a prerequisite test. Table 2 presents the Pearson correlation coefficients. It is shown that debt ratio has significantly negative correlations with loan ratio, ROA, and payout ratio, while it has a significantly positive correlation with asset size. All these correlations are consistent with the hypotheses in the study. Debt ratio has a significantly positive correlation with the proportion of outsider shareholdings which supports the latter hypothesis in the above-mentioned relations between ownership structure and debt ratio.

Table 2. **Correlations**

	Debt	Loan	ROA	logAsset	Div	Outshare
Debt	1					
Loan	-0.1761**	1				
ROA	-0.5229***	0.3546**	1			
LogAsset	0.1837**	0.2396**	0.2051**	1		
Div	-0.3455***	-0.0733	0.3173**	0.0243	1	
Outshare	0.2142**	-0.2055*	-0.2849*	0.0055	-0.0292	1

This table shows the Pearson correlations among the variables used in the study.
*, **, *** indicate statistical significance at the 10, 5, or 1% significance levels, respectively.

Table 3 shows the results of the panel regression for all the sample banks over the full sample period (1994-2008). It is shown that the coefficient on ROA is significantly negative, the coefficient on asset size is significantly positive, and the coefficient on payout ratio is significantly negative. The coefficient on loan ratio shows a marginal significance at the 1% significance level. These results are consistent with our hypotheses and expectations in this study. That is, the banks with higher ROA would have more sufficient resources of retained earnings and internal financing, and therefore, would not have great incentives for debt financing. Larger banks with lower possibility of bankruptcy, superior operational and financing skills with better diversified asset portfolios, and better ratings in credit evaluation would be charged lower cost of borrowing at external financing market. Therefore, larger banks would have greater incentives to use more debt than smaller banks. The banks higher payout ratio would try to retrieve the decrease of capital ratio due to dividend payment by using less debt. The banks with higher loan ratio, and therefore, with higher risk of asset portfolios would try to balance the overall bank risk by decreasing debt ratio and reducing financial risk. Finally, the coefficient on outsider shareholdings is not significant. Overall, the results for

panel regression of Korean banks for the full sample period are very consistent with the previous studies in the literature even though most of them are done with non-financial firms.

Table 3. **Panel regression results (Full sample period)**

	Slope coefficient	t-statistics
Intercept	0.9053	83.22***
Loan	-0.0207	-1.58
ROA	-0.0050	-8.25***
LogAsset	0.0049	6.09***
Div	-0.0194	-3.98***
Outshare	0.0067	1.05
F-statistics	34.74***	
Adjusted R^2	0.40	
Number of observations	264	

This table shows the slope coefficients and t-statistics of the panel regression result for the full sample period 1994-2008. *, **, *** indicate the statistical significance at the 10, 5, or 1% significance levels, respectively.

4.2. The Results for Subsample Periods. In this section, presuming that the capital structure decision of Korean banks could have been affected by the Asian financial crisis in late 1997, we divide the full sample period 1994-2008 into 3 subsample periods: 1994-1996 (pre-financial crisis period), 1997-2000 (financial crisis period), and 2001-2008 (post-financial crisis period). Then we estimate the above multivariate panel regression for each sample period, respectively, and examine whether there was any difference in the capital structure decision in Korean banks for each period. The partitioning of the sample periods like this would be meaningful by considering that in the process of overcoming the financial crisis 1997 — early 2000s, the most important methodological implementation of regulatory reform was targeted at making the capital structure of banks healthier. Therefore, examining the capital structure decision of banks separately for each period could give some additional policy implications for bank capital structure.

The results of the estimation for 3 different subsample periods are presented in Table 4. The main finding on the comparison between the pre-financial crisis period (1994-1996) and the post-financial crisis period (2001-2008) is that all the explanatory variables show nearly the same results except for asset size. Both loan ratio and ROA have significantly negative coefficients in both periods. Outsider shareholdings have a significantly positive coefficient in both periods. However, asset size shows different results between the period of pre- and post-financial crisis. It has a significantly positive coefficient for pre-financial crisis period which is consistent with the standard hypothesis in the literature, however, has a significantly negative coefficient for post-financial crisis period. This result can be understood by considering that merger and acquisition of unhealthier and smaller banks by larger banks is one of the main instruments of Korean banking reforms to overcome financial crisis. In this process, strengthening bank capital structure is the main target by bank regulator for the soundness and safety of banking system. Therefore, maintaining a healthier capital structure by reducing debt ratio became one of the most important corporate strategies of, especially, larger banks that acquired smaller, unhealthier banks.

Table 4. **Panel regression results (by subsample periods)**

	1994-1996		1997-2000		2001-2008	
	Slope coefficient	t-statistics	Slope coefficient	t-statistics	Slope coefficient	t-statistics
Intercept	0.7743	38.96***	0.9586	42.75***	1.0060	90.70***
Loan	-0.1163	-3.21***	-0.0450	-1.58	-0.0421	-3.57***
ROA	-0.0131	-2.41**	-0.0034	-4.86***	-0.0093	-6.05***
LogAsset	0.0191	11.01***	0.0018	1.04	-0.0019	-3.11***
Div	-0.0081	-0.93	-0.0059	-0.73	-0.0037	-0.75
Outshare	0.0361	1.74*	0.0074	1.17	0.0705	3.23***
F-statistics	31.11***		8.5*		18.30***	
Adjusted R²	0.66		0.37		0.47	
Number of observations	74		80		110	

This table shows the slope coefficients and t-statistics of the panel regression result for the subsample periods 1994-1996, 1997-2000, 2001-2008.
*, **, *** indicate the statistical significance at the 10, 5, or 1% significance levels, respectively.

Table 4 shows that all the coefficients except for ROA are insignificant during the period of financial crisis. This result suggests that Korean banks did not have any significant and meaningful mechanism for capital structure decision over the financial crisis period.

4.3. The Results for Partitioned Samples. To examine how the bank capital structure decision is related to bank financial and operational characteristics, we partition the sample banks into 2 groups and examine what differences there are between the 2 groups on capital structure decision. For this comparison, the full sample banks are partitioned into 2 groups based on the 2 most widely and importantly monitored variables by bank regulator for the evaluation of individual bank's soundness: capital-to-asset ratio and ROA. Each year the sample banks are partitioned into higher capital ratio banks and lower capital ratio banks, and also higher ROA banks and lower ROA banks, respectively, at the median for each variable. Then the above panel regression is estimated for each group, and the capital structure decisions are compared between the 2 groups.

The results for the partitioned samples are presented in Tables 5 and 6. Table 5 shows the results for the partitioned samples between higher capital ratio banks and lower capital ratio banks. First, it is shown that the coefficient on loan ratio is significantly negative for lower capital ratio group, however, it is not significant for the higher capital ratio group. Thus, the incentive for risk management by decreasing debt ratio per one unit of increase in loan ratio appears to be greater for the lower capital ratio group. Lower capital ratio banks are considered riskier, and therefore, their need to offset the increase of risk from the increase of loan ratio by decreasing debt ratio would be greater than the higher capital ratio banks.

It is also shown that the coefficient on asset size is significantly positive for the higher capital ratio group, however, it is not significant for the lower capital ratio group. Thus, the incentive to use more debt as the asset size increases appears greater for the higher capital ratio group. Higher capital ratio banks would have lower possibility of bankruptcy, and therefore, would be charged lower cost of borrowing at the capital market. Thus, they would have greater incentives to increase debt per one unit of increase in asset size.

Payout ratio is significantly negative for higher capital ratio group, however, it is not significant for the lower capital ratio group. This result suggests that the preference of equity financing of the banks with higher payout ratio to debt financing is more easily accepted by the stock market investors as the bank capital ratio is higher.

Table 6 compares the estimation results between higher ROA group and lower ROA group, but any significant differences are not observed between the 2 groups.

Table 5. **Panel regression results (Partitioned samples at capital ratio)**

	Higher capital ratio group		Lower capital ratio group	
	Slope coefficient	t-statistics	Slope coefficient	t-statistics
Intercept	0.8707	59.26***	0.9858	97.89***
Loan	0.0034	0.18	-0.0437	-4.21***
ROA	-0.0036	-3.92***	-0.0052	-11.98***
LogAsset	0.0062	6.17***	-0.0002	-0.32
Div	-0.0217	-3.30***	-0.0031	-0.76
Outshare	0.0066	0.20	0.0004	0.13
F-statistics	13.76***		56.88***	
Adjusted R²	0.35		0.40	
Number of observations	132		132	

This table shows the slope coefficients and t-statistics of the panel regression result for the partitioned samples based on the median value for the capital-to-asset ratio.
*, **, *** indicate the statistical significance at the 10, 5, or 1% significance levels, respectively.

V. Concluding Remarks. The objective of this paper is to examine empirically the determinants of the capital structure of Korean banks. Specifically, this paper examines whether the traditional, standard determinants of non-financial firms' capital structures also apply to the capital structure of Korean banks. The results in this paper suggest great similarities in the determinants of capital structure between banks and non-financial firms. Most determinants on bank capital structure appear to be very consistent with the estimates found for non-financial firms. Overall, we found that Korean banks' capital structure measured by debt-to-asset ratio is negatively related to bank profitability, loan ratio, and payout ratio for both periods of 1994-1996 (pre-financial crisis period) and 2001-2008 (post-financial crisis period). The proportion of outsider shareholdings turns out to be positively related to debt ratio. However, bank asset size shows a more complicated effect on debt ratio than it is hypothesized in the literature. It is differently related to debt ratio depending on market environment and regulation of banking. Bank asset size is positively related to debt ratio before the financial crisis which is the same as the standard hypothesis in the literature, however, it is changed into a negative relation after the financial crisis. This result can be understood by considering that merger and acquisition of unhealthier and smaller banks by larger banks is one of the main instruments of Korean banking reforms to overcome financial crisis. In this process, strengthening bank capital structure is the main target by bank regulator for the soundness and safety of the banking system. Therefore, maintaining a healthier capital structure by reducing debt ratio became one of the most important corporate strategies of, especially, larger banks that acquired smaller, unhealthier banks. Under the period of financial crisis 1997-2000, however, most variables are insignificant, suggesting that Korean banks did not have any meaningful mechanism for capital structure decision over this period.

Table 6. **Panel regression results (Partitioned samples at ROA)**

	Higher ROA group		Lower ROA group	
	Slope coefficient	t-statistics	Slope coefficient	t-statistics
Intercept	0.8994	58.26***	0.9072	57.03***
Loan	-0.0226	-1.14	-0.0124	-0.67
ROA	-0.0058	-3.45***	-0.0050	-7.16***
LogAsset	0.0055	4.60***	0.0044	3.89***
Div	-0.0228	-3.42***	-0.0132	-1.77*
Outshare	0.0193	1.32	0.0019	0.28
F-statistics	13.66***		19.94***	
Adjusted R^2	0.34		0.46	
Number of observations	132		132	

This table shows the slope coefficients and t-statistics of the panel regression result for the partitioned samples based on the median value for the ROA.

*, **, *** indicate the statistical significance at the 10, 5, or 1% significance levels, respectively.

References:

1. *Altman, E.* (1984). A Further Empirical Investigation of the Bankruptcy Cost Question, The Journal of Finance, #4, September.1067-1089.

2. *Angrawal, A., and Nagarajan, N. J.* (1990). Corporate Capital Structure, Agency Costs and Ownership Control, The Journal of Finance, #4, September. 1325-1330.

3. *Bradley, M., Jarrell, G. and Kim, E.H.* (1984). On the Existence of an Optimal Capital Structure: Theory and Evidence, The Journal of Finance, #3, July. 857-878.

4. *Crutchley, C.E., and Hansen, R.S.* (1989). A Test of the Agency Theory of Managerial Ownerhsip, Corporate Leverage and Corporate Dividends, Financial Management, Winter. 36-46.

5. *Friend, I. and Lang, L.* (1988). An Empirical Test of the Impact of Managerial Self-Interest on Corporate Capital Structure, The Journal of Finance, #2, June. 271-281.

6. *Jensen, G.R., Solberg, D.P. and Zorn, T.S.* (1992). Simultaneous Determination of Insider Ownership, Debt, and Dividend Policies, Journal of Financial and Quantitative Analysis. Vol. 27, #2, June. 247-263.

7. *Jensen, M. and Meckling, W.* (1976). The Theory of Firm Value: Managerial Behavior, Agency Costs and Ownership Structure, Journal of Financial Economics, Vol.3, #4, October. 305-360.

8. *Kim, B. G., and Kim, D. W.* (2007). Managerial Ownership and Capital Structure: Panel Analysis for Post-Financial Crisis Period, Korean Journal of Financial Management, Vol. 11, Summer. 81-111.

9. *Kim, H. J., and Lee, H. Y.* (1995). Estimation of the Determinants of Capital Structure Using Panel Data, Korean Journal of Financial Management, Vol. 7. 33-56.

10. *Kim, H. S.* (1989). The Effects of Agency Costs on Capital Structure, Sinpyong Journal. Vol.9, Iss. 9. 26-36.

11. *Leland, H.E., and Pyle, D. H.* (1977). Informational Asymmetries, Financial Structure, and Financial Intermediation, The Journal of Finance. Vol XXXII, #2, May, 371-387.

12. *Lim, U. G.* (1989). Determinants of Korean Firms' Capital Structure, Korean Journal of Finance. Vol. 20, Iss. 08. 1-27.

13. *Mehran H.* (1992). Executive Incentive Plans, Corporate Control and Capital Structure, Journal of Financial and Quantitative Analysis. Vol. 27, Iss. 4, December. 539-560.

14. *Modigliani, F., and Miller, M.* (1958). The Cost of Capital, Corporation Finance and the Theory of Investment, The American Economic Review 48. Vol. XLVIII, #3, June. 261-297.

15. *Myers, S.* (1984). The capital structure Puzzle", The Journal of Finance. Vol. 39, #3, July. 39, 575-592.

16. *Myers, S., and Majluf, N. S.* (1984). Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have, NBER Working Paper # 1396, July.

17. *Rajan, R., and Zingales, L.* (1994). What Do Know about Capital Structure? Some 26 Evidence from International Data, NBER Working Paper, # 4875, October.

18. *Ravid, S. A.* (1988). On Interactions of Production and Financial Decisions", Financial Management, Vol. 17, 13, Autumn. 87-99.

19. *Sun, W. S.* (1990). Determinants of Korean Firms' Capital Structure and Cost of Capital", Korean Journal of Finance, Vol. 19, #9. 61-80.

20. *Titman S., and R. Wessel.* (1988). The Determinants of Capital Structure Choice, The Journal of Finance, Vol. XLIII, #1, March. 1-19.

21. *Yoon, B. H.* (1989). Empirical Analysis on the Determinants of Korean Firms, Sinpyong Journal, Vol. 30, Iss. 8. 38-54.

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