Dividend Policy and Investment Decisions of Korean Banks

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Abstract

The objective of this study is to investigate the inter-relationship between banks' dividend policy and investment decisions in terms of risk management and profit maximization. From the panel regression analysis, this study finds that the bank's dividend policy appears to be closely related to both incentives of profit maximization and risk management. In this study our empirical methodology is based on the general notion that the bank's expectation on future economic condition is best captured by various measures of the components of ex-ante risky asset portfolios as well as the widely used risk measures such as capital ratio, nonperforming loans and return on asset which simply reflect the bank's historical performance. We find that when the banks have positive expectation on future economic condition, they tend to increase the proportion of risky asset portfolios to maximize expected profits rather than putting highest priority on risk management of the bank, and tend to pay more dividends based on higher expected profits. On the other hand, when the expectation on future economic condition is negative, the banks tend to put highest priority on the bank's risk management by increasing the proportion of safe asset portfolios and decreasing dividends based on lower expected profits.

Keywords: dividend policy, investment decision, banking industry, risk management, profit maximization

1. Introduction

Dividend policy is one of very important corporate decisions for the management of the firm. Dividend payment is not just the source of cash compensation to shareholders but also it is an effective means of signaling information on firm's current and future earnings to capital market. Through this signaling effect, dividend policy affects firm value, hence, firm's managers need to determine optimal amount of dividend payment to maximize firm value. In this manner, dividend payment plays the role of disciplining and monitoring firm's managers and contributes to reducing agency problem.

Although theoretical debate regarding the effectiveness of dividend policy is highly controversial, many previous studies attempted to identify the factors determining dividend payout. Jensen and Meckling (1976) argue that large firms increase dividends to deter agency costs. Holder, Langrehr and Hexter (1998) find that larger firms prefer paying dividends than smaller firms because larger firms can get an easier access to capital market at a lower cost. Rozeff (1982) and Jensen (1986) find that firms with higher debt financing avoid paying more dividends to reserve earnings. Aivazian et al. (2003) find that firms with higher investment opportunities tend to pay higher dividends. Kania and Bacon (2005) find that firms with higher profits distribute higher dividend payment. Kim and Gu (2009) also find that large and profitable firms tend to pay more dividends. Al-Shubiri (2011) finds a positive relationship between investment opportunities and dividend. There are very few studies on dividend policy of banks. Bessler and Nohel (1996) find that profit growth and number of shareholders have significant impact on bank dividend policy of north American banks. Matthias and Akpomi (2008) identify current profits, financial leverage, capital structure, past dividends and legal restrictions as the determinants of Nigerian banks' dividend policy. Baker et al. (2001) find that profit stability, past dividends, current and projected profits affect dividend policy decisions of American banks.

This study is on the same line with previous researches in the literature of dividend policy. More specifically, this study is focusing on analyzing how the Korean banks' dividend policy is related to the banks' investment decisions which would be made based on the expectation of future market condition. For this analysis, we believe that the expectation on future market condition would be efficiently reflected by the banks' composition

of asset portfolios. This study employs various measures of ex-ante risky asset portfolios as the indicator of the banks' expectation on future economy, and investigates the inter-relationship between banks' dividend policy and investment decisions in terms of risk management and profit maximization. From the panel regression analysis, this study finds that the bank's dividend policy appears to be closely related to both incentives of profit maximization and risk management. In this study our empirical methodology is based on the general notion that the bank's expectation on future economic condition is best captured by various measures of the components of ex-ante risky asset portfolios as well as the widely used risk measures such as capital ratio, nonperforming loans and return on asset which simply reflect the bank's historical performance. We find that when the banks have positive expectation on future economic condition, they tend to increase the proportion of risky asset portfolios to maximize expected profits rather than putting highest priority on risk management of the bank, and tend to pay more dividends based on higher expected profits. On the other hand, when the expectation on future economic condition is negative, the banks tend to put highest priority on the bank's risk management by increasing the proportion of safe asset portfolios and decreasing dividends based on lower expected profits.

The next section describes the sample of banks, testing models and hypotheses. In section 3, we present the empirical results and in section 4 offer concluding remarks.

2. Sample, Testing Model and Hypothesis

The sample of this study consists of all the Korean banks available in the Statistics of Bank Management provided by the Korean Financial Supervisory Service during 1994-2009. The variables that are used to identify the banks' dividend policy based on the implication from finance literature include the followings for each bank; dividend payout ratio, total asset size, capital-to-asset ratio, loan-to-asset ratio, return on asset, nonperforming loan ratio, consumer loan ratio, industrial loan ratio, investment securities ratio, government bond ratio and common stock ratio.

Following the implication of the previous studies that have examined the issue of dividend policy, this study specifies the function regarding banks' dividend policy as follows.

Dividend payout ratio = f (Asset size, Capital structure, Profitability, Risk, Asset portfolio composition)

Dividend payout ratio is measured as the cash dividends divided by net income. Capital structure represents capital ratio and is measured as the total equity divided by total asset. Profitability is measured as the return on asset (ROA). Risk is measured as the ratio of nonperforming loans. As asset portfolio composition, we use the two largest proportions of asset categories. They are loans and investment securities. As subcategory of loans, the ratios of consumer loans and industrial loans are used for the empirical analysis of this study. Also, the ratios of government bond and common stock are used for the subcategory of investment securities.

To examine the determinants of Korean banks' dividend policy and the relationship between the banks' investment and dividend policies, we estimate the following multivariate panel regressions during the period 1994-2009.

$$(DIV)_{i,t} = \beta_0 + \beta_1(LOGASSET)_{i,t} + \beta_2(CAPRATIO)_{i,t} + \beta_3(ROA)_{i,t} + \beta_4(LOANRATIO)_{i,t} + \varepsilon_{i,t} \qquad (1)$$

$$(DIV)_{i,t} = \beta_0 + \beta_1(LOGASSET)_{i,t} + \beta_2(CAPRATIO)_{i,t} + \beta_3(NPL)_{i,t} + \beta_4(LOANRATIO)_{i,t} + \varepsilon_{i,t} \qquad (2)$$

$$(DIV)_{i,t} = \beta_0 + \beta_1(LOGASSET)_{i,t} + \beta_2(CAPRATIO)_{i,t} + \beta_3(ROA)_{i,t} + \beta_4(INVSECURITIES)_{i,t} + \varepsilon_{i,t} \qquad (3)$$

$$(DIV)_{i,t} = \beta_0 + \beta_1(LOGASSET)_{i,t} + \beta_2(CAPRATIO)_{i,t} + \beta_3(NPL)_{i,t} + \beta_4(INVSECURITIES)_{i,t} + \varepsilon_{i,t} \qquad (4)$$

In the preliminary correlation test, the correlation between ROA and NPL, and the correlation between loan ratio and investment securities ratio are high. To address for the possible multicollinearity problem between these variables, we include these variables as a separate variable in each regression over (1)-(4).

The relation and expected sign between independent variables and dividend payout ratio is discussed below.

First, asset size is expected to have a positive relation with dividend payout ratio. This expectation is based on agency cost hypothesis. Agency theory argues that stockholders are not able to effectively monitor firm's management. The cost or the decrease of firm value resulted from this separation of ownership and control is called agency cost. One of the effective ways to reduce agency cost is known to be paying dividends to stockholders. Since agency cost would be proportional to firm size, it is expected that larger firms would pay more dividends than smaller firms. In addition, larger firms can access capital market more easily at a lower financing cost than smaller firms. Because of this easier access to external financing, larger firms are able to pay more portion of net income as dividends.

Capital ratio is expected to have a positive relation with dividend payout ratio. When capital ratio is low, or using

large amount of debt financing will make firm more likely encounter financial distress and bankruptcy risk. Thus, firm with lower capital ratio would not pay more dividends to avoid these bad consequences resulted from lowe capital. In addition, low capital-ratio firms need to decrease dividends and reserve cash to meet with the need for interest payments.

ROA as a measure of profitability is expected to have a positive relation with dividend payout ratio. Dividends are paid to stockholders, the providers of funds, as a financial compensation. Thus, the higher the firm's profit, the more the dividend payment will be.

Risk is expected to have a negative relation with dividend payout ratio. Risk may be define and measured as various ways. In this study, we measure bank's overall risk as the proportion of the bank's nonperforming loans (NPL). The main reason is that NPL is one of the most important indicators that are monitored by bank regulator for the soundness of bank as well as capital ratio. Thus, it may have a close effect on bank dividend policy.

Finally, this study includes two largest asset portfolio compositions; loans and investment securities are the most important two sources of bank profits. Loans are generally believed to be very risky because the profitability of loans highly depends on future market condition. Furthermore, a high loan ratio, therefore, can be interpreted as an indication of the bank's positive expectation on future market condition. Thus, the bank with high loan ratio may need to reserve cash as a financial source for future investment, hence, reducing dividend payouts. This says that loan ratio is expected to have a negative relation with dividend payout ratio. Investment securities are included as an alternative variable of loan ratio.

Table 1. Definition of independent variables and hypothesis for each independent variable

Independent variable	Definition of independent variable	Forecasted sign on regression coefficient
LOGASSET	Log of total asset size	(+)
CAPRATIO	Capital-to-asset	(+)
ROA	Return on asset	(+)
NPL	Nonperforming loan ratio	(-)
LOANRATIO	Loan-to-asset	(-)
INVSECURITIES	Investment securities-to-asset	(+)
CONSUMER	Consumer loans-to-loans	?
COMMERCIAL	Commercial loans-to-loans	?
GOVERNMENT	Government bonds-to-investment securities	?
COMMONSTOCK	Common stock-to-investment securities	?

3. Empirical Results

3.1 Descriptive Statistics and Estimation Results for the Bank Dividend Policy

Table 2. Descriptive statistics of the variables

Variable	Mean	Standard deviation	Min	Max
Total asset size	431,783	555,040	9,803	2,743,669
Capital-to-asset	0.0473	0.0209	-0.0619	0.1415
Return on asset	-0.1518	1.9441	-10.19	3.05
Nonperforming loan ratio	4.1713	4.2812	0.20	24.60
Loan-to-asset	0.4782	0.0889	0.2721	0.6910
Investment securities-to-asset	0.2901	0.0807	0.1114	0.5314
Consumer loans-to-loans	0.2519	0.1732	0.0276	0.7525

Commercial loans-to-loans	0.5007	0.1371	0.0766	0.7796
Government bonds-to-investment securities	0.2208	0.1421	0.0304	0.7597
Common stock-to-investment securities	0.0802	0.0733	0.0008	0.4909
Dividend payout ratio	0.1847	0.2214	0	1.4829

Descriptive statistics of the variables used in the study are presented in table 2. The mean value of the dividend payout ratio is 0.1847, ranging from 0 to 1.4829. The average asset size of the banks is 43,178 billion won. Capital-to-asset ratio and ROA average 0.0473 and -0.1518, respectively. Loan-to-asset ratio and investment securities-to-asset average 0.4782 and 0.2901, respectively. Consumer loans and commercial loans average 0.2519 and 0.5001, respectively. The mean value of the government bonds and common stock is 0.2208 and 0.0802, respectively.

Table 3 shows the estimation results for the determination of banks dividend policy. In the estimation process, ROA and NPL are included as a separate independent variable in each equation because of the possible multicollinearity problem between these variables. The same criterion is applied to the loan ratio and investment securities ratio.

Firstly, it is shown that bank assets size and dividend payout ratio is significantly positively related in two regressions. Thus larger banks tend to pay more dividends. This result is consistent with our hypothesis regarding asset size focusing on agency cost hypothesis and large firms' easier access to capital market at a lower financing cost. Positive relation between asset size and dividend payout can be also understood in terms of large banks' better risk diversification and risk management abilities of asset portfolios which makes large banks less exposed to future economic fluctuation. Thus other things being equal large banks would be able to pay more dividends.

It is shown that the debt ratio is significantly negatively related to dividend payout ratio in all the four regressions. So Korean banks tend to decrease dividends when their financial structures are weaker. When debt ratio is higher (capital ratio is lower), the banks need to prevent further decrease of capital ratio by retaining more earnings as well as reserving more cash for the payments of interests.

It is also shown that the bank ROA and NPL are significantly positively and negatively related to the dividend payout ratio, respectively. Thus, the banks with higher profits and less nonperforming loans tend to pay more dividends.

Regarding the two most important categories of bank asset portfolios, it is shown that loan ratio is significantly negatively related and investment securities ratio is significantly positively related to the bank dividend payout ratio. This result is also consistent with our hypothesis in this paper. Considering that higher loan ratio reflects the positive expectations of future economic conditions by bank, households and industries, the banks would have the motivations to decrease dividend payments to reserve more sources for future lending and investment for higher profits. A negative relation between loan ratio and dividend payout ratio is also understood in terms of the bank risk management. Riskier asset portfolio such as loans would make the banks to decrease the dividend payout and increase retained earnings to improve the capital ratios. On the other hand, it is shown in the table that the ratio of investment securities which are considered relatively safe asset portfolio are positively related to the bank dividend payout ratio.

Table 3. Panel regression results

	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)
Intercept	3.006*** (4.526)	3.478*** (5.688)	3.002*** (4.699)	3.309*** (5.696)
LOGASSET	0.015 (1.471)	0.015 (1.476)	0.027*** (2.664)	0.027*** (2.662)

CAPRATIO	2.870***	3.300***	3.585***	3.884***
	(3.985)	(4.969)	(5.021)	(5.968)
ROA	0.027***		0.023***	
	(3.313)		(3.001)	
NPL		-0.011***		-0.011***
		(-3.183)		(-3.340)
LOANRATIO	-0.554***	-0.598***		
	(-3.717)	(-3.900)		
INVSECURITIES			0.931***	1.012***
			(5.719)	(6.121)
R^2	0.182	0.180	0.233	0.239
F-statistic	15.143***	14.895***	20.639***	21.317***

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

3.2 Further Tests

In the estimation results in table 3, all the variables are observed to be consistently related to dividend payout ratio as we hypothesized. In particular, banks' risk management incentives appear to affect the banks' dividend policy very closely. To examine further how the banks' investment, risk management and dividend policies are interrelated, we departmentalize each of the loan ratio and investment securities ratio into two sub-category variables based on the riskiness of the variables. It is generally agreed that consumer loans are relatively safe and commercial loans are riskier. Commercial loans have highest systematic risk and are very highly dependent on market fluctuation. Also, obviously government bonds are the safest investment securities and common stocks are the riskiest type of investment securities. We re-estimate the regression equation (1) by replacing loan ratio by consumer loan ratio and commercial loan ratio first, and by replacing investment securities ratio by the government bond ratio and common stock ratio second. The estimation results are reported in table 4. It is shown that dividend payout ratio is significantly negatively related to the consumer loan ratio, while it is not related to commercial loan ratio. We interpret this result as follows based on the riskiness of the variables. Consumer loans are generally considered relatively safe having lower systematic risk compared to commercial loans. So that banks maintain higher consumer loan ratio in the loan portfolios may be an indication that the banks are not that optimistic about future economic conditions, and therefore, in terms of risk management purpose they need to decrease dividend payments not to damage the bank capital. On the other hand, that the banks maintain higher commercial loans which have very high systematic risk may be an indication of the banks' optimistic expectation about future economic conditions. Therefore, rather than putting priority on risk control by decreasing dividend payments, the banks would have the incentives to pursue profit maximizing strategies based on high expected cash flows. So the relation between industrial loan ratio and dividend payout ratio turn out not to be related.

Table 4. Panel regression results

	Coefficient	Coefficient	Coefficient	Coefficient
	(t-statistic)	(t-statistic)	(t-statistic)	(t-statistic)
Intercept	2.732***	3.085***	2.639***	3.067***
	(4.269)	(5.283)	(3.784)	(4.751)
LOGASSET	0.034***	0.035***	0.007	0.007
	(3.155)	(3.259)		(0.611)
CAPRATIO	2.997***	3.321**8	2.654***	3.083***
	(4.265)	(5.157)	(3.598)	(4.523)
ROA	0.025***		0.020**	
	(3.268)		(2.479)	

NPL		-0.012***		-0.007**
		(3.473)		(-1.995)
CONSUMER	-0.432***	-0.470***		
	(-5.352)	(-5.700)		
COMMERCIAL			-0.009	-0.015
			(-0.084)	(-0.131)
R^2	0.222	0.226	0.141	0.134
F-statistic	19.456***	19.884***	11.126***	10.510***

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

The same analysis applies to the case of ratio of government bond and common stock. That the banks maintain higher government bond ratio in the investment securities portfolios may be an indication that the banks are not that optimistic about future economic conditions, and therefore, in terms of risk management purpose they need to decrease dividend payments not to damage the bank capital. This result in shown in table 5 by a significantly negative coefficient on government bond ratio. On the other hand, that the banks maintain higher common stock ratio which have higher systematic risk may be an indication of the banks' optimistic expectation about future economic conditions. Therefore, rather than putting priority on risk control by decreasing dividend payments, the banks would have the incentives to pursue profit maximizing strategies based on high expected cash flows. So in table 5, the relation between common stock ratio and dividend payout ratio turn out not to be related.

Table 5. Panel regression results

	Coefficient	Coefficient	Coefficient	Coefficient
	(t-statistic)	(t-statistic)	(t-statistic)	(t-statistic)
Intercept	2.620***	3.057***	2.542***	2.961***
	(3.982)	(5.056)	(3.710)	(4.690)
LOGASSET	0.006	0.008	0.006	0.007
	(0.654)	(0.759)	(0.558)	(0.651)
CAPRATIO	2.566***	3.013***	2.554***	2.981***
	(3.564)	(4.526)	(3.400)	(4.279)
ROA	0.021***		0.020**	
	(2.656)		(2.505)	
NPL		-0.007**		-0.007**
		(-2.140)		(-2.025)
GOVERNMENT	-0.300***	-0.297***		
	(-3.495)	(-3.452)		
COMMONSTOCK			0.109	0.110
			(0.612)	(0.616)
R^2	0.178	0.170	0.142	0.135
F-statistic	14.678***	13.945***	11.233***	10.615***

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

3.3 Tests of Interaction Effects

In this section, we conduct the test of interaction effect to examine the interaction effect between bank debt (capital) ratio and the above four component variables of the bank asset portfolios; government bond ratio, common stock ratio, consumer loan ratio and commercial loan ratio. Debt ratio is chosen for the test of

interaction effect since debt ratio, or capital ratio is one of the best representative variables of the bank financial healthiness and is the most carefully monitored indicator by the bank regulator for the soundness of the bank. The results are reported in table 6. It is shown that the two interaction terms, Debt ratio x Government bond, and Debt ratiox Consumer loans, have significantly negative coefficients. Statistically this result implies that when the ratios of government bond and consumer loans are high, which may be the indication of not such an optimistic expectation of future economic conditions, if the debt ratio is high, this would may make the banks' financial structure and risk status worst. Thus, to improve risk status, the banks need to decrease their dividend payments. This result is another evidence supporting our above interpretation that one of the banks' most important factors for dividend policy is the risk management incentive. However, when the ratios of common stocks and commercial loans are high, the banks don't need to decrease their dividends even when the debt ratios are high, because they have pretty optimistic expectations about future economic conditions. Thus the coefficient on these interaction terms turn out not to be significant.

Table 6. Panel regression results

	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)
Intercept	2.560*** (3.889)	2.652*** (4.144)	2.552*** (3.739)	2.639*** (3.859)
LOGASSET	0.006 (0.653)	0.034*** (3.125)	0.006 (0.560)	0.006 (0.538)
CAPRATIO	2.504*** (3.474)	2.908*** (4.145)	2.566*** (3.428)	2.648*** (3.600)
ROA	0.021*** (2.652)	0.025*** (3.277)	0.020** (2.503)	0.020** (2.483)
Debt ratio * GOVERNMENT	-0.313*** (-3.487)			
Debt ratio * CONSUMER		-0.452*** (-5.332)		
Debt ratio * COMMONSTOCK			0.111 (0.596)	
Debt ratio * COMMERCIAL				-0.015 (-0.129)
R^2	0.177	0.222	0.142	0.141
F-statistic	14.661***	19.394***	11.227***	11.128***

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

4. Summary and Concluding Remarks

The objective of this study is to investigate the inter-relationship between banks' dividend policy and investment decisions in terms of risk management and profit maximization. From the panel regression analysis, this study finds that the bank's dividend policy appears to be closely related to both incentives of profit maximization and risk management. In this study our empirical methodology is based on the general notion that the bank's expectation on future economic condition is best captured by various measures of the components of ex-ante risky asset portfolios as well as the widely used risk measures such as capital ratio, nonperforming loans and return on asset which simply reflect the bank's historical performance. We find that when the banks have positive expectation on future economic condition, they tend to increase the proportion of risky asset portfolios to maximize expected profits rather than putting highest priority on risk management of the bank, and tend to pay more dividends based on higher expected profits. On the other hand, when the expectation on future economic

condition is negative, the banks tend to put highest priority on the bank's risk management by increasing the proportion of safe asset portfolios and decreasing dividends based on lower expected profits.

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