Volume : 3 | Issue : 4 | April 2014 • ISSN No 2277 - 8160

Research Paper | Management

Determination of Market Price of Select Banking Companies by Using Year Wise Y-X Correlation Analysis

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ABSTRACT

The Indian stock market has witnessed a paradigm shift in the last two decades of economic reforms. Knowledge of the relative influence of fundamental factors on equity prices is useful to corporate management, government and investors. The post reform period witnessed deregulatory initiatives in the banking sector, an important constituent of the financial sector of the economy. The focus of this paper is on the fundamental variables influencing equity prices of 'A' Group and 'B' Group shares of the banking companies listed at BSE. Year wise Y-X Correlation analysis was employed in the analysis of data. The findings reveal that the variable market capitalization influenced the market share price of 'A' Group shares positively in all the years of the study period. Three variables namely book value per share, Dividend per share and earnings per share were found significant in the maximum number of years. For 'B' Group category the book value per share influences the market share price in all the years of study period followed by earning per share

KEYWORDS:

INTRODUCTION

In the last two decades of economic reforms, there has been a paradigm shift in the capital market. Over a period of fifteen years, India has automated trading, expanded the direct reach of major stock exchanges to over 400 centers, dematerialized shares, moved to rolling settlements and introduced derivatives trading. The National Stock Exchange (NSE) accounts for 65 percentage of trading volumes nationwide while the Bombay Stock Exchange (BSE) accounts for another 33 percentage of the business. There are several fundamental, non-fundamental and technical factors which influence the market price of the scrips constituting the index and thereby have a bearing on the behaviour of the entire market. There are different variables, which assume greater significance in different years depending on the prevailing economic, industry and stock market conditions.

REVIEW OF LITERATURE

Badhani K.N (2006) examined the relationship of security prices and exchange rates in his study "Dynamic Relationship Among Stock Prices, Exchange Rates and Net FII Investment flow in India", and reported no relation between the markets and found only the short term causality run from exchange rates to stock prices.

Bipul marker & Rajnarayan Gupta (2002) conducted a study on "Determinants of Share Price – A System Approach" by using modified simultaneous equation and found that there was a link between share market and product market.

Lalwani Makesh (1997) in his research, "Determinants of Stock prices on India's National Stock Exchange", confined to the periods ending march of 1995, 1996 and 1997 for a panel of 117 major stocks listed on the National Stock Exchange, concluded that among many influencing factors, earnings per share for all years predominantly determined Indian stock prices followed by sales to equity ratio and payout ratio.

STATEMENT OF THE PROBLEM

Share price is the most important indicator readily available to the investors for their decision to invest or not in a particular share. It is important to study the factors affecting share prices of the companies in the financial sector of which banking Sector is an important constituent, in the post reform period with more openness to FDIs. In this background, this study on market prices of shares of banking companies in India and its determinants have been undertaken.

OBJECTIVES OF THE STUDY

The specific objectives of the study are:

1. To examine the trend of Share Prices of 'A' Group and 'B' Group shares and various explanatory variables
2. To identify the factors influencing Share Price of 'A' group and 'B' Group shares of the select banks.

HYPOTHESIS

The following hypothesis was formulated and tested in this study:

The explanatory variables determining equity prices for 'A' Group and 'B' Group shares would not be significantly different from each other.

METHODOLOGY

The study covers a period of ten financial years i.e. from 2003-2004 to 2012-2013. The data required for the study have been collected from the official directory of the Bombay Stock Exchange and the Electronic Database provided by Center for Monitoring of Indian Economy (CMIE). The sample was drawn from the list of Banks listed at Bombay Stock Exchange (BSE 500). For the present study, shares of 24 Banks have been selected out of the 41 banks listed at BSE. The select banking companies comprise of twelve banks with 'A' Group and twelve banks with 'B' Group. For the purpose of analyzing the influences of explanatory variables on the Market Price of shares, y-x correlation analysis was employed.

Empirical Analysis and Results

For the purpose of empirical analysis related to the study, share prices have been taken to be the dependent variable, while other factors have been taken as explanatory or independent variables. The variables chosen in the study are as follows:

Dependent Variable - Market Price of Shares (MP)

The market price per share has been computed by taking into account the average of the highest market price and the lowest market price of the shares during the financial year. For the purpose of facilitating a meaningful comparison, all shares have been brought to a face value of Rs.10 per share and thereby the impact of different face or par value has been removed.

$$\text{Market Price} = \frac{\text{High Price} + \text{Low Price}}{2}$$

where, High Price = Highest market price during the financial year
Low Price = Lowest market price during the financial year

Independent / Explanatory Variables

The seventeen independent variables considered for the analysis comprise of 13 micro variables and 4 macro variables such as:

Micro Variables

1. Book value per share (BV) 2. Dividend per Share (DPS) 3. Earning Per Share (EPS) 4. Price Earning Ratio (P/E Ratio) 5. Dividend yield (DY) 6. Debt to Equity Ratio (D/E) 7. Growth of Business 8. Market Capitalization 9. Dividend Payout Ratio 10. Price / Book value Ratio 11. Price / Cash Earning Per Share 12. Return on Capital Employed (ROCE) 13. Beta

Macro Variables
14. Gross Domestic Product 15. Interest Rate 16. Inflation Rate 17. Industrial Growth Rate

Table 1 Mean values of Dependent Variable and Independent Variables for 'A' Group shares of Select Banking Companies -2003-2004 to 2012-2013

Year	Market Price of Share Rs.	Book value Per Share Rs.	Dividend Per Share Rs.	EPS Rs.	PE Ratio (%)	Dividend Yield (%)	Debt-equity Ratio (times)	Growth of Business (%)	Market Capitalization Rs. in Lakhs	Payout Ratio (%)	P/BV Ratio (%)	P/CEP Ratio (%)	ROCE (%)	Beta	GDP Rate (%)	Industrial Growth Rate (%)	Interest Rate (%)	Inflation Rate (%)
2003 - 2004	92.41	79.96	2.33	12.01	12.36	6.43	1.02	34.55	2292.72	22.45	1.66	9.82	10.57	0.68	6.1	6.7	8	3.3
2004 - 2005	81.76	88.65	2.60	11.97	7.45	9.26	1.18	22.70	2119.85	27.02	1.21	5.87	9.48	0.32	4.4	5	7	7.1
2005 - 2006	94.42	117.26	2.97	16.72	6.62	7.73	1.70	63.09	2447.22	21.64	0.93	5.61	10.99	0.74	5.8	2.8	6.5	3.6
2006 - 2007	107.73	120.48	4.03	22.09	6.22	6.98	1.37	18.59	3340.45	21.17	0.97	5.17	12.94	1.00	3.8	5.8	6.25	3.4
2007 - 2008	263.54	142.85	4.98	28.19	10.82	3.14	1.14	46.96	7693.37	19.43	2.04	9.11	13.60	0.76	8.5	6.9	6	5.5
2008 - 2009	288.45	148.63	4.42	22.75	15.97	1.93	1.08	25.29	10117.54	21.70	2.16	12.95	10.06	1.23	7.5	8.4	6	6.5
2009-2010	360.20	173.47	5.02	24.59	18.75	1.73	1.18	29.93	15341.00	20.99	2.70	15.65	8.90	0.94	9.5	8.2	6	4.4
2010-2011	417.70	198.69	5.77	29.35	20.78	2.06	1.54	35.98	18705.41	19.76	2.60	17.35	7.85	0.94	9.7	11.5	6	5.4
2011-2012	552.05	270.95	7.10	34.86	18.64	1.94	1.07	29.33	27517.47	20.17	2.08	16.19	8.07	0.73	9	12.6	6	4.7
2012-2013	329.23	310.05	9.17	46.61	8.72	4.21	1.12	24.09	16950.68	19.15	1.07	7.49	8.38	0.94	6.7	14.6	6	8.4

Source: Compiled and computed from the data base on select banking companies from CMIE prowess

Table 2 Mean values of Dependent Variable and Independent Variables for 'B' Group shares of Select Banking Companies - 2003-2004 to 2012-2013

Year	Market Price of Share Rs.	Book value Per Share Rs.	Dividend Per Share Rs.	EPS Rs.	PE Ratio (%)	Dividend Yield (%)	Debt-equity Ratio (times)	Growth of Business (%)	Market Capitalization Rs. in Lakhs	Payout Ratio (%)	P/BV Ratio (%)	P/CEP Ratio (%)	ROCE (%)	Beta	GDP Rate (%)	Industrial Growth Rate (%)	Interest Rate (%)	Inflation Rate (%)
2003 - 2004	32.56	70.52	1.93	10.71	3.37	42.88	0.87	20.71	138.83	19.53	0.44	2.41	9.33	0.34	6.1	6.7	8	3.3
2004 - 2005	29.80	77.70	2.04	10.87	3.05	44.22	3.62	13.79	138.11	21.12	0.41	2.24	8.88	0.44	4.4	5	7	7.1
2005 - 2006	46.61	91.97	2.55	17.37	3.56	43.81	1.10	14.29	200.22	19.13	0.43	2.33	13.53	0.65	5.8	2.8	6.5	3.6
2006 - 2007	54.56	105.75	3.14	22.90	2.44	40.65	0.81	14.81	255.28	18.43	0.48	1.98	16.36	1.16	3.8	5.8	6.25	3.4
2007 - 2008	153.42	128.87	4.74	29.41	5.39	22.92	0.93	22.81	901.54	18.83	1.12	4.21	18.47	1.51	8.5	6.9	6	5.5
2008 - 2009	132.25	138.36	3.56	17.40	9.75	14.69	0.77	19.36	949.93	16.99	1.09	11.58	4.74	1.34	7.5	8.4	6	6.5
2009-2010	209.10	138.89	3.44	17.87	26.33	8.41	0.84	15.44	1323.34	16.88	1.32	11.61	5.19	0.92	9.5	8.2	6	4.4
2010-2011	207.84	161.74	4.59	27.36	8.99	10.93	0.93	25.28	1302.60	17.99	1.18	6.93	9.61	1.04	9.7	11.5	6	5.4
2011-2012	297.42	184.41	5.01	33.11	11.43	5.80	1.12	22.78	2032.05	15.38	1.61	9.18	10.10	0.94	9	12.6	6	4.7
2012-2013	130.01	217.17	5.75	40.30	4.21	4.04	1.00	19.97	921.41	14.85	0.63	3.65	8.90	0.93	6.7	14.6	6	8.4

Source: Compiled and computed from the data base on select banking companies from CMIE prowess

The average market price of 'A' Group shares presented a rising trend during the study period barring the year 2012-13. Average book value per share and dividend per share of the banking companies under this group increased steadily during the ten year period from Rs. 79.96 and Rs. 2.33 in 2003-04 to Rs. 310.05 and Rs. 9.17 in 2012-13 respectively. Earnings per share also increased steadily. P/E ratio and dividend yield presented wide fluctuations. Debt-equity ratio stood in between 1to 2 times during the study period. Growth rate of business of the select sample revealed high volatility with a minimum of 18.59 per cent and maximum of 63.09 per cent. Market capitalization (size), even though presented an uptrend from 2005-06 to 2011-12, dipped during 2012-13. Dividend payout ratio, price / book value, price / cash earnings per share and ROCE revealed fluctuations. Beta showed above average risk during 2008-09 and the succeeding periods. The average inflation rate and industrial growth rate stood higher at 8.4 per cent and 14.6 per cent respectively during 2012-13.

The trend of market price of 'B' Group shares was found to be similar as that of 'A' Group shares. As regards the independent variables pertaining to the select banks, book value per share and dividend per share witnessed uptrends. P/E ratio and dividend yield ratio and dividend payout ratio dipped to a low towards the end of the study period i.e. 2012-13 price/book value ratios, price to cash earnings per share and ROCE recorded wide fluctuations. Lower than average risk was revealed by beta values.

Correlation Analysis

Analysis has been made for the association between the market price of shares and independent variables year-wise through y-x correlation matrix. Tables 3 and 4 show the y-x correlation matrix pertaining to 'A' Group shares and 'B' Group shares respectively**.**

Table 3 Y-X Correlation Matrix for 'A' Group Shares - Year-wise – 2003-2004 to 2012-2013

Year	Y	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}
2003 - 2004	-	0.261	0.043	0.221	0.836**	-0.494	0.168	0.573	0.806**	-0.138	0.776**	0.831**	-0.105	0.791**
2004 - 2005	-	0.39	0.451	0.41	0.801**	-0.675*	-0.019	0.462	0.845**	-0.356	0.732**	0.806**	0.011	0.152
2005 - 2006	-	0.58*	0.574	0.498	0.714**	-0.579*	0.1	0.264	0.785**	-0.071	0.654*	0.708**	-0.475	0.133
2006 - 2007	-	0.63*	0.566	0.492	0.577*	-0.557	0.107	0.311	0.786**	0.058	0.617*	0.558	-0.52	-0.541
2007 - 2008	-	0.796**	0.708*	0.71**	0.447	-0.309	0.015	0.251	0.665*	-0.2	0.36	0.437	-0.46	-0.203
2008 - 2009	-	0.785**	0.768**	0.757**	0.221	-0.538	0.168	0.311	0.792**	-0.221	0.317	0.229	-0.165	-0.523
2009-2010	-	0.779**	0.829**	0.794**	0.129	-0.538	0.157	0.24	0.843**	0.037	0.124	0.124	-0.229	0.037
2010-2011	-	0.623*	0.695*	0.619*	0.26	-0.707*	0.395	-0.122	0.846**	0.266	0.392	0.267	-0.31	-0.383
2011-2012	-	0.779**	0.722**	0.712**	0.365	-0.644*	0.303	0.259	0.861**	0.038	0.497	0.372	-0.262	0.144
2012-2013	-	0.76**	0.737**	0.715**	0.33	-0.593*	0.15	0.434	0.919**	0.146	0.61*	0.364	-0.109	-0.252

R> = 0.576 : *Significant at 5% level; R> = 0.708 : **Significant at 1% level

Y - Market Share Price
X_1 - Book Value per Share
X_2 - Dividend per Share
X_3 - Earning Per Share
X_4 - PE Ratio
X_5 - Dividend Yield
X_6 - Debt-Equity Ratio
X_7 - Growth of Business
X_8 - Market Capitalization
X_9 - Payout Ratio
X_{10} - P/BV Ratio
X_{11} - P/CEPS Ratio
X_{12} - Return on Capital Employed
X_{13} - Beta

Table 4 Y-X Correlation Matrix for 'B' Group Shares - Year-wise - 2003-2004 to 2012-2013

Year	Y	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}
2003 - 2004	-	0.82**	0.393	0.451	0.296	-0.262	-0.021	0.35	0.506	-0.051	0.114	0.367	-0.493	-0.247
2004 - 2005	-	0.876**	0.468	0.391	0.595*	-0.103	-0.199	-0.034	0.38	0.068	0.047	0.614*	-0.002	-0.422
2005 - 2006	-	0.809**	0.373	0.487	0.289	-0.201	0.249	-0.39	0.814**	-0.173	0.797**	0.631*	-0.153	0.006
2006 - 2007	-	0.826**	0.486	0.603*	0.671*	-0.162	0.403	0.158	0.651*	-0.336	0.607*	0.553	-0.167	-0.18
2007 - 2008	-	0.914**	0.607*	0.677*	0.648*	-0.135	0.127	-0.087	0.478	-0.193	0.43	0.636*	-0.16	-0.282
2008 - 2009	-	0.921**	0.82**	0.638*	-0.115	0.324	-0.209	0.513	0.292	0.385	-0.178	0.082	0.264	-0.323
2009-2010	-	0.911**	0.921**	0.932**	-0.178	0.37	0.329	0.596*	0.721**	0.107	0.699*	-0.238	0.357	0.559
2010-2011	-	0.946**	0.904**	0.866**	0.016	0.34	0.193	-0.129	0.767**	-0.142	0.585*	0.15	0.057	-0.192
2011-2012	-	0.954**	0.9**	0.938**	-0.081	0.587*	0.327	-0.22	0.644*	0.021	0.186	-0.05	-0.033	-0.376
2012-2013	-	0.953**	0.883**	0.871**	-0.276	0.298	0.286	-0.16	0.577*	0.04	-0.101	-0.286	-0.395	-0.507

Source: Computed from the statistical Tables relating to the Banks in India

R> = 0.576 : *Significant at 5% level; R> = 0.708 : **Significant at 1% level

Y - Market Share Price
X_1 - Book Value per Share
X_2 - Dividend per Share
X_3 - Earning Per Share
X_4 - PE Ratio
X_5 - Dividend Yield
X_6 - Debt-Equity Ratio
X_7 - Growth of Business
X_8 - Market Capitalization
X_9 - Payout Ratio
X_{10} - P/BV Ratio
X_{11} - P/CEPS Ratio
X_{12} - Return on Capital Employed
X_{13} - Beta

Table 3 depicts year-wise y-x correlation matrix for 'A' Group shares. The years 2005-06 and 2012-13 were the only two years where the maximum number of variables had turned out to be significant as regards 'A' Group shares. They include book value per share (X_1), price earning ratio (X_4), dividend yield (X_5), market capitalization (X_8), price/book value ratio (X_{10}) & price/cash earning per share ratio (X_{11}) and book value

per share (X_1), dividend per share (X_2), earning per share (X_3), dividend yield (X_5), market capitalization (X_8) & price/book value ratio (X_{10}) respectively.

The variables book value per share (X_1), dividend per share (X_2), earning per share (X_3), dividend yield (X_5) and market capitalization (X_8) had been found significant in two years i.e. 2010-11 and 2011-12. Book value per share (X_1) was found to be significantly correlated with market price for eight years and dividend per share (X_2) earning per share (X_3) were found significant for six years from 2007-08 to 2012-13 at one per cent level of significance. Dividend yield (X_5) had been negatively correlated with market share price during the years 2004-05, 2005-06, 2010-11, 2011-12 and 2012-13.The variable market capitalization (X_8) turned out to be significant during all the ten years of the study period.

The year-wise y-x correlation matrix of 'B' Group shares is presented in Table 4. The variable book value per share (X_1) turned out to be significant in all the years of the study period as regards 'B' Group shares.The year 2009-10 had turned out to be the year with the maximum number of variables significant namely book value per share (X_1), dividend per share (X_2), earning per share (X_3), growth of business (X_7), market capitalization (X_8) and price / book value ratio (X_{10}). Dividend per share (X_2) appeared significant for six years from 2007-08 to 2009-10. Earnings per share (X_3) presented significant correlation with market price for seven years from 2006-07 to 2011-12. Market capitalization emerged significant for six years from 2005-06 to 2012-13 excluding the periods 2007-08 and 2008-09.

CONCLUSIONS

The universe of stock markets is increasing by expanding in the world of finance. Stock market is significant as a source of wealth creation and fuelling real sector growth through equity participation. As regards the fundamental analysis carried out in the study, the dependent variable namely market price of shares of 'A' Group on the average was found to be rising yearly except the year 2012-13, which presented a decline. Regarding 'B' Group shares, the average yearly market prices were fluctuating and the year 2012-13 witnessed a downtrend. The year-wise y-x correlation matrix revealed that the variable market capitalization influenced the market share price of 'A' Group shares positively in all the years of the study period. Three variables namely book value per share, Dividend per share and earnings per share were found significant in the maximum number of years. For 'B' Group category the book value per share influences the market share price in all the years of study period followed by earning per share. As found in 'A' Group shares, the variable Dividend per share is positively correlated with market price of 'B' Group shares in 6 years out of 10 years of study period. Hence investors can form better judgment and make intelligent and rational investment decisions based on these variables while making investments in securities.

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