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DETERMINANTS OF BANK DIVIDEND POLICY USING DATA FROM U.S. BANKS : An Empirical Investigation

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Abstract

The prior papers used publicly traded bank holding companies whereas this paper uses both public and private banks in different sizes. Through tools robust tools it shows that present dividends are related to past dividends, past earnings and present earnings. This comes from a data set that includes community banks as well large banks. The results of this study are stronger statistically and due to the wider range of banks in the sample may be more general.

JEL Classification: G21, G35

INTRODUCTION

Finance theory formulates that the market value of the equity securities is determined by its future cash flows discounted to the present using a risk adjusted interest rate. Dividends representthe future cash flows of a common stock; therefore, dividendpolicy is important for investors because dividends provide a return on their investment or a possibility to sell their shares at a higher price in the future. On the other hand, corporations may have better investment opportunities where they can use the funds allocated for dividends. These investments may increase company's market value more than the amount of lost dividends thus, benefit investors.Therefore, there is an opportunity cost of paying dividends.

Since dividends play an important role, factors that determine a corporation's dividend policy have been an interest of the financial economists for more that forty years. A group of researchers believe that dividends have no impact on security value. Another group believes dividends have a significant impact on the value of equity securities.

Modigliani and Miller "MM" (1961) came up with the "Dividend Irrelevance Theory" under perfect market conditions. However, many researchers found several problems in their model.

The majority of dividend theories were formulated during the normal economic and financial conditions. The recession of 2007-2009 created an opportunity to investigate bank dividend policy during financial crisis. Banking is a particularly relevant area of study because the financial services industry was at the center of the financial crisis. Theis and Dutta (2009), and Theis, Yesilyaprak, Jaeregui, and Dutta (2010) studied the impact of recession on bank holding companies.The primary objective of this study is to explore the changes of the determinants of dividend policiesafter the 2007-2009 financial crisis using a model similar to Theis, Yesilyaprak, Jaerugi, and Dutta (2010). This study use a sample consists of851 banks located in six states during 2010.

LITERATURE REVIEW

The earliest research was done by Lintner (1956). He proposed a behavioral model with managers smoothing dividend payments to reduce shocks to investors and increase firm value. Fama and Babiak (1968) tested Lintner model on industrial firms and found that companies will increase dividends only if they are sustainable in the future.

Miller & Modigliani "MM" (1961) argued that in a world where there are no taxes and transactions costs; and equal information is available among all investors (Perfect Capital Market Assumptions) a company's dividend policy will have no effect on shareholder's wealth. In the real world however, there are market imperfections such as taxes, transactions costs, unequal information among investors which create problems for MM.

Graham and Dodd (1934), Lintner (1962), and Gordon (1963) argued that even under perfect capital market assumptions investors prefer a dollar of dividends today to a dollar of potential capital gains in the future "the bird in the hand" argument. Furthermore, since tax rates on dividends are higher in most countries than capital gains, taxable investors would prefer companies that pay low dividends and reinvest earnings in profitable growth opportunities "the tax argument". The third argument against MM proposition under perfect capital market conditions is "the clientele effect". Some investors prefer to invest in companies that pay higher dividends and yields. On the other hand, there are younger investors with a longer investment horizon who prefer

investing companies that reinvest a higher percentage of their earnings into long term projects with higher growth potential thus pay little or no dividends.

MM theory assumes symmetric information about the company among all investors. In reality, managers usually have information about the company unavailable to outside investors. When a company increases its dividend, it sends a positive signal to investors that management has a positive outlook on company's earnings thus can afford to increase dividends. On the contrary, when managers cut dividends, it may signal that they have given up hope that the earnings will rebound in the near future thus they need to reduce dividends to save cash. The idea that change in dividends reveal managers' views on company's future earnings is known as "dividend signaling hypothesis". There are several studies that are consistent with this hypothesis: The surveys of Baker, Powell, and Veit (2002) and Baker, Farrelly and Edelman (1985) show management believes dividend policy is an important determinant of firm value. Both surveys indicate management's view of the importance of dividends to firm value whether coming from the present value of future dividends as hypothesized by Gordon (1959) and Fama and French (1998), or from capital gains linked to future dividends.

Baker, Powell, and Veit (2002) and Baker, Farrelly and Edelman (1985) use surveys to show management believes continuity of dividends is an important element in value creation and significantly increases firm value.

Gordon (1959) finds dividends increase firm value and reduce the cost of capital, while others such as Litzenberger and Ramaswamy (1979) find higher dividend payout ratios linked to higher returns and costs of capital. Dividend irrelevance is supported by Miller and Modigliani (1961, 1982), Miller and Scholes (1978), and Bernstein (1996) who show dividends do not affect stock prices or cost of capital. As no clear cut reason for dividend payments is patently evident, researchers proposed a variety of theories, among them are signaling, agency cost reduction, investment opportunities, residual, and bird in the hand.

Dividends as a signal of firm health are proposed in Bhattacharya (1979), John and Williams (1985), and Miller and Rock (1985). In their view, management pays and increases dividends to signal private information about the quality of the firm's earnings to the investing public. All firms compete to attract investors and, given investors value dividends, strong firms can increase dividends with little fear of having to reduce them in the future while weaker firms cannot match dividend increases. Management will not send false signals of value as

later reductions in dividend substantially reduce share price. Healy and Palepu (1988) and Nissim and Ziv (2001) find support for this signaling hypothesis for dividends.

Fama and French (2001) studied the companies listed in NYSE, AMEX, and NASDAQ. They found that the percent of the firms that pay dividend falls from 66.5% in 1978 to 20.8% in 1999. They also found that three fundamental characteristics: profitability, investment opportunities, and size have significant effect on company's dividend payment. Aivazian, Booth and Cleary (2003) studied the dividend policy of in eight emerging market countries. They found that taxes and debt levels in all countries impact dividends inversely.Furthermore, dividends were affected by profitability, size, risk, and growth.

Jensen and Meckling (1976) point out agency costs increase as management uses free cash flow to pay for their perquisites. Rozeff (1982) and Easterbrook (1984) extend agency theory to dividend policy. Rozeff's model and results indicate investment opportunities, risk, agency problems and size influence dividend policy. Born and Rimbey (1993) find evidence consistent with Easterbrook in an examination of external financing and market response to initial dividends. In agency theory, the dividend paying firm seeks outside financing for investment activities and exposes itself to market scrutiny in the financing process. Using public offerings forces management to accept investor monitoring which helps insure it operates in the best interest of outside shareholders. Crutchley and Hansen (1989) and Moh'd, Perry, and Rimbey (1995) support the agency cost explanation for dividends. While agency cost theory of dividend policy is supported in general, differences appear between industries, see Michel (1979), Dempsey, Laber, and Rozeff (1993) Barclay, Smith, and Watts (1995), Casey and Theis (1997), and Casey and Dickens (2000).

A firm can invest earnings in investment opportunities or pay dividends. A Firm with many profitable investment opportunities will retain earnings to invest in the best of its investment prospects. Dickens, Casey and Newman (2003) and Theis and Dutta (2009) find investment opportunities measured by the market to book value ratio are significant in determining dividends. Firms with fewer profitable opportunities use the free cash flow for dividends payments or for an increase in management perquisites.

Companies don't like cutting their dividends because of the negative affect on its share price therefore, increase the risk in earnings. The risk in earnings flow is a material determinant of corporate dividends and bank

holding company dividends, see Dickens, Casey, and Newman (2003) and Theis and Dutta (2009).

Both firm size and industry regulation may also affect dividend payment. If the firm is large, it has a reduced risk of bankruptcy and accordingly is able to pay greater dividends due to its reduced risk. Firms in regulated industries experience less risk and can pay larger dividends than non-regulated firms. In the banking industry regulators restrict dividends to banks that are well capitalized. Most banks are well capitalized as measured by bank regulators.

In the residual earnings theory of dividend policy, current earnings would materially affect dividend payments. Under this theory, management invests in all profitable opportunities until acceptance of all with positive net present values and pay dividends out of the residual funds.

The Dickens, Casey, and Newman (2003) study uses Morningstar data and a model developed by Barclay, Smith, and Watts (1995) to describe dividend policies in publicly traded bank holding companies. The Barclay *et al.* model uses investment opportunities, size, regulation, and signaling as determinants of corporate dividend policy. Dickens *et al.* found support for the Barclay *et al.* elements and three additional determinants: an agency variable, dividend history, and risk as measured by variation in earnings after tax. Since all bank holding companies are regulated, Dickens, *et al.* used the assets to capital ratio to estimate regulation's effect on bank holding company dividend policy. Their results indicate investment opportunity, size, expected earnings, inside ownership and previous dividends are significant factors in bank holding company dividend policy. Theis and Dutta (2009) find similar results using a different sample and Uniform Bank Performance Report results in 2006.

During the periods covered by Dickens *et al.* (2003) and Theis and Dutta (2009), bank earnings were in an increasing secular trend. Theis, Yesilyaprak, Jaureugui, & Dutta (2010) investigated determinants of dividends during a steep recession. The model's variables measure the relative impact of different theories in describing the determinants of bank holding company dividend policy: investment opportunities, regulation, agency effects, dividend smoothing, riskiness of earnings, and residual earnings. The results here indicate the primary factors affecting dividends during the recession are: investment opportunity, past dividend, size, residual earnings, and insider ownership.

Moin, Guney, and El Alak (2020) investigated the influence firm's excessive cash holdings and corporate ownership structure on its dividend payout policy in

Indonesia for the period from 1995 to 2014. Their results indicate that excessive cash holding positively affects a firm's likelihood of paying dividends. Furthermore, they find that family, foreign, state and institutional ownership have significant negative impact on dividends, which suggests the signals of expropriation of firms' wealth by major shareholders

Barros,Verga, and Miranda (2020) studied the firm variables that are more relevant on the decision to pay dividends using non-financial firms listed on Euronext stock exchanges from 2000 to 2017. Their results indicate that variables such as operating margins, analyst's coverage and shares in free float have substantial impact on the dividend policy of firms. Furthermore, firm's size is the major determinant of the dividend policy.

Ferri, F. and Li, N., (2020) studied the impact of executive stock options as well as the financial ratios on company dividend policy using S&P 1500 firms excluding financials and utility firms. They investigated the causal effect of option-based compensation on payout policy using the adoption of FAS 123R, which resulted in a significant decrease in option grants. Firms with larger expected accounting impact due to FAS 123R decreased option-based compensation much more aggressively than firms with lower impact. Their results show no evidence that firms with a larger accounting-induced decline in option compensation increased dividends, reduced repurchases, or changed their payout composition.

Kumar and Alert (2020) studied the impact of financial flexibility on company dividend policy using firm-level data for 4,994 U.S. firms from 1993 to 2013. They defined financial flexibility as a firm's ability to access financing in order to fund investment opportunities and unexpected expenses. Their model included a variation in real estate prices as exogenous shocks to firms' debt capacity to study the causal effect of financial flexibility on payout policy. The results show that an increase in financial flexibility causes in higher dividends, share repurchases, and payout flexibility.

DATA AND METHODLOGY

All of the financial information was downloadedfrom the Federal Deposit Insurance Corporation's (FDIC) web site. Initially financial data was collected from a large number of states. Due to the enormous size of the data we decided to focus on banks in six southern states: Alabama, Arkansas, Louisiana, Mississippi, Oklahoma, and Texas. Table-1 contains the number of banks in our sample in each state.

Table 1: Number of Banks in Sample By State

State	*Number of Banks*	*Percent*
AL	64	7.52
AR	77	9.05
LA	102	11.99
MS	63	7.40
OK	184	21.62
TX	361	42.42
Total	851	100.00

The original sample had some interesting characteristics: Some bankspaid dividend in 2010 despite the fact they had a negative net income. Those banks as well as some other banks with some missing data were taken out of the sample. Total number of banks in the remaining sample is 851. Variables collected from the website are cash dividend payment, net income, total income (revenue), capital to asset ratio for each year. Dividend payout ratio is calculated using cash dividends divided by net income.Coefficient of variation of is the standard deviation divided by the average of the net income for the past five years. Future earning is the change in net income from current year to next year divided by current year's net income.

Previous studies such as dickens *et al.* (2003) and Theis*et al.* (2010) used dividend yield as the dependent variable. Since we had some banks in our sample which did not have any stock price data available, we were unable to calculate and use dividend yield. Instead, first we used dividend payout ratio and later the dollar amount of dividend as depend variable. Independent variables are capital to asset ratio, natural logarithm of total revenue, future earnings, previous dividend, and the coefficient of earnings. First we tested the model with dividend payout as dependent variable. Unfortunately, R-square was too low (3%), therefore we decided to change the model to dollar amount of dividend as dependent variable and adjusted independent variables accordingly. Equation (1) and table-2 contains the description of our variables.

$$D_0 = \alpha + \beta_1(NI_0) + \beta_2(Ln(TR_0)) + \beta_3(TETA) + \beta_4(NI_1) + \beta_5(D_{-1}) + \beta_6(CV(NI_5))$$

Equation (1)

Dickens *et al.* (2003) and Theis*et al.* (2010) used the market to book ratio as a measure of investment opportunities. We did not use it for two reasons: first

one is that some banks in our sample are not public companies, second one is that market to book ratio may not correctly reflect the investment opportunities for a company.

Table 2: Variable Definitions

	Variable	*Description*	*Ffiec Code*
(D_0)	Current Dividend	Total cash dividends paid to shareholders in 2010	eqcdiv
(NI_0)	Current Net Income	Total Net Income in 2010	netinc
(TE/TA)	Capital to Asset Ratio	Equity Capital to Total Assets Ratio in 2010	eqv
$Ln\ (TR_0)$	Ln of Total Revenue	Natural Logarithm of the Total Income from All Sources in 2010	Calculated
(NI_1)	Future Earnings	Net Income in 2011	netinc2011
(D_{-1})	Previous Dividend	Total cash dividends paid to shareholders in 2009	eqcdiv
$CV(NI_5)$	Earnings Volatility	Coefficient of Variation of Net Income during the past five years.Standard Deviation / Average of net income between years 2004 and 2009	Calculated

Often larger banksare considered as having a lower risk and more likely to pay higher dividends. However, one must be careful about the larger size being failure proof. This phenomenon is also known as a "too big to fail". An example of this was seen with First Continental Bank in the early 1980's and continued during the banking crisis of the 1980's. Dickens*et al.* (2003) and Theis*et al.* (2010) used the natural log of revenue as the size variable and this study uses the same variable. The natural log of revenue should vary directly with dividend returns.

The capital ratio is a key ratio and determines whether the bank is adequately capitalized. In order to provide a cushion against bank failures, regulators increased the minimum capital required for each bank (Basel I, II, and II). FDIC website reports equity capital to assets ratio which is the book value of equity capital divided by the book value of assets. Banks with higher capital should be able to pay dividends therefore; bank dividends should be positively related to the capital ratio. Dickens *et al.* (2003) uses the asset to capital ratio as a surrogate for the influence of regulators on bank dividend policy. Most banks have sufficient capital to pay dividends, although this ratio is more constraining over this study period than during the time periods covered in Dickens *et al.* and Theis and Dutta (2009). All companies in the sample are banks listed at FDIC and come under state or federal regulation. Therefore, our model contains no variable for being in a regulated industry.

Dickens *et al.* (2003) and Theis *et al.* (2010) used insider information in their models. As we mentioned at the beginning of this section there are some banks in our sample which are not public, thus there is no information regarding insider ownershipof some banks.Therefore, we don't have anindependent variable for the insider information in our model.

Lintner (1956) concluded that dividends should not change drastically in the short term. Later Baker, Powell, and Veit (2002) and Baker, Farrelly, and Edelman (1985) supports this idea. The prior year's dividend should have a positive relationship with current dividends. To represent the past dividends, we included the dollar amount of previous year's dividend (2009). There should be a positive relationship between current year dividends and earnings previous year's dividends. The net income for the dividend year should be positively related to the dividend yield. Firms could pay dividends from 2010 earnings to forestall elimination or reduction of dividends during a temporary down turn as Lintner (1956) would expect. Net Incomein 2010 should be positively related to the dividends in 2010.

The inclusion of the coefficient of variation of net income for the prior five years captures a measure of the risk. As the risk of earnings being low to pay dividends, management is less likely to pay higher dividends. The coefficient of variation should have a negative sign. Table-2 summarizes the variables used in our model.

RESULTS

Table 3 gives the descriptive statistics ofthe variables used in our model.Table-4 shows the correlation between independent variables. We have independent variables that have Pearson correlation significant at 0.01 level. Gujarati (1995) indicates on page 325 that"as in the case of near multicollinearity, the OLS estimators still retain the property of BLUE (Best Linear Unbiased Estimators).

Table 3: Descriptive Statistics of Variables

		D_0	NI_0	$Ln(TR_0)$	*TETA*	NI_1	Div_{-1}	$CV(NI_5)$
N	Valid	851	851	851	851	851	851	
	Missing	440	440	440	440	440	440	
Mean		2660.34	4459.65	9.2385	10.6571	4867.55	2425.46	.4105
Median		868.00	1683.00	9.1464	10.0659	1734.00	789.00	.2259
Std. Deviation		11909.45	15080.55	1.1573	2.7505	18083.829	9276.530	5.5122
Range		279996	218773	7.6208	24.4102	319160	171782	197.2966
Minimum		4	-628	6.4504	5.9264	-42334	0	-51.2950
Maximum		280000	218145	14.0712	30.3365	276826	171782	146.002

Table 4: Correlations Between Independent Variables

		NI_0	$Ln(TR_0)$	*TETA*	NI_1	Div_{-1}	$CV(NI_5)$
NI_0	Pearson Correlation	1	.556**	-.018	.980**	.893**	-.010
	Sig. (2-tailed)		.000	.601	.000	.000	.767
$Ln(TR_0)$	Pearson Correlation	.556**	1	-.167**	.525**	.502**	-.038
	Sig. (2-tailed)	.000		.000	.000	.000	.271
TETA	Pearson Correlation	-.018	-.167**	1	-.026	-.029	-.015
	Sig. (2-tailed)	.601	.000		.440	.394	.660
NI_1	Pearson Correlation	.980**	.525**	-.026	1	.903**	-.005
	Sig. (2-tailed)	.000	.000	.440		.000	.882
Div_{-1}	Pearson Correlation	.893**	.502**	-.029	.903**	1	-.007
	Sig. (2-tailed)	.000	.000	.394	.000		.827
$CV(NI_5)$	Pearson Correlation	-.010	-.038	-.015	-.005	-.007	1
	Sig. (2-tailed)	.767	.271	.660	.882	.827	

** Correlation is significant at the 0.01 level (2-tailed).

Table 5: Full Model OLS Summary

Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	.896[a]	.804	.802	5296.657

ANOVA

Model	Sum of Squares	df	Mean Square	F-stat	Sig.	
1	Regression	96881730550.493	6	16146955091.749	575.555	.000[b]
	Residual	23678064712.68	844	28054579.043		
	Total	120559795263.15	850			

Coefficients

Model		*Unstandardized Coefficients*		*Standardized Coefficients*		
		Beta	*Std. Error*	*Beta*	*t-stat*	*Sig.*
1	(Constant)	5095.790	2033.983		2.505	.012
	NI_0	.543	.063	.688	8.680	.000
	$Ln(TR_0)$	-461.944	194.432	-.045	-2.376	.018
	TETA	-115.883	67.450	-.027	-1.718	.086
	NI_1	-.453	.053	-.687	-8.468	.000
	Div_{-1}	1.173	.046	.914	25.533	.000
	$CV(NI_5)$	2.312	32.999	.001	.070	.944

a. Dependent Variable: D_0

b. Predictors: (Constant), NI_0, $Ln(TR_0)$, *TETA*, NI_1,Div_{-1}, $CV(NI_5)$

First we ran OLS with full model. The results of the full regressions model are given in table 5. Full model had an adjusted R-square of .802 which is higher than Dickens *et al.* (2003) and Theis*et al.* (2010). F statistics is highly significant indicating that simultaneous test of each coefficient is equal to zero will be rejected. Two variables; 2010 Net Income (NI_0)and 2009 Dividend (D_{-1}) have the correct sign and are significant. 2011 Net Income (NI_1) and Natural Logarithm of Total Revenue (Ln (TR_0))are significant but have the opposite sign of the model which can be interpreted as banks with higher 2011 expected future income (NI_1) reduced their 2010 dividend (D_0). Additionally, large banks paid lower dividends than smaller banks.

When variables are correlated with each other, IBM SPSS Base Statistics User Guide 24 recommends three methods for variable selection: Forward Selection, backward elimination, and stepwise selection. In forward selection variables are added into model one at a time and tested using F-statistic. This process continues until an established criterion for the F-statistic no longer holds. Backward elimination starts with all of the independent variables and variables are removed from the model one by one with the lowest F-statistic until it reaches at a minimum F value. Stepwise selection starts with one variable and tests variable in the model if it meets a certain F-statistic. If it does not meet the criteria the variable will be removed from the model. Furthermore, we employed OLS with stepwise selection, forward selection, and backward elimination methods for variable selection. These are available in SPSS statistics software under linear regression.

OLS stepwise selection method created four models can be seen Table-6.Variables are entered into the model when the probability of F-statitic was less than or equal to .050 and removed from the model whenthe probabilityofF-statistic was greater than or equalto .100.

Out of the four, Model-4 has the highest Adjusted R^2 (80.2%). This model contained four variables: 2009 Dividend (D_{-1}), 2010 Net Income (NI_0), 2011 Net Income (NI_1), and natural logarithm of Total Income ($Ln(TR_0)$). First three of the independent variables are significant at .01 and the last one is significant at .05 level. 2009 Dividend (D_{-1}) and 2010 Net Income (NI_0) coefficients have positive sign which supports the idea that banks with higher current income will pay higher dividends and the banks which paid high dividend previous year will pay high dividend in the current year. Coefficients of 2011Net Income (NI_1) and natural logarithm of Total Revenue ($Ln(TR_0)$) have negative signs which is the opposite what our original model was predicting. Large banks and

Table 6: Variables Entered / Removed[a] in The Models Created By Stepwise Selection

Model	*Variables Entered*	*Variables Removed*	*Method*
1	D_0	-	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	D_0, NI_0	-	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3	Div_{-1}, NI_0,NI_1	-	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
4	D_{-1}, NI_0, NI_1,$Ln(TR_0)$	-	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: D_0

banks with higher future income paid lower dividends during 2010.Forward selection method created four models similar to stepwise selection method (See Tables 7 and 8).

Table 7: Models Created By Stepwise Selection and Forward Selection

Variable	*Model-1*	*Model-2*	*Model-3*	*Model-4*
Adjusted R^2	.785	.786	.801	.802
F-Statistic	3103.995	1560.633	1142.86	861.661
(Significance)	(.000)	.000	.000	.000
Constant	-.98.947	-154.372	-312.144	3276.36
t-Statistics (Significance)	-.506(.613)	-.784(.434)	-1.636(.102)	1.891(.059)
D_{-1}t-Statistics (Significance)	1.138	1.052	1.169	1.174
	55.714 (.000)	23.183 (.000)	25.403(.000)	25.529(.000)
NI_0t-Statistics (Significance)		.059	.502	.534
		2.12(.034)	8.282(.000)	8.556(.000)
NI_1t-Statistics (Significance)			-.432	-.447
			-8.151(.000)	-8.371(.000)
$Ln(TR_0)$				-397.184
t-Statistics (Significance)				-2.083(.038)

Table 8: Variables Entered / Removed[a] in The Models Created by Forward Selection

Model	*Variables Entered*	*Variables Removed*	*Method*
1	D_{-1}	-	Forward (Criterion: Probability-of-F-to-enter <= .050)
2	Div_{-1}, NI_0	-	Forward (Criterion: Probability-of-F-to-enter <= .050)
3	Div_{-1}, NI_0,NI_1	-	Forward (Criterion: Probability-of-F-to-enter <= .050)
4	D_{-1},NI_0, NI_1,$Ln(TR_0)$	-	Forward (Criterion: Probability-of-F-to-enter <= .050)

Backward selection method created two models can be seen Table-9 and 10. This method started with all of the variables in the model and removed themone by one from the model when the probability of F-statistic was greater than or equal to .100. This method removed the coefficient of variation of Net Income (COV(NI_5))from Model-1 and the corresponding t-statistic and level of significance. Risk factor was not a significant variable in our model. Both models have adjusted R^2 of 80.2%.Model-2 has slightly higher F-statistic statistic than Model-1.

Table 9: Variables Entered / Removed[a] in The Models Created By Backward Elimination

Model	*Variables Entered*	*Variables Removed*	*Method*
1	$CV(NI_5)$, NI_1, *TETA*, $Ln(TR_0)$, Div_{-1}, NI_0[b]	-	Enter
2	-	CV(NI_5)	Backward (Criterion: Probability-of-F-to-enter >= .100)

a. Dependent variable: D_0
b. All variables included in Model-1

Two of the variables created by the backward elimination method: 2010 Net Income (NI_0) and 2009 Dividend (D_{-1}) have a positive sign predicted by our original model. Both variables are significant and directly related with the current year's2010 dividend (D_0) which can be interpreted as current year's dividend depends on current year's net income and the previous year's dividend. Banks which were profitable this year and paid dividend last year also paid

Table 10: Variables Entered / Removedin the Models Created By Backward Elimination

Variable	*Model-1*	*Model-2*
Adjusted R^2	.802	.802
F-Statistic (Significance)	575.555 (.000)	691.479 .000
Constant	5095.79	5102.744
t-Statistics (Significance)	2.505(.012)	2.513(.12)
NI_0	.543	.543
t-Statistics (Significance)	8.680 (.000)	8.685 (.000)
$Ln(TR_0)$	-461.944	-462.479
t-Statistics (Significance)	-2.376(.018)	-2.382(.017)
TETA	-115.883	-115.986
t-Statistics (Significance)	-1.718(.086)	-1.721(.086)
NI_1	-.453	-.452
t-Statistics (Significance)	-8.468(.000)	-8.473(.000)
Div_{-1}	1.173	1.173
t-Statistics (Significance)	25.533 (.000)	25.548 (.000)
$CV(NI_5)$	2.312	
t-Statistics (Significance)	.070 (.944)	

dividend this year. Natural logarithm of the total revenue is significant but, has a negative sign which does not support the original assumption that larger banks have a tendency to pay dividends. Total equity capital to total assets (TETA) variable is statistically significantbut has the negative sign which can be interpreted as, well capitalized banks pay lower dividends. Similarly, future net income 2011 (NI_1) is significant but, has a negative sign which indicates that banks with higher expected net income, might have better investment opportunities therefore did not increase dividends in current year.

CONCLUSION

This study identified six variables which may have an impact on bank dividend policy. We applied different methods to variable selection in our model: Stepwise selection, forward selection, and backward elimination methods in order to eliminate the potential effect of multicollinearity. Stepwise selection identified four models. The fourth model has four variables which had statistically significant coefficients: Previous year's dividend (D_{-1})), current year's net income (NI_0), next year's net income (NI_1), and the natural log of total revenue ($Ln(TR_0)$).

The first two had positive signs which are predicted by the theoretical model. Next year's income and natural log of had negative signs which were not predicted. Theis*et al.* (2010) also found that ln of total revenue has a negative sign. This can be interpreted as large banks did not pay more dividends than smaller banks. Also banks expected to have a higher future income did not pay higher dividend.

Forward selection method created four models as well. The fourth model had included four variables: Last year's dividend (D_{-1}), current net income (NI_0), future net income (NI_1), and natural logarithm of total revenue ($Ln(TR_0)$) all are statistically significant. Variable signs are the same as the stepwise selection method. Previous dividend and current net income had positive signs and future net income and the ln of total income had negative signs. We can interpret that banks which paid dividend last year and have a high current net income paid dividend as well. Future net income and size variables have a negative coefficients again large banks and the ones with higher future income reduced their dividends during the current year.

Backward elimination method created two models. The second model removed risk variable ($CV(NI_5)$). It identified five variables: Current year's net income (NI_0), last year's dividend (D_{-1}), future earnings (NI_1), size ($Ln(TR_0)$), equity to capital ratio (TETA) as statistically significant. Previous dividend (D_{-1}) and current net income (NI_0) have positive signs. Future net income (NI_1) and size ($Ln(TR_0)$) variables have negative signs similar to the first two methods. Equity to capital ratios was included first time in the model with a negative sign which is the opposite of theoretical basis. We assumed that banks that are well capitalized will be paying higher dividends, but the model indicated otherwise.

Finally, our adjusted R^2 (.802) is higher than the previous studies: Dickens (2003) (Adj-R^2.215), Theis and Dutta (2009) (Adj-R^2 .5443), and Theis*et al.* (2010) (Adj-R^2 .5193). This can be interpreted as our model is more accurate in determining dividend policies of banks. However, our model needs to be tested on multiple years to reach a strong conclusion.

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