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Public Sector Banks

# Effect of Financial Leverage on Financial Performance of Indian Public Sector Banks

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The study aims to analyse the effect of financial leverage on financial performance of Indian Public Sector Banks using random effects regression model. The model is based on panel data consisting of 12 Indian Public sector banks studied over a period of 14 years from financial year 2010-11 to 2023-24. Financial performance is measured using Return on Equity (ROE) and financial leverage is measured using Debt-to-Equity ratio (DE) and Debt-to Total Assets ratio (DTA). It is observed that Return on Equity (ROE) bears a positive significant relationship with Debt-to-Equity ratio (DE) and Debt-to Total Assets ratio (DTA). The results are in consonance with agency cost theory and other empirical studies. The study indicates the efficient use of debt capital by the Indian Public Sector Banks in increasing the return to its shareholders. Financial leverage helps in increasing returns to shareholders, when the profit generated exceeds the debt-servicing costs.

**Keywords:** financial leverage, financial performance, india, public sector banks

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# 1. Introduction

Financial management is primarily concerned with the maximisation of value of shareholders by maximising the market value of the firm (Brealey et al., 2012; Ali, 2020). However, the profit maximisation must be commensurate with the risk-taking capacity of the firm (Perinpanathan, 2014). Financial leverage is associated with the use of debt in capital structure decisions of a financial institution. In general, the cost of equity is higher than debt financing cost. However, there remains financial risk due to usage of debt, in times of rise of interest rates and decline in asset value. The usage of financial leverage in capital structure also helps the investors, creditors and other stakeholders to gain an insight into the profitability as well as stability of the firm (Al-Hawatmah & Shaban, 2023). Financial leverage involves the usage of fixed charges or fixed interest payments. If the funds borrowed are not employed in assets generating income higher than the fixed costs to be borne, it shall lead to high risk and loss impacting the financial performance (Zutter & Smart, 2021). Debt financing offers benefits such as stable interest rate, as well as tax deductions (Santos et al., 2023). The level of debt employed also affects the capital structure (Sahminan, 2021).

Public sector banks are a type of government banks in India, where more than 50% is held by Ministry of Finance, Government of India or State Ministry of Finance. The nationalisation of banks took place in the year 1969, with the nationalisation of 14 major banks. With this the share of banking sector held by the public banks continued to grow through 1980s, and by 1991, public sector banks accounted for 90% of the banking sector. Despite the fact that before 2000s banks were not able to register profits, from 2002-03 banks were able to register substantial profit. As of 30th September, 2024 there are 12 public sector banks which are as follows:

1. State Bank of India
2. Bank of Baroda
3. Union Bank of India
4. Punjab National Bank
5. Canara Bank
6. Punjab & Sind Bank
7. Indian Bank
8. Bank of Maharashtra
9. Bank of India
10. Central Bank of India
11. Indian Overseas Bank
12. UCO Bank

# 2. Literature Review

Many financial decisions derive its inception from Modigliani and Miller according to whom under perfect market conditions both capital structure and dividend decisions are irrelevant to the firm. Real and financial decisions are not inseparable in cases where external and internal financing are not perfect substitutes.

The trade-off theory on the other hand fits in the literature and assumptions given by Modigliani and Miller (1958), which was modified later including taxation (Modigliani and Miller, 1963). This theory is set to balance the tax advantage of debt, also known as tax shields.

Myers (1977) showed capital structure can influence investment decisions even without apparent market imperfections.

Abor (2005) investigated the relationship between capital structure and profitability of listed firms in Ghana Stock Exchange for the period from 1998 to 2003. The results showed a positive association between debt-to-total assets ratio and return on equity.

Berger and di Patti (2006) found that higher financial leverage or lower equity capital is associated with higher profit.

Saaedi and Mahmoodi (2011) investigated the relationship between financial leverage and financial performance. The investigation was carried out on 320 companies listed in Tehran Stock Exchange over a period of 8 years from 2002 to 2009. The study concluded negative relationship between Return on Assets and capital structure but found no significant relationship between Return on Equity and financial performance.

Javed et al. (2015), Illyukhin (2015) and Rehman et al. (2020) assessed the impact of financial leverage on financial performance. The studies showed a negative relationship between financial leverage on financial performance.

# 3. Objectives of the Study

The previous studies exhibit different conclusions related to the relationship between financial leverage and firm's financial performance.

Some showed positive, some negative and some mixed results related to the nature of the relationship. Hence this study envisages to find out the effect of financial leverage on financial performance of Indian Public Sector Banks.

# 4. Research Hypotheses

Financial leverage is related to financing carried out by borrowing. The inclusion of debt in capital structure shall affect financial performance as well as earnings of a financial institution. Hence debt ratios can be used to evaluate financial position. Inclusion of debt, lead to exposure to risk because the loans and interests that are to be paid are fixed in nature. Based on this, the following research hypotheses have been formulated to study the effect or the impact of financial leverage, denoted by Debt-to-Equity ratio (DE) and Debt-to-Total Assets ratio (DTA), on the financial performance indicator Return on Equity (ROE):

**Hypothesis 1**

**Ho:** There is no impact of Debt-to-Equity ratio on Return on Equity.

**Hypothesis 2**

**Ho:** There is no impact of Debt-to-Total Assets ratio on Return on Equity.

# 5. Data and Methodology

**Sample selection**

For the purpose of analysis, the 12 public sector banks of India as of 30th September 2024 has been chosen. Data has been sourced from the annual reports of the Indian Public Sector banks.

**Variables Selection**

The following variables have been chosen for the purpose of analysis as shown in Table 1:

**Table 1:** Variables Selection

| Aspects | Variables | RelevantLiterature |
|---|---|---|
| Financial Performance | For financial performance analysis the profitability ratio Return on Equity (ROE) is selected. | Salim and Yadav (2012); Gupta and Gupta (2014); Vatavu (2015) |
| Financial Leverage | For financial leverage, the ratios Debt-to-Equity (DE) and Debt-to-Total Assets (DTA) have been chosen. | Bose et al. (2017); Le and Phan (2017); Dinh and Pham (2020); Ullah et al. (2020) |

**Methodology**

The panel data set comprises of a cross-section of data of 12 Public Sector Banks over a period of 14 years (FY 2010-11 to 2023-24). It forms a strongly balanced panel. The total number of firms-years observations is 168. The details of the techniques employed for analysis are as follows:

**Levin, Lin, and Chu Unit-Root Test:**

It is a panel unit root test where the null hypothesis suggests the presence of unit root and alternative hypothesis is homogeneous stationarity. The test takes into consideration heterogeneity of individual deterministic effects of the variables, and heterogeneous serial correlation of the error terms. A pooled t-statistic is calculated to evaluate the null hypothesis ($H_o$: $\rho i=\rho=0$) against the alternative hypothesis of stationarity of each time series ($H_a$: $\rho i=\rho<o\ for\ all\ i$).

**Breusch-pagan Lagrange Multiplier Test and Hausman Test:**

The Breusch-Pagan Lagrange Multiplier test is the technique applied to choose the appropriate model between Random Effects and Pooled OLS. The acceptance of null hypothesis signifies choosing pooled OLS model over the Random Effects model. The Hausman test is employed to choose between Fixed Effects and Random Effects models. If the null hypothesis is accepted then, the Random Effects model will be the appropriate model.

**Regression Models:**

The details of the regression model employed in the study are as follows:

**Pooled OLS Regression Model:**

Pooled OLS model is a regression model where different units are pooled together with no assumption of individual differences. It takes the form of:

$y_{it} = \alpha+\beta x_{it} +u_{it}$

Here where y is the dependent variable, x is exogenous variable, i denotes the banks and time is denoted by t. α is the intercept term, $\beta$is the coefficient of x and $u_{it}$ is the error term.

**Random Effects (RE) Regression Model:**

Random effects regression model is also called Error Component Model (ECM). The equation for random effects model is given as:

$y_{i,t} = x_{i,t}\beta + \mu + u_i + \varepsilon_{i,t}$

The compound error-$u_i + \varepsilon_{i,t} = w_{i,t}$ introduces cross-correlations.

In random effects model, the variation across cross-sections is taken to be random by nature and not correlated with the predictor or independent variables.

**Fixed Effects (FE) Regression Model:**

Fixed effects regression model indicates that each unit has its own intercept. The equation for the Fixed Effects model is given by:

$y_{i,t} = x_{i,t}\beta + \alpha_i + \varepsilon_{i,t}$

In fixed effects model the unit intercepts do not change over time even if it varies among the cross-section units.

It is to be further mentioned that the panel regressions have been conducted with robust-clustering technique to take care of heteroskedasticity and autocorrelation.

# 6. Analysis and Findings

**Levin, Lin, and Chu Unit-Root Test**

The results of Levin, Lin, and Chu Unit-Root Test are given in table 2 as follows:

**Table 2:** Levin, Lin, and Chu Unit-Root Test

| Variables | Adjustedt – values | P-values | Acceptance or Rejection of H0 | Stationarity Results |
|---|---|---|---|---|
| ROE | -27.0086 | 0.000 | Rejection of H0 | Stationary at level |
| DE | -25.6303 | 0.000 | Rejection of H0 | Stationary at level |
| DTA | -26.7086 | 0.000 | Rejection of H0 | Stationary at level |

(Level of Significance is 5%)
(**Source:** Researcher's Own Computation)

The stationarity test results prove stationarity of all the variables at level.

**Breusch-Pagan Lagrange Multiplier Test and Hausman Test**

The results of the Breusch-Pagan Lagrange Multiplier Test and Hausman test led to the choice between the correct panel regression model to be selected for the purpose of analysis. The results are given in the following table 3:

**Table 3:** Breusch-Pagan Lagrange Multiplier and Hausman Test

| Dependent Variable | Independent Variables | Breusch-Pagan Lagrange Multiplier TestP-Value (Prob>chibar 2) | Hausman Test P-Value |
|---|---|---|---|
| Return on Equity (ROE) | Debt-to-Equity ratio (DE) | 0.000 [chibar2(01) = 15.25] | (Prob>chi 2) of 0.8999 [chi2(2) = 0.21] |
| | Debt-to-Total Assets Ratio (DTA) | | |

(Level significance is 5%)
(**Source:** Researcher's Own Computation)

It is evident from the above table that the Breusch Pagan Lagrange-Multiplier Test has rejected Pooled OLS regression against Random Effects regression as is denoted by p-value of 0.000. The Hausman Test to choose between Random Effects Regression and Fixed Effects Regression with p value of 0.8999, leads to acceptance of null hypothesis, which means the Random Effects Regression is chosen. The model chosen for Return on Equity (ROE) as dependent variable and Debt-to-Equity ratio (DE) and Debt-to-Total Assets Ratio (DTA) as independent variables is:

$ROE_{it} = \alpha + \beta_1 DE_{it} + \beta_1 DE_{it} + w_{it}$.

The results of the Random Effects regression are as follows in Table 4:

**Table 4:** Results of Random Effects Regression

| Dependent Variable | Independent Variables | R-square Values | Wald chi2-Statistic Value/ F-statistic value at 5% level of significance | Coefficient Values | Results |
|---|---|---|---|---|---|
| Return on Equity (ROE) | Debt-to-Equity ratio (DE) | within= 0.2911 between =0.8629 overall= 0.7697 | Wald chi2(1)-= 10.72 (Prob > chi2 or p-value associated with Wald chi2 statistic= 0.0011) | 0.30350 (0.000) | Significant relationship as p-value significant at 5% and 1% level of significance. |
| | Debt-to -Total Assets ratio (DTA) | | | 0.86509 (0.000) | Significant relationship as p-value significant at 5% and 1% level of significance. |

(Source: Researcher's Own Computation)
(**Note:** Figures in brackets for coefficient values indicate p-values of z-statistic, i.e., Prob**>|**z|)

It is imperative to mention here that the regressions have been conducted with robust-clustering technique to take care of heteroskedasticity and autocorrelation.

Overall R-square values of 0.7697 and significant p-value of 0.0011 associated with Wald chi2 statistic [significant at 5% and 1% level of significance] indicate good fitness of the model in case of random effects regression model. A positive and significant relationship (p-value of 0.000 at 5% and 1% level of significance) can be noticed between debt-to-equity ratio and return on equity. It means with one unit change in debt-equity ratio, return on equity increases by 0.30350 unit. A positive and significant relationship (p-value of 0.000 at 5% and 1% level of significance) can be noticed between debt-to-total assets ratio and return on equity. It means with one unit change in debt-equity ratio, return on equity increases by 0.86509 unit.

# 7. Conclusion

The findings of the study consistently indicate that with increase in debt capital in the capital structure, the profitability of Indian public sector banks increases. A capital structure geared by debt capital, thus can be seen to increase the return to the equity shareholders. This happens when the increase in profit exceeds the increase in debt-servicing costs. Thus, the financial leverage employed is helping in increasing the profits of Indian public sector banks. The fact that financial leverage here has positive effect on financial performance of Indian Public sector banks is in accordance with the agency cost theory. The theory assumes higher leverage helps to reduce the agency cost of equity and increases the value of a financial institution by aiding the managers to act more in the interest of shareholders.

Financial Leverage has significant impact on performance and growth of a financial institution. The increase in profitability smoothens the path to a wide range of investment opportunities. This in turn results in increase of financial assets. However, debt entails fixed payments and hence carries risk. Hence employment of debt capital must be made keeping the risk-return trade off into consideration.

This result is supported by Abor (2005) and Berger and di Patti (2006), on the other hand it differs from the findings of Javed et al. (2015), Illyukhin (2015) and Rehman et al. (2020) which indicate negative relationship between financial leverage and financial performance. These differences in results among studies is due to the fact that the economic conditions of different countries play a major role in modifying the effect of financial leverage. In cases of government credit support in some countries, both the effectiveness and efficiency of financial leverage in impacting the financial performance of firms is affected.

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