# Value Relevance of Earnings and Book Value per Share: Comparative Study of Indian Public and Private Sector Banks

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### Abstract

*This study examines the value relevance of accounting numbers with a share price of Indian banks and investigates whether there is significance difference in the value relevance of accounting information between private and public sector banks listed on Bombay Stock Exchange, India. The study uses a price valuation model provided by Ohlson in 1995 uses data for a period of 15 years from 2002 to 2016. To compare the explanatory power Collins et al (1997) model is used.*

*Findings of our study indicate 1) earnings per share (EPS) and book value per share (BVPS) jointly and individually are positively and significantly related with market share price of public sector banks, private sector banks, and all banks; (2) The incremental information content of BVPS is greater than that of EPS in public sector banks. While in private sector banks, EPS add more to the overall explanatory power of the model than BVPS. (3) The common explanatory power of EPS and BVPS is greater in public sector banks, which is 49.8%. (4) Overall empirical findings reported that accounting information in public sector banks is more relevant than that of private sector banks.*

***Keywords:*** *Accounting information, Private Sector Banks, Public Sector Banks, Value relevance.*

## 1. Introduction

The International Accounting Standard Board (IASB) defined word relevance, as the principal qualitative characteristic that financial statements should have in order to be useful in the decision making; also accounting information is considered to be relevant when has ability of influencing user's economic decision by helping them to evaluate the past, present and future events and correcting their past evaluation.

Prior literature in India has empirically examined value relevance of accounting information in Indian context (Vishnani and Shah, 2008; Srinivasan and Narasimhan, 2010; Mohanty, 2012; Sharma *et al.*, 2012; Varun, 2014; Modi and Pathak, 2014; Khanna, 2014; Sharma, 2014) but none of these studies focused on comparison between the same sector. For conducting the analysis, the study used the list of Indian banks (private and public) listed in Indian stock market. The Banking industry is considered for this study as it has a significant role in the economy and is representative of knowledge based industry (Bhatia and Mehrotra, 2016). The

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choice of variables used in this study is guided by previous studies and theoretical framework of Ohlson (1995) price model, which is based on two bottom line accounting numbers that are earnings per share and book value per share. The model has been successfully tested in various studies within different contexts and also applied in different stock markets with different attributes. Understanding the value relevance of accounting information in this sector will be relevant to investors, mutual funds and analysts for investment purposes and for regulator/s of the stock market.

*Hypothesis:* Ho: There is significance difference in the value relevance of accounting information between private and public sector banks listed in Bombay Stock Exchange.

## 2. Research Design

### 2.1 Sample and Data

The data required for the study sourced from the annual financial reports of the listed Indian banks under Bombay stock exchange through prowess database and Reserve Bank of India official website. Following are the constituents of the study.

### Table 1: Constituents of the Study

| S/No. | Type of Bank | Number |
|-------|--------------|--------|
| 1. | Private Sector Bank | 14 |
| 2. | Public Sector Bank | 23 |
| | Total | 37 |

### 2.2. Model Specification

In order to test significant ability of accounting information in explaining market share price, we based on Ohlson (1995) price model which expressed market share prices as a linear function of its earnings per share and book value per share, many other researchers have used this model.

Initially, we focused on the model (1) to measure the joint ability of earnings per share and book value in explaining market share prices.

$$Pit = \alpha_0 + \beta_1 \ EPS_{it} + \beta_2 BVPS_{it} + \varepsilon_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (1)$$

We use the similar methodology employed by Collins *et al* (1997) to compare the explanatory power of earnings per share and book value per share on stock price per share. Further, we decomposed total explanatory power into three components (i) the incremental explanatory power of earnings per share (ii) the incremental explanatory power of book value per share and (iii) the explanatory power common to both earnings per share and book value per share. In order to calculate the mentioned three components, the adjusted $R^2$ for the following equations are estimated.

$$Pit = \gamma_0 + \gamma_1 EPS_{it} + \varepsilon_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (2)$$

$$Pit = \delta_0 + \delta_1 BVPS_{it} + \varepsilon_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3)$$

The adjusted $R^2$ from model 1-3 is used as the primary metric to measure value-relevance and denoted as adj.$R^2_{(EPS\ \&\ BVPS)}$, adj.$R^2_{EPS}$ and adj.$R^2_{BVPS}$ for model 1,2 and 3 respectively. The incremental explanatory power of earnings per share (incr.EPS) calculated by taking the explanatory power (Adj.$R^2_{(EPS\ \&\ BVPS)}$) from model 1 less the explanatory power (Adj.$R^2_{BVPS}$) from model 3;the incremental explanation power of book value per share (incr.BVPS) calculated by taking the explanatory power (Adj.$R^2_{(EPS\ \&\ BVPS)}$) from model (1) less the explanatory power (Adj.$R^2_{EPS}$) from model (2).The remaining adj.$R^2_{(EPS\ \&\ BVPS)}$-incr.EPS –incr.BVPS represents the explanatory power common to both earnings per share and book value per share (incr.Com).

**Table 2: Description of Dependent and Independent Variables Used**

| Name | Nature | Formula | Description |
|------|--------|---------|-------------|
| $P_{it}$ | Dependent variable | Closing market share prices | Closing market share price of firm i at time t |
| Á | Independent | Captured the influence of variables that have been excluded from the model but exercise some influence on the dependent variable. | |
| $EPS_{it}$ | Independent variable | Earnings attributable to ordinary shareholders Total amount of outstanding ordinary shares | Earnings per share of firm i at time t |
| $BVPS_{it}$ | Independent variable | Equity share capital + shareholders reservesTotal number of outstanding ordinary shares | Book value per share of firm i at time t |
| T | Time | Represents the number of years covered for this study | 2002…2016 corresponding to the years 2002-2016. |

## 3. Analysis and Results

### 3.1. Descriptive Statistics

**Table 3: Descriptive Statistics of the Dependent and Independent Variables**

| Variables | Mean | Median | Std.Dev | Minimum | Maximum |
|-----------|------|--------|---------|---------|---------|
| Private Sector Banks | | | | | |
| Pit | 5.160 | 5.087 | 1.362 | -3.228 | 7.761 |
| EPS | 2.504 | 2.804 | 1.544 | -3.228 | 5.497 |
| BVPS | 4.712 | 4.703 | 0.963 | 2.384 | 7.073 |
| Observations | | | 201 | | |
| Public Sector Banks | | | | | |
| Pit | 5.088 | 4.848 | 1.274 | 2.534 | 9.476 |
| EPS | 3.004 | 3.084 | 1.749 | -4.311 | 6.786 |
| BVPS | 5.120 | 4.950 | 1.290 | 0.000 | 8.250 |
| Observations | | | 333 | | |
| All banks | | | | | |
| Pit | 5.116 | 4.950 | 1.307 | -3.228 | 9.476 |
| EPS | 2.816 | 2.916 | 1.691 | -4.311 | 6.786 |
| BVPS | 4.966 | 4.884 | 1.194 | 0.000 | 8.250 |
| Observations | | | 534 | | |

### 3.2. Correlation Matrix

The relationship between accounting variables and market share prices was measured by using the Pearson's Correlation analysis. As indicated in Table 4. The highest correlation coefficient is 83.3 percent (between BVPS and P) followed by a correlation coefficient of 73.8 percent (between EPS and P) which is a strong positive correlation. It is essential to test for multicollinearity in the regressors (Bhatia and Dhamija, 2015). The results of correlation coefficient and Variance Inflation Factor (VIF) are well within acceptable limits and indicate the absence of multicollinearity.

**Table 4: Correlation among Dependent and Independent Variables**

| Variables | P | EPS | BVPS |
|---|---|---|---|
| Private Sector Banks | | | |
| $P_{it}$ | 1 | | |
| $EPS_{it}$ | 0.708*** | 1 | |
| $BVPS_{it}$ | 0.705*** | 0.783*** | 1 |
| VIF | | 2.58 | 2.58 |
| Public Sector Banks | | | |
| $P_{it}$ | 1 | | |
| $EPS_{it}$ | 0.738*** | 1 | |
| $BVPS_{it}$ | 0.833*** | 0.701*** | 1 |
| VIF | | 1.96 | 1.96 |
| All banks | | | |
| $P_{it}$ | 1 | | |
| $EPS_{it}$ | 0.713*** | 1 | |
| $BVPS_{it}$ | 0.765*** | 0.729*** | 1 |
| VIF | | 2.127 | 2.127 |

Notes:***Correlation is significant at a level of the 1%

### 3.3. Regression Results

### Regression Results for Private Sector Banks

The following tables present the summary of regression results for model 1, 2 and 3 for each year from 2002-2016 and the decomposition of the coefficient of variation for private sector banks. Table 5 reveals that the result of the pooled data for model 1 indicates that EPS and BVPS jointly are significant at a level of 0.01 and positively related to stock prices of private sector banks.

### Table 5: Pooled and Yearly Cross-Sectional Regression Results of Market Stock Prices on EPS and BVPS for Private Sector Banks

| Dependent variable: Market share prices | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Year | N | $\beta_1$ | $\beta_2$ | adj.$R^2$ (EPS&BVPS) | $\gamma_1$ | adj.$R^2$ EPS | $\delta_1$ | adj.$R^2$ BVPS |
| 2002 | 11 | -0.125(-0.24) | 0.680(1.12) | 0.070 | 0.356(1.20) | 0.042 | 0.559(1.73) | 0.167 |
| 2003 | 11 | 0.132(0.60) | 0.694(1.32) | 0.356 | 0.349(2.31)** | 0.303 | 0.933(2.78)*** | 0.401 |
| 2004 | 11 | 0.138(0.16) | 0.540(0.57) | 0.174 | 0.611(2.02)* | 0.236 | 0.678(2.14)* | 0.264 |
| 2005 | 14 | 0.326 (2.36)** | 0.138(0.42) | 0.490 | 0.367(3.92)** | 0.525 | 0.683(2.54)** | 0.296 |
| 2006 | 14 | 0.251(0.98) | 0.453(0.93) | 0.466 | 0.458(3.55)*** | 0.472 | 0.866(3.52)*** | 0.468 |
| 2007 | 14 | 0.301(0.77) | 0.371(0.60) | 0.467 | 0.522(3.70)*** | 0.495 | 0.809(3.64)*** | 0.485 |
| 2008 | 14 | 0.250(0.71) | 0.885(2.25)** | 0.807 | 0.985(6.19)*** | 0.741 | 1.140(7.64)*** | 0.815 |
| 2009 | 14 | -0.077(-0.10) | 1.125(1.61) | 0.684 | 1.060(4.93)*** | 0.642 | 1.054(5.73)*** | 0.710 |
| 2010 | 14 | 0.160(0.30) | 0.821(1.38) | 0.569 | 0.844(4.00)*** | 0.536 | 0.985(4.54)*** | 0.601 |
| 2011 | 14 | 0.614 (2.71)** | 0.270(1.00) | 0.863 | 0.823(9.11)*** | 0.863 | 0.939(7.08)*** | 0.791 |
| 2012 | 14 | 0.210(1.31) | 0.715(2.63)** | 0.640 | 0.500(3.49)** | 0.462 | 0.959(4.70)*** | 0.618 |
| 2013 | 14 | 0.341(1.57) | 0.682(2.10)* | 0.706 | 0.706(4.74)*** | 0.622 | 1.088(5.24)*** | 0.671 |
| 2014 | 14 | 0.285(1.38) | 0.189(0.52) | 0.295 | 0.366(2.76) | 0.389 | 0.568(2.27)** | 0.242 |
| 2015 | 14 | 0.222(1.33) | 1.190(3.38)** | 0.764 | 0.639(4.17)*** | 0.559 | 1.538(6.30)*** | 0.749 |
| 2016 | 14 | 0.205(0.98) | 1.024(2.71)** | 0.736 | 0.667(4.50)** | 0.597 | 1.329(6.12) | 0.737 |
| All years | 201 | 0.354(5.30)*** | 0.552(5.15)*** | 0.556 | 0.625(14.15)*** | 0.499 | 0.998(14.05)*** | 0.495 |

Note:***, **,*Statistically significant at a level of 1%,5% and 1% respectively
Numbers in the parentheses are the corresponding t-statistics

### Table 6: The Decomposition of adj.$R^2$ for Private Sector Banks

| Year | Adj.$R^2$ (EPS&BVPS) | Adj.$R^2$ EPS | Adj.$R^2$ BVPS | Incr.EPS | Incr.BVPS | Incr.Comm |
|---|---|---|---|---|---|---|
| 2002 | 0.070 | 0.042 | 0.167 | -0.097 | 0.028 | 0.139 |
| 2003 | 0.356 | 0.303 | 0.401 | -0.045 | 0.053 | 0.348 |
| 2004 | 0.174 | 0.236 | 0.264 | -0.09 | -0.062 | 0.326 |
| 2005 | 0.490 | 0.525 | 0.296 | 0.194 | -0.035 | 0.331 |
| 2006 | 0.466 | 0.472 | 0.468 | -0.002 | -0.006 | 0.474 |
| 2007 | 0.467 | 0.495 | 0.485 | -0.018 | -0.028 | 0.513 |
| 2008 | 0.807 | 0.741 | 0.815 | -0.008 | 0.066 | 0.749 |
| 2009 | 0.684 | 0.642 | 0.710 | -0.026 | 0.042 | 0.668 |
| 2010 | 0.569 | 0.536 | 0.601 | -0.032 | 0.033 | 0.568 |
| 2011 | 0.863 | 0.863 | 0.791 | 0.072 | 0 | 0.791 |
| 2012 | 0.640 | 0.462 | 0.618 | 0.022 | 0.178 | 0.440 |
| 2013 | 0.706 | 0.622 | 0.671 | 0.035 | 0.084 | 0.587 |

| 2014 | 0.295 | 0.389 | 0.242 | 0.053 | -0.094 | 0.336 |
| 2015 | 0.764 | 0.559 | 0.749 | 0.015 | 0.205 | 0.544 |
| 2016 | 0.736 | 0.597 | 0.737 | -0.001 | 0.139 | 0.598 |
| All years | 0.556 | 0.499 | 0.495 | 0.061 | 0.057 | 0.438 |

### Regression Results for Public Sector Banks

The following tables present the summary of regression results for model 1, 2 and 3 for each year, 2002-2016 and the decomposition of the coefficient of variation for public sector banks.

Table 7 reveals that the result of the pooled data for model 1 indicates that EPS and BVPS jointly are significant at a level of 0.01 percent and positively related to stock prices of public sector banks. The beta coefficients for EPS (BVPS) are positive. The positive value of coefficient signifies that there exists a direct relationship between variables. Also, values signify that a unit increase in EPS (BVPS) will leads to 22.1 percent (62.1 percent) increase in market stock prices (P). These results indicate how investors in banking sector attribute more relevance to EPS and BVPS in valuing stock prices of public banks, possibly due non-availability of competing information sources. Further, estimated regression results shows that model 1 is statistically significant and explained about 73.9 percent (adj.$R^2$ =0.739) of the variation in stock prices of public sector banks.

### Table 7: Yearly Cross-Sectional Regression Results of Prices on EPS and BVPS for Public Sector Banks

| Dependent variable: Market share prices | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Years | N | $\beta_1$ | $\beta_2$ | adj.$R^2$ (EPS&BVPS) | $\gamma_1$ | adj.$R^2$ EPS | $\delta_1$ | adj.$R^2$ BVPS |
| 2002 | 18 | 0.397(3.31)** | 0.454(3.20)** | 0.924 | 0.742(11.20)*** | 0.880 | 0.875(11.03)*** | 0.876 |
| 2003 | 19 | 1.026(4.40)*** | -0.067(-0.33) | 0.909 | 0.952(13.82)*** | 0.913 | 0.780(8.82)*** | 0.810 |
| 2004 | 20 | 0.359(1.61) | 0.571(2.66)** | 0.957 | 0.936(17.73)*** | 0.942 | 0.911(19.75)*** | 0.953 |
| 2005 | 23 | 0.548(1.62) | 0.178(0.51) | 0.783 | 0.716(9.18)*** | 0.791 | 0.727(8.56)*** | 0.767 |
| 2006 | 23 | 0.737(3.17)** | 0.036(0.16) | 0.787 | 0.771(9.34)*** | 0.797 | 0.715(7.15)*** | 0.695 |
| 2007 | 23 | 0.247(0.92) | 0.770(2.71)** | 0.955 | 0.970(18.84)*** | 0.941 | 1.026(21.74)*** | 0.955 |
| 2008 | 23 | 0.091(0.19) | 0.725(1.43) | 0.733 | 0.766(7.59)*** | 0.720 | 0.818(8.08)*** | 0.745 |
| 2009 | 23 | -0.232(-0.86) | 1.226(3.86)** | 0.869 | 0.773(8.97)*** | 0.783 | 0.960(12.23)*** | 0.871 |
| 2010 | 23 | 0.285(1.91)* | 0.800(5.00)*** | 0.964 | 1.000(16.34)*** | 0.923 | 1.093(22.95)*** | 0.960 |
| 2011 | 23 | -0.090(-0.32) | 1.303(4.22)*** | 0.955 | 1.066(15.76)*** | 0.918 | 1.205(22.04)*** | 0.956 |
| 2012 | 23 | 0.167(1.47) | 0.738(4.54)*** | 0.720 | 0.580(6.89)*** | 0.564 | 0.930(9.47)*** | 0.711 |
| 2013 | 23 | 0.198(1.11) | 0.932(4.37)*** | 0.944 | 0.942(13.75)*** | 0.895 | 1.160(19.12)*** | 0.943 |
| 2014 | 23 | 0.177(0.93) | 0.731(3.74)** | 0.804 | 0.803(6.96)*** | 0.683 | 0.891(9.59)*** | 0.805 |
| 2015 | 23 | 0.115(1.94)* | 0.887(8.32)*** | 0.829 | 0.335(3.05)** | 0.274 | 0.979(9.63)*** | 0.807 |
| 2016 | 23 | 0.068(2.18)** | 0.960(8.60)*** | 0.833 | 0.176(2.91)** | 0.254 | 1.058(9.53)*** | 0.803 |
| All years | 333 | 0.221(7.72)*** | 0.612(15.80)*** | 0.739 | 0.538(19.91)*** | 0.544 | 0.822(27.41)*** | 0.693 |

Note: ***, **,*Statistically significant at a level of 1%, 5% and 1% respectively.
Numbers in the parentheses are the corresponding t-statistics
Coefficient estimates are based on ordinary least-squares estimation.

### Table 8: The Decomposition of adj.$R^2$ for Public Sector Banks

| Year | adj.$R^2$ (EPS&BVPS) | adj.$R^2$ EPS | adj.$R^2$ BVPS | Incr. EPS | Incr. BVPS | Incr.Comm |
|------|------|------|------|------|------|------|
| 2002 | 0.924 | 0.880 | 0.876 | 0.048 | 0.044 | 0.832 |
| 2003 | 0.909 | 0.913 | 0.810 | 0.099 | -0.004 | 0.814 |
| 2004 | 0.957 | 0.942 | 0.953 | 0.004 | 0.015 | 0.938 |
| 2005 | 0.783 | 0.791 | 0.767 | 0.016 | -0.008 | 0.775 |
| 2006 | 0.787 | 0.797 | 0.695 | 0.092 | -0.010 | 0.705 |
| 2007 | 0.955 | 0.941 | 0.955 | 0 | 0.014 | 0.941 |
| 2008 | 0.733 | 0.720 | 0.745 | -0.012 | 0.013 | 0.732 |
| 2009 | 0.869 | 0.783 | 0.871 | -0.002 | 0.086 | 0.785 |
| 2010 | 0.964 | 0.923 | 0.960 | 0.004 | 0.041 | 0.919 |
| 2011 | 0.955 | 0.918 | 0.956 | -0.001 | 0.037 | 0.919 |
| 2012 | 0.720 | 0.564 | 0.711 | 0.009 | 0.156 | 0.555 |
| 2013 | 0.944 | 0.895 | 0.943 | 0.001 | 0.049 | 0.894 |
| 2014 | 0.804 | 0.683 | 0.805 | -0.001 | 0.121 | 0.684 |
| 2015 | 0.829 | 0.274 | 0.807 | 0.022 | 0.555 | 0.252 |
| 2016 | 0.833 | 0.254 | 0.803 | 0.030 | 0.579 | 0.224 |
| All years | 0.739 | 0.544 | 0.693 | 0.046 | 0.195 | 0.498 |

## 4. Conclusions

The findings of our study indicate that (1) earnings per share and book value per share jointly and individually are positively and significantly related with market share price of public sector banks, private sector banks, and all banks; (2) The incremental information content of book value per share is greater than that of earnings per share in public sector banks. While in private sector banks, earnings per share add more to the overall explanatory power of the model than book value per share. (3) The common explanatory power of earnings per share and book value per share is greater in public sector banks, which is 49.8%. (4) Overall empirical findings reported that accounting information is relevant. However, there is certain difference in the value relevance of accounting information among banks. These differences are even more noticeable when the value relevance of earnings per share and book value per share are observed separately. Analysis conducted has shown that book value per share is more relevant than earnings per share in public sector banks while in private sector banks earnings per share is more relevant than book value per share. For the banking sector as a whole, book value per share is more relevant than the earnings per share. Given the respective value of adj.$R^2$ reported under both sectors, it is posit to note that accounting information is more relevant in public sector banks than that of the private sector banks and this supports hypothesis of the study that there is significant difference in the value relevance of accounting information between public sector banks and private sector banks. For overall banking sector, accounting information has the significant ability in influencing stock prices during the entire period covered by this study. Therefore, this study concludes that banking sector should provide adequate and reliable

accounting information in their financial statements to assist potential and prospective investors in taking the informed decision.

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