

Micro-economic factors affecting stock returns: an empirical study of S&P BSE Bankex companies

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Abstract

Background/Objectives: The equity market has become an essential market playing an important role in economic prosperity, capital formation and sustained economic growth. There can be different micro-economic/fundamental factors. The present study analyses the various fundamental factors that affects the market price of shares which will provide a yardstick and a parameter for long term investors to decide about their investment.

Methods/Statistical analysis: For the purpose of empirical analysis related to the study, index values have been taken to be dependent variable, and other factors (Book Value Per Share, Earning Per Share, Price Earning Ratio, Dividend Yield, Debt to Equity Ratio, Market Capitalisation to Sales, Price/Book Value Ratio, Cash Earning Per Share, Return on Equity and Beta) have been taken as independent variables. Factor Analysis is carried out to identify the critical factors and a detailed analysis of the effect of various factors on stock market. Subsequently regression analysis is undertaken to identify the nature of relationship between index value (dependent variable) and the factors (independent variable).

Findings: Following micro-economic variables were found significantly explain the variance in the S&P BSE Bankex during the period from April 2000 to Mar 2014 : a) Return on Equity b) Debt to Equity. The factors. These micro-economic variables impact the stock prices of S&P BSE Bankex.

Improvements/Applications: The present study can be further carried out for the returns of the other companies listed on the various indexes. Further, other dependent variables can be studied to analyse their impact on the returns of the stock.

Keywords: Micro-economic variables, stock return, S&P BSE Bankex Index, ROE, EPS, BV, D/E.

1. Introduction

The equity market has become an essential market playing an important role in economic prosperity, capital formation and sustained economic growth. Stock markets are more than a place to buy/sell securities; they operate as a mediator between savers and users of capital by means of accumulation of funds, sharing risk and transferring wealth. Stock markets are important for a country's economic growth as they assist the flow of resources from one place to another.

The determinants of stock prices are often a matter of debate. Share prices change on daily basis. Economists and financial market participants hold different views as far as market share prices and fluctuations are concerned. There can be different micro-economic/Fundamental (internal factors of companies like dividend policy, EPS, size, change in board of directors, performance of the company, appointment of new people and the creation of new asset etc.) and Non-Fundamental (external factors like economy, GDP, inflation, money supply, government rules and regulations, other economic conditions, investors behaviour, competition, market conditional, uncontrolled natural or environmental circumstances etc.) factors responsible for these fluctuations.

While the fundamentals of the company provides key for long term investors, the market information plays an important role in deciding the short term investment decisions. They daily changes in the share prices are like passing cloud while change in the fundamentals of the company has an impact over a long period of time.

To predict future stock prices, some analysts use stock valuation ratios to derive a stock's current fair value and forecast future value and some others consider market trend too. If fair value is not equal to the present market stock price, fundamental analysts believe that the stock is either over or under valued and the market price will ultimately gravitate towards fair value.

The present study analyses the various fundamental factors that affects the market price of shares which will provide a yardstick and a parameter for long term investors to decide about their investment. This analysis will throw a light on the bleak and dismal attitude of investors and help them to identify the essential fundamental factors to sell, buy or hold their shares.

A large number of empirical studies have been conducted about the determinants of stock prices. In this section, some of these studies has been reviewed.

The variables that have significant impact on market price movement are cash flow per share, price-earnings ratio and return on asset have a significant impact on prices of shares [1]. Also, Flow of Foreign Institutional Investors, Political Stability, Growth of Gross Domestic Product, Inflation, Liquidity and different interest rate, global level factors as the major factors that affect the Indian stock market [2]. The internal factors explained the extent of the influence of the factors on stock market prices, and relatively strong relation between stock market prices and independent factors [3]. Other studies showed that dividend influence market price of share significantly in negative direction and earning per share and price-earning ratio are being crucial determinants of share prices of manufacturing, pharmaceutical sector, energy, infrastructure and commercial banking sectors [4]. Further literature reveals that earning per share is the most influencing factor on the UAE stock prices. There is a positive relationship between stock prices and money supply and Gross Domestic Product and negative relationship between stock price and consumer price index (inflation) and interest rate [5]. Few other studies examined the stock market's reaction to Federal Reserve Policy and concluded that stocks are claims to real assets, so if monetary neutrality holds stock values should be independent of monetary policy in the very long run. In the medium term, however, real and nominal volatility induced by the form of the monetary policy rule may well influence stock values [6].

2. Need of the study

There are many factors which affects the stock market behaviour rapidly. The variation due to the different factors reflects its impact in the economy also. It is said that if one wants to study the economic structure of the country, he should study the behaviour of the stock markets. As far as Indian stock market is concerned, it is most efficient market as it has the ability of response on the rapid changing conditions.

The need of the study is to identifying some basic factors that local and foreign investors should rely on. Knowledge of relative influence of fundamental factors on equity share prices is also required by corporate management and government. An understanding of determinants of share prices is useful in the management policies relating to bonus declaration, dividend payment, right issues etc.

3. Objectives

1. To examine determinants of share prices of S&P BSE Bank Index.
2. To examine the relationship between micro-economic factors and S&P BSE Bankex Index.

4. Hypothesis

H_{01} : There is no significant relationship between micro-economic factors and S&P BSE Bankex Index

5. Research methodology

5.1. Research design

Variables: For the purpose of empirical analysis related to the study, index values have been taken to be dependent variable, and other factors have been taken as independent variables. The variables chosen in the study are as follows:

Dependent Variables- Market price of shares (MP) S&P Banker Index value for different years has been taken as dependent variable.

Independent /Explanatory Variables- The independent variables are considered reviewing the literature are:-

A) Book Value Per Share (BV)

$BV = (\text{Reserves} + \text{Equity Capital}) / \text{Total number of shares}$

B) Earning Per Share(EPS)

EPS=(Net Profit after tax-preference dividend)/Number of shares outstanding

C) Price Earning Ratio (P/E)

P/E Ratio= Market price per share/EPS

D) Dividend Yield (Y)

$Y = (\text{Dividend per share} \times 100) / \text{Market price}$

E) Debt to Equity Ratio (D/E Ratio)

D/E Ratio= Total Debt/Shareholder's Equity

F) Market Capitalisation to Sales (M/S)

$M/S = (\text{Market Price per share} \times \text{Total number of Equity shares}) / \text{Total Sales}$

G) Price/Book Value Ratio (P/B Ratio)

P/B Ratio= Market price per share/ Book value per share

H) Cash Earning Per Share (CEPS)

CEPS=Operating cash flows/Diluted Shares Outstanding

I) Return on Equity (ROE)

ROE= Net Income/Shareholder's Equity

J) Beta= Co-variance between market return and stock return / Market variance

5.2. Data collection

The study is based on the secondary data covering a period of 14 financial years i.e. from 2000-2001 to 2013-2014. The data was collected from the official directory of the BSE, official websites of companies and the Database provided by Center of Monitoring of Indian Economy (CMIE) by using Software Prowess.

5.3. Research tools

The data on accounting variables is standardised to ensure uniformity and to avoid biased inferences. Statistical Software for Social Sciences (SPSS) has been used to analyse the data collected. Factor Analysis is carried out to identify the critical factors and a detailed analysis of the effect of various factors on stock market. Subsequently regression analysis is undertaken to identify the nature of relationship between index value (dependent variable) and the factors (independent variable).

5.4. Sampling

S&P Bankex Index Companies :-

1. Axis Bank Ltd.
2. Bank of Baroda
3. Bank of India
4. Canara Bank
5. Federal Bank Ltd.
6. HDFC Bank Ltd.
7. ICICI Bank Ltd.
8. Indusind Bank Ltd.
9. Kotak Mahindra Bank Ltd.
10. Punjab National Bank
11. State Bank of India
12. Yes Bank Ltd.

6. Results and analysis

Descriptive Analysis

Table 1 depicts the Descriptive Statistic of all the dependent and independent variables.

Table 1. Descriptive Statistic of all the dependent and independent variables

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
SnP Bankex index Value	13	1178.5100	14572.4600	7439.463846	4729.8132734
BV year wise Avg of All Companies	14	93.0589	542.6875	273.071172	153.4211355
EPS year wise Avg of All Companies	14	14.3267	75.4967	41.164405	21.0498388
PE year wise Avg of All Companies	14	7.0955	26.4045	15.151243	5.9379266
Yield year wise Avg of All Companies	14	0.9333	4.1933	2.050152	1.0029362
DE year wise Avg of All Companies	14	0.0943	1.9178	1.314126	0.4042639
MS year wise Avg of All Companies	14	0.8643	2.8954	1.834026	0.6506321
PB year wise Avg of All Companies	14	1.0109	3.1258	2.073476	0.6654448
Cash EPS year wise Avg of All Companies	14	14.7389	75.4967	41.306409	20.8869407
ROE year wise Avg of All Companies	14	0.0081	0.2206	0.1430285	0.0457175
Beta	14	0.8110	1.2858	1.090486	0.1518628
Valid N (list wise)	13				

Factor analysis

Before using the Factor Analysis, all the variables have been standardised because of different units.

Table 2. The KMO and Bartlett's Test to find adequacy of data

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling		0.567
Bartlett's Test of Sphericity	Approx. Chi Square	241.193
	df	45
	Sig.	.000

Table 2 depicts that the KMO value is 0.567 i.e. greater than 0.05 (On 95% confidence level), reveals that the variables are unrelated.

Table 3. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loading			Rotation Sums of Squared Loadings		
	Total	%of Variance	Cumulative %	Total	%of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.711	47.110	47.110	4.711	47.110	47.110	3.729	37.290	37.290
2	2.951	29.507	76.617	2.951	29.507	76.617	3.581	35.810	73.100
3	1.373	13.728	90.345	1.373	13.728	90.345	1.186	11.856	84.956
4	.573	5.735	96.080	.573	5.735	96.080	1.112	11.123	96.080
5	.243	2.432	98.512						
6	.103	1.028	99.540						
7	.029	.291	99.831						
8	.013	.126	99.957						
9	.004	.043	100.00						
10	3.212E-006	3.212E-005	100.00						

Extraction Method: Principal Component Analysis

From Table 3, it can be inferred that four components extracted explain 96.08% of the variance in the data which is significantly high and acceptable.

Using Factor analysis, Table 4a following set of 4 micro-economic variables which significantly explain the variance of S&P Bankex Index were extracted : a) Book Value Per Share b) Price Book Value Ratio c) Debt Equity Ratio and d) Return on Equity

Table 4a. Rotated Component Matrix to find out principal components

Rotated Component Matrix ^a				
	Component			
	1	2	3	4
BV year wise Avg of All Companies	.973	.142	.110	.004
Cash EPS year wise Avg of All Companies	.960	.159	.027	.192
EPS year wise Avg of All Companies	.959	.160	.027	.194
Beta	.880	.028	-.162	-.264
PB year wise Avg of All Companies	.092	.088	.006	-.040
MS year wise Avg of All Companies	.141	.953	-.101	-.057
PE year wise Avg of All Companies	.027	.948	.034	-.255
Yield year wise Avg of All Companies	-.357	-.813	.386	-.008
DE year wise Avg of All Companies	.044	-.117	.950	.263
ROE year wise Avg of All Companies	.091	-.223	.286	.910
Extraction Method : Principal Component Analysis.				
Rotation Method : Varimax with Kaiser Normalization				
a. Rotation converged in 5 iterations.				

Regression analysis

Table 4b. Tests of Normality

	Test of Normality					
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
BV year wise Avg of All Companies	.200	14	.133	.906	14	.140
PB year wise Avg of All Companies	.137	14	.200	.931	14	.316
DE year wise Avg of All Companies	.157	14	.200	.927	14	.277
ROE year wise Avg of All Companies	.151	14	.200	.898	14	.104
a. Lilliefors Significance Correction						

From the Table 4b significant value for both K-S and S-W tests came out to be more than 0.05 (at 95% confidence level) for all the 4 variables, hence the multiple regression test can be used.

Table 5. ANOVA test applied to find the goodness fit of the model for the data

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.742	4	2.936	91.029	.000 ^b
	Residual	.258	8	.032		
	Total	12.000	12			
a. Dependent Variable : SnP Bankex index Value						
b. Predictors : (Constant), ROE year wise Avg of All Companies BV year wise Avg of All Companies, PB year wise Avg of All Companies, DE year wise Avg of All Companies						

Table 6. Model Summary for selected independent variable and dependent variables

Model Summary ^b						
Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate	Durbin-Watson
1	.989 ^a	.979		.968	.1795771	2.097
a. Predictors : (Constant), ROE year wise Avg of All Companies, BV year wise Avg of All Companies, PB year wise Avg of All Companies, DE year wise Avg of All Companies						
b. Dependent Variable : SnP Bankex index Value						

From the Table 5 significant value is .000 which is much less than .05 (95% of confidence level), stating that the model is good fit for data. Table 6 reveals that the R square value .979 depicts the 4 variables explain 97.9% variance in S&P Bankex index

Table 7. Coefficient of the selected independent variables and their significance in regression equation

Model		Coefficients ^a							
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Fraction Missing Info.	Relative Increase Variance	Relative Efficiency
		B	Std. Error	Beta					
1	(Constant)	-.123	.058		-2.128	.066			
	BV year wise Avg of All Companies	.922	.054	.904	17.186	.000			
	DE year wise Avg of All Companies	-.011	.147	-.004	-.072	.945			
	PB year wise Avg of All Companies	.304	.057	.295	5.315	.001			
	ROE year wise Avg of All Companies	.076	.217	.022	.350	.735			

a. Dependent Variable : S&P Bankex index Value

Table 7 shows the coefficients of the 4 variables and the intercept. The significant value is less than .05 (at 95% confidence level) for 2 variables BV and PB, thereby indicating that these variables do not have a significant relationship with S&P Bankex Index, whereas the significant value of ROE and DE are more than .05 indicating that these variables have a relationship with S&P Bankex Index.

7. Conclusion

Following micro-economic variables were found to significantly explain the variance in the S&P BSE Bankex during the period from April 2000 to Mar 2014: a) Return on Equity, b) Debt to Equity. These micro-economic variables impact the stock prices of S&P BSE Bankex.

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