

## An Short Study On Recession Impact On Fundamental Determinants Of Stock Prices Of BSE Listed Companies

\*Dr. Arti Gaur

\*\*Ms. Sunita Sukhija

### Abstract

A global recession is a period of global economic slowdown where significant decline in activity across the economy, lasting longer than a few months. The Global Economic Slowdown had a recessionary impact on the financial market leading to decline in share prices and indices in India. The objective of this paper is to compare the impact of fundamental factors on Stock prices of BSE listed companies in normal period and recession period. The study employs panel data consisting of annual time series data over the period 1998-2013 and cross section data pertaining to BSE listed eighty companies. The panel data techniques, viz. Fixed Effects model and Random Effects model have been employed to investigate the objective. The empirical results reveal that Earning per Share has positive and significant impact on the share price at five percent level in the normal period (pre recession period). PER has positive and significant impact while Growth has a negative and significant impact on the share price at five percent level during recession period. While PER and ROCE have positive and significant impact on the share price at five and ten percent level. The variable BV, DPS, EPS, DPR and Growth have a positive relationship with share price and statistically insignificant in post recession period.

**Key Words :** Recession, Fundamental, Fixed Effect Model, Random Effect Model, Share Price.

JEL Classifications: C23, G30, G32.

### 1. Introductio

A global recession is a period of global economic slowdown. The decline in business takes more than just a few months. A recession is a situation in which a nation's gross domestic product or output, a negative growth of at least two consecutive quarters or maintain six months. This decrease extends also from eleven months to possibly up to two years. The basic cause of the crisis was largely an unregulated environment, mortgage lending to subprime borrowers. Since the borrowers did not have adequate repaying capacity and also because subprime borrowing had to pay two-to-three percentage points higher rate of interest and they have a history of default, the situation became worse. The global recession of 2008-2009 brought a great amount of attention to the risky investment strategies used by many large financial institutions, along with the truly global nature of the financial system. As a result of such a wide-spread global recession, the economies of virtually all the world's developed and developing nations suffered extreme set-backs and numerous government policies were implemented to help prevent a similar future financial crisis. The Global Economic Slowdown had a recessionary impact on the financial market leading to decline in share prices and indices in India. It is visible in industrial production, employment, real income and wholesale-retail trade. The technical indicator of a recession is two consecutive quarters of negative economic growth as measured by a country's gross domestic product (GDP); although the National Bureau of Economic Research (NBER) does not necessarily need to see this occur to call a recession. Although at one time it was thought that this crisis would not affect the Indian economy, later it was found that the Foreign Direct Investment (FDI) started drying up and

this affected investment in the Indian economy. In the recovery phase the economy has adopted expansionary fiscal policy to accelerate aggregate demand. In this respect RBI has adopted a contractionary monetary policy overcome the crisis which led to higher interest rate on bank deposits. The domestic stock markets are in a sideways movement during the recession period of last 2-3 years. The current volatility in the stock markets can be attributed to negative sentiments due to a fall in global markets, profit booking by foreign institutional investors (FII), uncertainty over the US subprime crisis and high crude oil prices.

### 1. Review of literature

The link between fundamental factors and share price changes has been extensively investigated in the financial literature. **Sen and Ray (2003)** examined the key determinants of stock price in India. The study is based upon the stocks comprising the BSE index over a period 1988-2000. The empirical study revealed dividend payout was an important factor affecting stock prices. Further, they found earning per share has a very weak impact on the share prices. The study explored one of the crucial factor dividend payout ratios having impact on Indian stock price. **Dutta (2004)** had made a survey on three groups viz; individuals, brokers and financial institutions to study the impact of micro and macro factors on share price. Most of the individual and brokers considered the role of random elements in share price as very important in post reform period. **Mehta & Turan (2005)** identified market capitalisation, market price to book value ratio and price-earning ratio as major factors influencing share prices by examining share prices of the firms listed on

\*Assistant Professor, Deptt. Of Business Administration, Ch. Devi Lal University, Sirsa. Email: [gaur\\_aarti1977@yahoo.com](mailto:gaur_aarti1977@yahoo.com), Mb. 9254118004

\*\*Assistant Professor, JCD Institute of Business Management, JCDV, SIRSA (Haryana)-125055, Email: [sunita.sukhija@yahoo.com](mailto:sunita.sukhija@yahoo.com), Mb.9812881822

the Bombay Stock Exchange. **Sharma and Singh (2006)** used data from 160 Indian firms between 2001 and 2005 and found that earnings per share, price-earnings ratio, dividend per share, dividend coverage, dividend payout, book value per share, and firm size are the determinants of share prices. They revealed that Book value and Earnings are important indicators of market price of share as they are an indicator of the good financial health of the companies. Dividend per share is most significant variable of market price of share, which indicates that the companies should use a liberal dividend policy to attract the primary as well as secondary market. Price-earnings ratio also explained the investors' anticipate about the growth in the firm's earnings. **Srivastava (2010)** concluded that emerging economies like India in long term are more affected by domestic macro economic factors than global factors. The main domestic macroeconomic factors affecting the stock market in long run are industrial production; wholesale price index and interest rate. **Sharma (2011)** examined the empirical relationship between equity share prices of different industry groups and explanatory variables such as book value per share, dividend per share, earning per share, price earnings ratio, dividend yield, dividend payout, size in terms of sale and net worth for the period 1993-2008. The results revealed that earning per share, dividend per share and book value per share has significant impact on the equity price of different industry groups in India. **Nisa (2011)** in her research on Karachi Stock Exchange used the following variable: P/E Ratio, Net Profit after Tax, Inflation, DPS, GDP and Annual Turnover as stock price determinant. **Aurangzeb (2012)** presented a study from the period of 1997 to 2010 of 3 South Asian countries namely, Pakistan, India and Sri Lanka. Regression results indicate that foreign direct investment and exchange rate have significant positive impact on performance of stock market in South Asian countries while; interest rate has negative and significant impact on performance of stock market in South Asia. Results also indicate the negative but insignificant impact of inflation on stock market performance in South Asia. **Malhotra & Tandon (2013)** have presented a study with an attempt to determine the factors that influence stock prices in the context of National Stock Exchange (NSE) 100 companies. A sample of 95 companies was selected for the period 2007-12 and using linear regression model the results indicate that firms' book value, earning per share and price-earnings ratio are having a significant positive association with firm's stock price while dividend yield is having a significant inverse association with the market price of the firm's stock. **Uddin, Rahman, Hossain (2013)** this study has put a great stride to identify what determines the share prices of stock market focusing exclusively on financial sector of Bangladesh. Data have been collected from companies like Bank, Insurance, Leasing Companies associated with financial sector ranging from 2005 to 2011 from Dhaka Stock

Exchange (DSE). Some pertinent variables like Net Profit after Tax (NPAT), Price earnings ratio (P/E), Net asset value (NAV), Earnings per share (EPS) were selected from previous literature for deciding stock price (SP) determinants. A regression model along with some descriptive statistical tools was applied using SPSS. Findings show that Earnings per share (EPS), Net asset value (NAV), Net profit after tax (NPAT) and Price earnings ratio (P/E) have strong relationship with stock prices.

## 2. Objective of the study

To compare the impact of fundamental factors on Stock prices of BSE 200 companies in normal period and recession period.

### 3.1 Hypothesis of the study:

$H_{01}$  - There is no significant impact of fundamental factors on stock prices during normal and recession period.

### 3.2 Research Methodology

The fixed effects model as well as the random effects model has been used to explore the fundamental determinants of share price due to the fact that former takes into the firm specific effect and the later consider the time effect.

### 3.3 Scope of study

#### 3.3.1 Fundamental Factors

Eight Key variables such as: Book Value Per Share (BV), Dividend Per Share (DPS), Earnings Per Share (EPS), Cover (C), Payout Ratio (P), Price Earning (P/E), Return on Capital Employed (ROCE) and Growth (G) have been included in the study.

#### 3.3.2 Sample Profile

To examine the hypothesis, the study has used secondary data. The sample was drawn from the companies listed on the Bombay Stock exchange. The yearly data has been used on the concerning aspect, a sample of eighty companies was selected for the purpose of the study with the fact that the companies have been listed continuously during the study period.

#### 3.3.3 Time period

Time period of the study will be for fifteen financial years i.e. from 1st April 1998 to 31st March 2013. To study the impact of recession on Stock price and key variables during the recession period, the whole study period has been divided into three parts. The first part includes the normal period of nine years from 1st April 1998 to 31st March 2007. The second

part comprises the recession period of two years from 1st April 2007 to 31st March 2009 and third part consists of the normal period of four years starting from 1st April 2009 up to 31st March 2013.

### 3.4 Data Collection

The data relating to the companies which are listed in BSE 200 will be collected on a yearly basis from the updated version 'PROWESS 4' database of the Centre for Monitoring Indian Economy and Bombay Stock Exchange Official Directory.

### 3.5 Model Specification

The panel data analysis techniques, viz. Fixed Effects model and Random Effects model have been employed to investigate the objective. The general specification of the parameters of the model in the present case is as follows:

$$SP_{it} = \alpha_i + \beta_1 BV_{it} + \beta_2 EPS_{it} + \beta_3 DPS_{it} + \beta_4 COVER_{it} + \beta_5 DPR_{it} + \beta_6 PER_{it} + \beta_7 ROCE_{it} + \beta_8 GROWTH_{it} + \beta_{it} \quad (3)$$

In the above specification SP represents the stock prices. The explanatory variables, BV, DPS, EPS, COVER, DPR, PER, ROCE and GROWTH denote Book value per share, Dividend per share, Earnings per Share, Cover, Dividend Payout Ratio, Price-earnings ratio, Return on Capital employed, and Growth (Sales), respectively. EViews 6 software was used to analyse the data for all the above purposes.

**3.5.1 Fixed Effect Model** - This model allows for heterogeneity or individually among 80 companies by allowing to have its own intercept value. Another term fixed effect is due to the fact that although the intercept may differ across different companies but intercept does not vary over time, it is time invariant. To take into account the differing intercepts, one can use dummy variables. The FEM using dummy variables is known as the least-squares dummy variable (LSDV) model. FEM is appropriate in situations where the individual-specific intercept may be correlated with one or more regressors. The Fixed Effects method allows us to take into consideration the firm-specific effects on regression estimates. However, this model does not take into consideration the time effect and often results in a loss in a large number of degrees of freedom if N is large.

**3.5.2 Random Effect Model** - In this model, all the 80 companies have a common mean value for the intercept. In ECM it is assumed that the intercept of an individual unit is a random drawing from a much larger population with a constant mean value. The individual intercept is then

expressed as a deviation from this constant mean value. One advantage of ECM over FEM is that it is economical in degrees of freedom, as we do not have to estimate N cross-sectional intercepts. We need only to estimate the mean value of the intercept and its variance. ECM is appropriate in situations where the (random) intercept of each cross-sectional unit is uncorrelated with the regressors. Hence, the Random Effects Model, which, besides incorporating the firm-specific effects, takes into consideration the time effects and is an appropriate specification if we are drawing N individuals randomly from a large population (Maddala, 2005; Baltagi, 2003).

**3.5.3 Hausman Test** - This test is used to check which model (fixed effect or random effect model) is suitable to use. If p value found statistically significant, then fixed effect model will be used otherwise random effect model will be suitable. If correlated ( $H_0$  is rejected), a random effect model produces biased estimators, violating one of the Gauss-Markov assumptions; so a fixed effect model is preferred.

## 4. Empirical Results

To examine the determinants of stock prices in India, the panel data techniques have been employed. Table 4.1 presents the estimate of fixed effects as well as random effects models for the normal period. Our primary concern here is that the choice between fixed effects and random effects models. To select appropriate model for our empirical analysis we conducted Hausman specification test. The results of Hausman test revealed that the difference in coefficients between fixed effects and random effects is systematic and provided evidence in favour of random effects model for normal period.

Table 4.1 displays the results of panel data regression for the normal period from 1<sup>st</sup> April 1998 to 31st March 2007. The results of Hausman test revealed that the difference in coefficients between fixed effects and random effects is systematic and provided evidence in favour of random effects model for normal period. The empirical results reveal that the EPS has positive and significant impact while COVER has a negative and significant impact on the share price at five percent level. The variable BV, PER, and ROCE have a positive relationship with share price and statistically insignificant. However, the DPS, DPR and Growth have a negative impact on share price and are insignificant. The study results suggest that Earnings per share and COVER are being the important determinants of share prices for the normal period.

**Table 4.1 Fundamental Determinants of Equity Share Price of all sample Companies in Normal Period (1998-2007)**

Variables	Fixed Effect Model		Random Effect Model	
	Coefficient	t-value	Coefficient	t-value
Constant	649.585	8.0016(0.00)	667.161	6.5761(0.00)
Book Value	0.3457	0.7866(0.43)	0.2646	0.6294(0.52)
DPS	-6.1463	-0.6489(0.39)	-6.0763	-0.7033(0.57)
EPS	1.679	0.8562(0.51)	1.044**	0.5541(0.08)
Cover	-1.817***	-1.7074(0.08)	-1.5440***	-1.6172(0.09)
DPR	-60.967	-0.7495(0.45)	-53.834	-0.6771(0.49)
PER	0.4070	0.9932(0.32)	0.3287	0.8200(0.41)
ROCE	3.3597	0.9454(0.34)	1.5589	0.4899(0.62)
Growth	-0.1468	-1.1470(0.24)	-0.1235	-0.9784 (0.32)
Hausman test (p-value)	6.413806		.6010	

\*significant at 1 percent level of significance, \*\* significant at 5 percent level of significance,

\*\*\* significant at 10 percent level of significance

Source : All the numerical figures of table are calculated from eviews6 version

Table 4.2 exhibits the results of panel data regression for the recession period from 1st April 2007 to 31st March 2009. The results of Hausman test revealed that the difference in coefficients between fixed effects and random effects is systematic and provided evidence in favour of fixed effects model for recession period. The empirical results reveal that the PER has positive and significant impact while Growth has a negative and significant impact on the share price at five percent level. The variable EPS and COVER have a positive relationship with share price and statistically insignificant. However, the DPS, BV, DPR and ROCE have a negative impact on share price and are

insignificant. The study results suggest that Price Earning ratio and Growth are being the important determinants of share prices for the recession period.

**Table 4.2 Fundamental Determinants of Share Prices of all sample Companies during the Recession Period (2007-2009)**

Variables	Fixed Effect Model		Random Effect Model	
	Coefficient	t-value	Coefficient	t-value
Constant	506.3989	1.789470(0.07)	522.0392	3.068427(0.00)
Book Value	-1.381127	-1.074433(0.28)	-0.292430	-0.414447(0.67)
DPS	-12.44184	-0.706007(0.35)	-9.074563	-0.746753(0.40)
EPS	2.699866	0.939573(0.48)	1.667440	0.842618(0.45)
Cover	0.883109	0.409890(0.68)	0.293948	0.235601(0.81)
DPR	-156.6743	-0.52245(0.60)	225.7937	0.991496(0.32)
PER	17.6432*	3.90455(0.00)	7.45248**	2.517443(0.01)
ROCE	-0.037996	-0.005092(0.99)	-2.340172	-0.530513(0.59)
Growth	-0.43768**	-2.252426(0.02)	-0.36117**	-2.070206(0.04)
Hausman test (p-value)	15.204454		0.0500	

\*significant at 1 percent level of significance, \*\* significant at 5 percent level of significance,

\*\*\* significant at 10 percent level of significance

Source : All the numerical figures of table are calculated from eviews6 version

Table 4.3 reveals the results of panel data regression for the recession period from 1st April 2009 to 31st March 2013. The results of Hausman test revealed that the difference in coefficients between fixed effects and random effects is systematic and provided evidence in favour of random effects model for normal period. The empirical results reveal that the PER and ROCE have positive and significant impact on the share price at five and ten percent level. The variable BV,

DPS, EPS, DPR and Growth have a positive relationship with share price and statistically insignificant. However, the Cover has a negative impact on share price and are insignificant. The study results suggest that Price Earning ratio and ROCE are being the important determinants of share prices for the Normal period.

**Table 4.3 Fundamental Determinants of Share Prices of all sample Companies in the Normal Period (2009-2013)**

Variables	FIXED Effect Model		Random Effect Model	
	Coefficient	t-value	Coefficient	t-value
Constant	602.2941	3.741329(0.00)	704.1956	3.741329(0.00)
Book Value	0.399051	0.528184(0.59)	0.023015	0.528184(0.97)
DPS	4.939547	0.370476(0.91)	6.269397	0.370476(0.82)
EPS	0.277998	0.110864(0.71)	0.516771	0.110864(0.59)
Cover	-0.863628	-0.616216(0.53)	-0.698465	0.616216(0.60)
DPR	-5.207140	-0.023062(0.98)	61.92135	0.023062(0.77)
PER	3.20400**	2.58046(0.01)	3.09887**	2.580466(0.01)
ROCE	8.74226***	1.916682(0.09)	5.13805***	1.916682(0.07)
Growth	0.214224	0.113427(0.90)	0.571456	0.113427(0.75)
Hausman test (p-value)	10.428459		0.2362	

\*\*\*significant at 1 percent level of significance,\*\* significant at 5 percent level of significance,

\* significant at 10 percent level of significance

Source : All the numerical figures of table are calculated from eviews6 version

Table 4.4 exhibits the results for the normal as well as recession period. The normal period has been divided in to two parts, the first part consist the period from 1stapril 1998 to 31st march 2007. In this period, The results of Hausman test revealed that the difference in coefficients between fixed effects and random

effects is systematic and provided evidence in favour of random effects model. The relationship between dependent and independent is more than 60 percent, it means 61% of the variation in share price can be explained by the determinants taken under study in normal period. Earning per Share has positive and significant impact on the share price at five percent level. The variable Cover has a negative impact on share price and significant at ten percent level.

**Table: 4.4 Compiled Panel Data Regression Analysis of the Determinants of Market Share Price for Normal and Recession Period (1998-2013)**

	Normal period		Recession Period
	01-04-1998 to 31-03-2007	01-04-2009 to 31-03-2013	01-04-2007 to 31-03-2009
Time duration	01-04-1998 to 31-03-2007	01-04-2009 to 31-03-2013	01-04-2007 to 31-03-2009
Model Specification	Random Effect Model	Random Effect Model	Fixed Effect Model
R-Square	61%	88%	56%
F-Value	5.148(0.00)	19.510(0.00)	8.0073(0.00)
Book Value	0.2646	0.023015	-1.381127
DPS	-6.0763	6.269397	-12.44184
EPS	1.044**	0.516771	2.699866
Cover	-1.544***	-0.698465	0.883109
DPR	-53.834	61.92135	-156.6743
PER	0.3287	3.09887**	17.6432***
ROCE	1.5589	5.13805***	-0.037996
Growth	-0.1235	0.571456	-0.43768**
Hausman Test	6.413 (.601)	10.428 (0.236)	15.204** (.0500)

\*significant at 1 percent level of significance,\*\* significant at 5 percent level of significance,

\*\*\* significant at 10 percent level of significance

Source : All the numerical figures of table are calculated from eviews6 version

However, the variables book value, PER and ROCE have a

positive relationship with share price and are insignificant. The variable DPS, DPR and Growth have a negative impact on share price and is insignificant. The second part of normal period contains the period from 01-04-2009 to 31-03-2013. The results of Hausman test revealed that the difference in coefficients between fixed effects and random effects is systematic and provided evidence in favour of random effects model for normal period. The relationship between dependent and independent is more than 60 percent and very high, it means 88% of the variation in share price can be explained by the determinants taken under study in normal period. The empirical results reveal that the PER and ROCE have positive and significant impact on the share price at five and ten percent level. The variable BV, DPS, EPS, DPR and Growth have a positive relationship with share price and statistically insignificant. However, the Cover has a negative impact on share price and are insignificant. In the recession period **from 1<sup>st</sup> April 2007 to 31<sup>st</sup> March 2009**. The results of Hausman test revealed that the difference in coefficients between fixed effects and random effects is systematic and provided evidence in favour of fixed effects model for recession period. The relationship between dependent and independent is less than 60 percent, it means 56% of the variation in share price can be explained by the determinants taken under study in recession period. The empirical results reveal that the PER has positive and significant impact while Growth has a negative and significant impact on the share price at five percent level. The variable EPS and COVER have a positive relationship with share price and statistically insignificant. However, the DPS, BV, DPR and ROCE have a negative impact on share price and are insignificant. In the nutshell, recession has impact on relationship of independent and dependent variables, model specification and variables also.

## Conclusions

In the normal period from 01-04-1998 to 31-03-2007, Earning per Share has positive and significant impact on the share price at five percent level. The variable Cover has a negative impact on share price and significant at ten percent level. However, the variables book value, PER and ROCE have a positive relationship with share price and are insignificant. The variable DPS, DPR and Growth have a negative impact on share price and is insignificant. The second part of normal period contains the period from 01-04-2009 to 31-03-2013. PER and ROCE have positive and significant impact on the share price at five and ten percent level. The variable BV, DPS, EPS, DPR and Growth have a positive relationship with share price and statistically insignificant. However, the Cover has a negative impact on share price and are insignificant. In the recession period **from 1<sup>st</sup> April 2007 to 31<sup>st</sup> March 2009**. PER has positive and significant impact while Growth has a negative and significant impact on the share price at five percent level. The variable EPS and COVER have a positive relationship with share price and statistically insignificant. However, the DPS, BV, DPR and ROCE have a negative impact on share price and are insignificant.

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