Empirical study of Impact of Financial Leverage on Dividend of Nationalized Banks in India

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Abstract

Dividend is one of the difficult choices that every business has to make. On one hand, dividend has the capacity to make shareholders happy to spread the positive information in the market; on the other hand it reduces the investment in projects which are capable of accelerating growth of the business and thus defeating the purpose of shareholders' wealth maximization. Financial Leverage reflects the ability of a firm to use various fixed financial charges to magnify the effects of variation in EBIT on EPS of the firm. Since financial leverage has a capacity to increase earnings for the shareholders it must have some effect on the portion of this earning distributed to the shareholders. The study has aimed to understand and analyze financial leverage and dividend of nationalized banks in India. The present study is a quantitative research where the relationships have been developed in the form of statistical model. A co relational research design has been adopted for the study to analyze the effect of financial leverage and dividend.

Keywords: Dividend, Financial Leverage, Earnings, Co-relation, Regression

Introduction

Dividend is very crucial financial decisions of the firm which has the capacity to affect the value of the firm. The decision affects not only the shareholders but also the financial position of the company, expansion or growth plans, liquidity, creditors, value of shares and even the perception about the company and management. Dividend as a policy decision is affected by lot of factors, which changes with country and industry concerned. Earnings, past earnings, ownership, risk, liquidity, growth opportunities, tax aspects and leverage are to name a few. Even the magnitude and direction of impact of these factors change with change in country and industry.

Financial Leverage is being considered as a tool to multiply the returns for the shareholders by the business firms. Using the concept of financial leverage every business assumes that it will be able to generate higher returns on funds borrowed which will be passed on to the shareholder, which will increase their return. So if financial leverage has a capacity to increase earnings for the shareholders it must have some effect on the portion of this earning distributed to the shareholders. Banks are being considered as profit making business opportunity by the investors in capital markets these days. With the privatization of banks, the expectations of investors from this sector have increased. In the present study, an attempt has been made to analyze the impact of financial leverage on the dividend paid by the nationalized banks.

Literature Review

While studying the determinants of dividend many of researches included leverage as an factor suggested that leverage could be one of the determinants. In order to analyze the impact of financial leverage on dividend paid, various studies have been explored to understand the relationship between these two variables.

Sector is relevant for dividend payment (Twaijry, 2007). Along with it country is also important. So the relationship in context to Indian banks has been explored.

Gupta and Banga (2010) researched on the various factors affecting dividend policy of a bank with the help of regression analysis. It has been made sure that the factors used during the analysis do not possess multi-co linearity problems. It also studies the effect of the financial leverage in determining the dividend policy of a firm suggesting that if the financial leverage is more than the required optimum then the firm has to bear a higher cost of transactions and the risk associated with the firm also increases. Therefore, financial leverage exhibits an inverse relationship with dividend policy especially in context of the Indian firms and it has been also found that the liquidity of the Indian firms affect the dividend decisions affirmatively.

Gupta (2012) examined the selected private and public sector banks in India and measured the effect of financial leverage on these selected banks. This study has been carried over the period from 2007 to 2011. For analyzing the results, the balance sheets of the respective banks were observed and also the effects of leverage ratio were deduced from the same. It has been observed that the financial leverage in the commercial banks did not experience a rise in consecutive years following the year 2007 rather showed a decline in this area. Whereas, the government banks in the country showed a stable leverage ratio over the years and also experienced a movement towards an increased financial leverage ratio within the banks. On the other hand, public sector banks experienced a decline in the owner funds which were measured as a percentage of total sources of public and private sector banks, whereas on the other side, the commercial banks showcased a significant increase in the funds of the owners in the bank. The fixed asset turnover ratio has been also estimated for the public and private sector banks from 2007 to 2011 and it has been found that fixed assets turnover ratio increased in both the sectors of the banks but with the public sector experiencing a higher turn-over of the fixed assets compared to that experienced by the commercial banks in the country.

Another research (Sri Hari et al., 2012) concluded that nationalized sector banks paid more dividends than private sector banks.

Dr. Souvik Banerjee and Dr. K.T. Rangamani analysed the dividend paid by 40 banks in India for the period of 2010-2015. They took 24 public sector and 16 private sector banks to conduct their study. They concluded that dividend payout ratio of private banks and public banks were not statistically different from each other.

Research Design

The present research is quantitative research conducted to analyze the properties of the past records and to make predictions for the future by developing mathematical models. In social sciences like commerce, management and economics statistical methods are extensively used in quantitative research. In the present research, the quantitative values for dividend, financial leverage have been studied for a period of 13 years. The values for the years where banks have paid no dividend have been ignored. Inferences have been drawn from the values collected for 19 nationalized banks. Further the relationships have been developed in the form of statistical models. The focus of the study has been to explore the impact of financial leverage on dividend paid by the banks. Correlation and regression models have been developed for the leverage, earnings and dividend, of nationalized banks in India. For the purpose of analysis, SPSS 21.0 has been used to explore correlation and regression.

Data Analysis and Interpretation:

The regression has been used as a tool to find out the impact of financial leverage on DPS of nationalized banks in India with DPS as dependent variable and financial leverage as independent variable.

Linear Regression of DPS and Fl for Nationalized Banks

The linear regression has been run on the data related to nationalized banks to find out the impact of their financial leverage on dividend per share (DPS). The results have been depicted as below;

		DPS	Financial Leverage
Pearson Correlation	DPS	1.000	396
1 curson conclution	Financial Leverage	396	1.000
Sig (1-tailed)	DPS	•	.000
Sig. (1 tunou)	Financial Leverage	.000	

Table 1 Regression of DPS and FL of Nationalized Banks

Table 2	Model Summary	of Regre	ssion of	DPS and l	FL of N	ationalized	Banks
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R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.396 ^b	.157	.152	4.79607	.512

Table 3 Coefficients of DPS and FL of Nationalized Banks

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	В	Std. Error	Beta		
(Constant)	13.218	1.338		9.880	.000
Financial Leverage	403	.069	396	-5.794	.000

From the above tables it has been concluded that there is significant negative relationship between DPS and financial leverage of nationalized banks as the p value is less than 0.05. DPS has decreased with the increase in financial leverage in case of nationalized banks in India. The regression coefficient is -0.403 with a constant of 13.218.

Regression Model

The equation can be written as a model fit equation between two variables as-

DPS = 13.218 - 0.403 (Financial Leverage)

As the value of R^2 is .157, it means that only 15.7 % of variations in DPS are explained by Financial Leverage for the nationalized banks. The null hypothesis that there is no significant impact of financial leverage on equity dividend of nationalized banks has been rejected since the p value is

less than 0.05. It shows that there is significant impact of financial leverage on equity dividend paid by nationalized banks.

Validity of Regression Results for DPS and Fl of Nationalized Banks

Before we reach any conclusion regarding this model it is necessary to ensure the validity of regression results. To check validity of results of regression few basic assumptions of classic linear regression model are checked with -. tests of linearity, normality, stationarity, auto collinearity and homoscedasticity.

Assumption of Linearity

This has been checked with the help of Scatter diagram. The scatter diagram of the above said data is represented in figure below;





As there are number of outliers present and a cluster is formed, it has been observed that the relationship is not linear between Financial Leverage and DPS of nationalized banks.

Assumption of Normality-

Shapiro-Wilk test along with Q-Q plot has been used to test the normality of data.

Shapiro-Wilk Test- the results of the test are as below:-

Table 4 Test of Normality of DPS	and FL of N ationalized Banks
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	Kolmogorov-Smirnov ^b			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	Df	Sig.
DPS	.172	182	.000	.795	182	.000
Financial Leverage	.144	182	.000	.881	182	.000

As we are able to see that level of Significance for Shapiro -Wilk test is below 0.05, so the data don't hold the assumption of normality and regression results of the data which is not normal, are not valid.

Q-Q Plot –On the observation of the data of DPS on Q -Q plots, it is found that it is quite along the expected line but this is not the case of Log Financial Leverage.



Assumption of Stationarity and auto correlation Stationarity has been checked using auto correlation test in SPSS and Durbin-Watson statistics. Auto-correlation test Auto correlation test results show that data is not stationary Figure 4 ACF Chart of FL of NationalizedFigure 5 ACF Chart of DPS of Nationalized



Durbin-Watson Statistics

As per the model summary, the Durbin-Watson value is 0.512 which very far off from the expected value of 2, for that to fulfill the assumption. So the data is having auto- colinearity.

a) Assumption of Homoscedasticity

To check this assumption the scatter plot of residuals has been observed.



Figure 6 Scatter Plot of Regression Standardized Residuals of FL and DPS of Nationalized Banks

The scatter plot of residuals is not equally distributed and depicts a cluster, which suggests the presence of hetroscedasticity

Assumption of Correct Regression

This assumption is checked with the help of P -P plot of observed and expected residuals. As per the observed P -P plot the residuals are near to but not exactly on the expected line. So the egression is not a good fit.

Figure 7 Normal P-P Plot of Regression Standardized Residuals of FL and DPS of Nationalized Banks



log of all the values. After transformation the model has

The regression has been run on the data related to

been developed in the form of:-

Log DPS = a + b (Log Financial Leverage)

nationalized banks and the details are as follows:-

It has been analyzed that the majority of assumption of linear regression model are not satisfied in the case of nationalized banks also, so some kind of transformation is needed to make the data normal and fit the regression line. This transformation has been done by taking log values.

Linear Regression with Log of DPS and Fl for Nationalized Banks

The transformation has been done with the help of taking

Table 5 Linear Regression with Log of DPS and FL of Nationalized Banks in India

Correlations ^a					
		Log DPS	Log Financial Leverage		
Pearson Correlation	Log DPS	1.000	488		
	Log Financial Leverage	488	1.000		
Sig. (1-tailed)	Log DPS		.000		
	Log Financial Leverage	.000			

Table 6 Model Summary of Linear Regression with Log of DPS and FL of NationalizedBanks

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.488	.238	.233	.33855	.808

Table 7 Coefficients of Linear Regression with Log of DPS and FL of Nationalized Banks

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	В	Std. Error	Beta		
(Constant)	2.763	.290		9.539	.000
Log Financial Leverage	-1.723	.230	488	-7.492	.000

From the above tables it has been observed that there exists significant negative relationship between Log DPS and Log Financial Leverage of nationalized banks as the p value is less than 0.05. Log Financial Leverage has a negative impact on Log DPS. It means with the increase in leverage, DPS decreases in case of nationalized banks in India. The regression coefficient is -1.723 with a constant of 2.763.

Regression Model

The equation can be written as a model fit equation between two variables as-

Log DPS = 2.763 - 1.723 (Log Financial Leverage)

As the value of R^2 is .238, it means that 23.8 % of variations in DPS are explained by Financial Leverage for the nationalized banks.

Validity of Regression Results with Log DPS and Log Fl for Nationalized Banks

Before we reach any conclusion regarding this model it is necessary to ensure the validity of results of regression. To check validity of results of regression few basic assumptions of classic linear regression model are checked Assumption of Linearity

with - tests of linearity, normality, stationarity, auto collinearity and homoscedasticity.

This has been checked with the help of Scatter diagram. The scatter diagram of the above said data has been represented in figure 8.

R² Linear = 0.238 1.50ő O 1.00-Ö Ö 00 C 0 Ö .50 00 000 O LogDPS C 0 08 0 0 8 0 o 0 00 .00 0 C Ö 0 0 0 0 -.50 0 0 -1.00 1.20 1.40 1.00 1.60 LogFinancialLeverage

Figure 8 Scatter Plot of Log DPS and Log FL for Nationalized Banks

As there are number of outliers present and a cluster is formed, it has been observed that the relationship is not linear between Log Financial Leverage and Log DPS of nationalized banks.

Assumption of Normality-

Shapiro-Wilk test along with Q-Q plot has been used to test the normality of data. **Shapiro-Wilk Test** - the results of the test are as below:-

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	Dť	Sig.
Log DPS	.076	182	.012	.986	182	.070
Log Financial Leverage	.091	182	.001	.968	182	.000

Table 8 Te	est of Normality of	Log DPS and	Log FL of N ationalizedBanks
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As we are able to see that level of Significance for Shapiro-Wilk test is below 0.05 for Log financial leverage, so the data don't hold the assumption of normality and regression

Figure 9 Q-Q plot of Log DPS of Nationalized Banks

results of the data which is not normal, are not valid.

Q-Q Plot – On the observation of the data on Q-Q plots, it is found that it is not normal.

Figure 10 Q-Q plot of Log FL of N ationalized



Assumption of Stationarity and auto correlation Stationarity has been checked using auto correlation test in SPSS and Durbin-Watson statistics. Auto-correlation test Auto correlation test results show that data is not stationary



Figure 12 ACF Chart of Log DPS of Nationalized



Durbin-Watson Statistics

As per the model summary, the Durbin -Watson value is 0.808 which very far off from the expected value of 2, for that to fulfil the assumption. So the data is having auto- colinearity.

Assumption of Homoscedasticity

To check this assumption the scatter plot of residuals has been observed.



Figure 13 Scatter Plot of Regression Standardized Residuals of Log FL and Log DPS of Nationalized Banks

The scatter plot of residuals is not equally distributed, which suggest the presence of hetroscedasticity.

Assumption of Correct Regression

This assumption is checked with the help of P-P plot of observed and expected residuals.





As per the observed P-P plot the residuals are very much lying on the expected line. So this assumption is fulfilled.

It has been analyzed that in this case also all of assumption of linear regression model are not satisfied. Though the results have improved as compared to simple regression but regression line cannot be taken as a good fit. Now the efforts have been made to find the non linear regression between the variables.

Nonlinear Regression of DPS and Fl of Nationalized Banks

As the linear regression model even after transformation

with log is not a good fit to explain the impact of financial leverage on dividend of nationalized banks, Non-linear regression model has also been applied. The correlation between dividend paid and financial leverage is negative, therefore decay model has been chosen.

The model is in the form as below:-

DPS=A-(B*(C*Financial Leverage))

When the same model has been run on the data related to nationalized banks, the results are as below:-

Dairs							
Parameter	Estimate	Std. Error	95% Confidence Interval				
			Lower Bound	Upper Bound			
А	13.218	1.342	10.570	15.865			
В	748	5632898.382	-11115429.734	11115428.237			
С	538	4047563.080	-7987078.757	7987077.682			

Table 10 Parameter Estimate for Non-Linear Regression of DPS and FL for Nationalized Banks

From the above tables it has been concluded that there is a negative relationship between DPS and Financial Leverage nationalized of banks i.e. with the increase in leverage DPS decreases in case of nationalized banks.

Nonlinear Regression Model

The equation can be written as a model fit equation between two variables as-

DPS= 13.218 - (-0.748*(-0.538*Financial Leverage)) i.e.

DPS= 13.218 - (0.748*(0.538*Financial Leverage))

As the value of R^2 is .157, it means that 15.7 % of variations in DPS are explained by Financial Leverage for the nationalized banks.

Conclusion:

As per the results of the analysis there exist a negative relationship between financial leverage and dividend paid by nationalized banks in India. Linear regression models after transformation with Log have also been developed depicting the significant impact of FL on DPS for banks. Though the models cannot be used to predict DPS on the basis of FL yet the results of the study can be used by the financial experts to formulate strategies related to capital structure.

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