

Determinants of Stock Prices in India- An Empirical Study

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ABSTRACT

Stock market is volatile in nature and to determine the stock prices by investors is not an easy task. There are so many internal & external factors influence the stock prices. The present study is an attempt to explore the factors affecting stock prices of NSE. The study considers quarterly time series data of GDP, exchange rate, money supply, Price earnings ratio, Dividend yield ratio and price book value from 2003-04 to 2013-14. Multiple regression test was applied to explore the determinants of stock prices and results revealed that price earnings ratio, price book value and exchange rate have significant and positive relationship with stock prices while exchange rate negatively significant with stock prices of NSE 100. The study also reveals that dividend yield ratio negatively insignificant with stock prices. The GDP was found to be insignificant in determining stock prices.

Keywords: Price Earnings Ratio, Book Value, Dividend Per Share, Money Supply.

CONCEPTUAL FRAMEWORK

An individual seller or buyer can not affect the price of stock. Stock prices influenced by the numerous factors. The movement of stock price is the result of movement of financial and economic factors. Economist suggested that price of stock is determined by the force of demand and supply but market expectations also play an important role to determine stock prices. Fundamental Factors, technical factors and market sentiments significantly contributed to demand and supply of stock prices. Stock market is a volatile and dynamic that is why accurate prediction of stock prices and returns is quite tough for investors as well as fund managers. Fundamental and technical analysis is required to predict the share prices. These can be done on the basis of internal as well as external factors. Intrinsic factors like dividend per share, price earnings ratio, book value per share which represent the financial position of company while extrinsic factors are macro economic variables like GDP, interest rate, exchange rate, money supply which represent to country's economy. Collins (1957) found that dividend net profit, operating earnings and book value are the Determinants of stock prices of US bank.

The present study established a relationship among external factors internal factors and stock prices of NSE 100 index. The study taken into consideration 6 variables out of 3 macro-economic such as GDP, exchange rate and Money supply where as 3 are financial factors such as Dividend ratio, Price earnings ratio and book value per share.

A general belief is that accelerating growth of economy automatically translates into a positive stock returns.

As the GDP of nation represents the aggregate of consumption, government spending, investments and exports if GDP goes high it affects corporate earnings. Higher corporate sales lead to higher EPS and it also affects the stock prices (Singh, 2011). High rate of money supply will increase inflation and it also affects expected rate of returns but high expected returns decreases the value of firm and it all affects the stock prices negatively (Patel, 2012). Change in exchange rate of currency also results to change in stock prices. As depreciation in domestic currency increase the cost of import which affects to organizational financial performance and its result will reflect by change in stock prices.

GDP

It is the monetary value of all the finished goods & services produced within specific period of time in country's border; usually it is calculated on yearly basis. GDP calculations are likely used to determine the economic performance of a whole country or region, yet it can also weigh the comparative contribution of an industry sector. It includes all private and public consumption, government outlays & investments. GDP is commonly used as a gauge of the economic strength of a Nation.

Money Supply

Money supply is the total stock of currency and other liquid instruments in a country's economy of particular period of time. It includes cash, coins and balances held in checking & savings accounts. Money supply is calculated by M1, M2, M3 & M4 according to the dimension and kind of account in which instrument is held.

Exchange Rates

Moreover, the trade openness and capital movements have made the exchange rates as one of the main determinants of equity prices (Kim, 2003). Exchange rate changes directly influence the international competitiveness of firms, given their impact on input and output price (Joseph, 2002).

Basically, foreign exchange rate volatility influences the value of the firm since the future cash flows of the firm change with the fluctuations in the foreign exchange rates. When the Exchange rate appreciates, since exporters will lose their competitiveness in international market, the sales and profits of exporters will shrink and the stock prices will decline. On the other hand, importers will increase their competitiveness in domestic markets.

Price Earnings Ratio

The Price/Earnings Ratio or P/E Ratio is a stock's current worth divided by the company's straggling 12-month earnings per share from constant operations. It helps to the investors to make a decision whether to buy shares of a particular company. It is a widely used ratio. It is considered to estimate the approval in the market value of equity shares. The price-to-earnings ratio, or P/E ratio, is defined as market price per share divided by annual earnings per share. Generally, a high P/E ratio suggests that investors are expecting higher earnings growth in the future in comparison to companies with a lower P/E. However, the P/E ratio doesn't tell us the whole story by itself.

Price Earnings Ratio = Market value per share/ Earning per share

Dividend Yield Ratio

Dividend yield ratio defines the relation between dividend per share and current share price. It is the measure of returns on investment. Low share price leads the high dividend yield whereas high share prices lead the low dividend yield share price.

Dividend Yield = Dividend Per Share/ Current Share Price

Price-to-Book Ratio

This ratio is used to compare stock market price to stock's book value P/B Ratio = Stock Price/ Total Assets – Intangible assets& Liabilities

LITERATURE REVIEW

Gatua Fridah Karimi (2013) investigated determinants of equity share prices in NAIROBI Security Exchange. The study employed secondary data of seven macroeconomic variables i.e. FOREX, Interest rate, NSE all share Index, Equity Turnover, NSE 20

share Index, Lagged share prices for a period of 2008 to 2012 and share prices of seven firms of different sectors. Regression analysis was used to develop a model to determine relationship between independent and dependent variables. Results revealed a significant relationship existed between FOREX, IR, NSE all share Index and stock prices of Equity bank only but on the other hand variables have negligible impact on share prices of other firms.

Mukherjee and Naka (1995) and another study done by Cheung and Ng (1998) reported a positive and significant relationship between money supply and stock prices. In a study done by Jaffe and Mandelker (1976) also found a negative relation between annual stock returns and concurrent rates of inflation in short run but positive relationship was found in long run time period.

In addition, Homa and Jaffee (1977) examined the monetary policy and stock price link for the US economy using time series quarterly data of period 1954 to 1969., the variables undertaken study was stock price, money supply and growth rate. Simple regression test was applied and found the positive and significant relationship between money supply, growth rate in money supply and stock prices. However, Kandir (2008), in his work found no significant relationship between money supply and stock returns in the Turkish capital market.

Chuam et al, (2012) in their study analyzed that all the independent variables in their chosen model are considerably affects the stock price movement. Expected inflation and money supply have a negative correlation while Treasury bill rate has a positive correlation with the stock price movement.

Islam et al, (2015) scrutinized that both dividend and retained earnings are powerful determinants of stock price at certain point. The important results in their study are Price Manipulation, Improper Financial Statement, Manipulations and Scams, Lack of Knowledge, Selection of Membership, Delays in Settlement, Market Crash.

Malhotra et al, (2013) primarily examined that from the period of 2007-12 revealed 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. Stephen et al, (2014) investigated that the explanatory power of earnings per share, book value per share and dividend cover are statistically significant in explaining the movement in stock prices. Uddin et al, (2013) found out that that Earnings per share (EPS), Net asset value (NAV), Net profit after tax (NPAT) and Price earnings ratio (P/E) have strong connection with stock prices.

Al-Qenae, Li & Wearing (2002) examined the effects of macro & micro economic factors on stock prices of Kuwait stock exchange.. Earning was the indicator of micro economic factor while inflation and interest rate were the indicators of macro economic factor. The results revealed that inflation and interest rates had negative significant effect on stock prices. A previous study by Udegbumam and Eriki (2001) on Nigerian capital market also shows the inverse significant relationship between inflation and stock prices.

Alam & Rashid (2014) studied the relationship among interest rate, exchange rate, IIP, inflation rate money supply and stock returns of Karachi stock exchange 100 index. The time series data from 2001 to 2011 was analyzed through unit root test, cointegration test and Granger causality test. The data was stationer at first difference level. Long term relationship was found among all the variables under taken study. The results revealed that Index of industrial production (IIP) had positive and significant long term relationship with stock returns while interest rate, exchange rate and money supply had negative long term association with stock returns. Exchange rate and inflation measured through CPI had causal relationship with stock returns.

Izuchukwu, Ifurueze et al. (2015) investigated the effect of GDP, inflation rate and monetary policy on Nigeria stock market. CPI and money supply were taken as the indicators of inflation rate and monetary policy respectively. The results revealed that GDP had positive and significant cause and effect relationship with stock returns while inflation and monetary policy had negative but significant impact on stock returns. Long run relationship was found by results of cointegration test between independent variable (stock returns) and independent variables (GDP, Inflation rate and monetary policy).

Shubiri (2010) established the relationship between financial factors, economic factors and stock price. Net assets value per share, dividend percentage per share, Earning per share were take as the measure of financial factors whereas lending interest rate, inflation rate and GDP were taken under economic factors. Simple and multiple regression test results revealed that there is a signnificant and positive effect of net assets value, earning per share, dividend percentage er share and GDP on Market price of stock while inflation and interest rate are negatively insignificant with stock prices.

Patel (2012) studied the long run relationship between macro economic variables and stock prices of Sensex, S &P CNX nifty. Time series data from 1991 to 2011 were taken into consideration. Eight macro economic variables were studied that are interest rate, inflation rate, exchange rate, IIP, money supply, Gold price, silver price and oil prices. Results of ADF test indicate dthat the data was stationer at different level of integration. Long run equilibrium relationship was found between stock market and macro economic variables. Granger causality test also revealed causal effect of exchange rate, IIP and oil price with stock prices of sensex and nifty.

Patra and Poshakwale (2006) established a long term and short term significant relationship between money supply, inflation and trading volumes while insignificant relationship was found between exchange rate and stock price Athens stock exchange.

Hasan and Javed (2009) studied the relationship between macro-economic variables which include exchange rate, inflation, interest rate, money supply foreign portfolio and stock prices. ADF, PP test was used to check the stationarity of data and data was found stationer at different level of integration. To establish the long run relationship VAR, OLS test was applied and the results to be found that exchange rate and money supply contributed significantly to stock prices in long run where inflation and interest

rate are not significant towards stock prices. The results also supported by Ozlen & Ergun (2012) they also found exchange rate and interest rate have significant effect on stock returns

OBJECTIVES

To calculate financial factors like P/E ratio, price book value and Dividend yield ratio

To tabulate Economic factors like GDP, Exchange rates and Money Supply (M3)

To establish the relationship among NSE index returns, financial factors and economic factors.

Hypothesis

H_0 = There is no association of financial and economic determinants with stock index prices.

RESEARCH METHODOLOGY

The study was causal and descriptive in nature. The total population of the study was stock market indices of India. In the present study, the sample chosen from NSE 50 index and time-frame of the study was considered from the year 2003-04 to 2013-14.

Quarterly prices of Stock index, GDP, money supply, exchange rates, price earnings and price to book ratios were collected from the official websites of NSE India, yahoo finance and RBI.

Tools for Data Analysis

Mathematical formula used to compute financial factors like P/E ratio, Price book value and dividend yield whereas economic factors like GDP, Money Supply and exchange rates were tabulated from various sites.

Shapiro Wilks test was applied to know the normality of data.

Multiple Regression was applied to identify the common determinants and their association.

RESULTS AND DISCUSSION

HYPOTHESIS

To follow the first assumption of regression normality test was applied and found that the values are insignificant and hence we may not reject the null hypothesis and found that the data was normally distributed.

Table 1: Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Standardized Residual	.107	44	.200*	.965	44	.196
a. Lilliefors Significance Correction						
*. This is a lower bound of the true significance.						

H_0 = There is no association of financial and economic determinants with stock index prices.

The multiple linear regressions were applied between independent and dependent variables. Stock index is taken as dependent variable and financial and economic factors were taken as independent variables. In financial factors price earnings ratio, price to book value and dividend yield and in economic factors GDP, money supply and exchange rate were taken as independent variables. The adjusted r^2 value was found to be 0.989 indicating that all the six independent variables taken together explain 98.9% of the total variance in the dependent variable i.e. stock index. The goodness of fit for the model was tested by using ANOVA and the F-value is 628.125 which is significant at 0% level of significance, indicating that the model has high fit. Hence the null hypothesis that there is no impact of financial and economic determinants on stock index prices is rejected.

ANOVA^b

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.895E7	6	1.649E7	628.125	.000 ^a
	Residual	918951.052	35	26255.744		
	Total	9.987E7	41			
a. Predictors: (Constant), moneysupply, pricearning, pricetobook, excrate, dividendyield, gdp						
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The Durbin Watson value, which is 1.213, depicts that there is no autocorrelation. Initially the VIF value among economic determinants was high but resolved after removing outliers. Further the contribution of individual independent variables was evaluated through computation of β and was tested for significance using t-test.

Coefficients^a

Model B		Unstandardized Coefficients		Standardized Coefficients	T	Sig. Tolerance	Collinearity Statistics	
		Std. Error	Beta				VIF	
1	(Constant)	-1024.714	847.650		-1.209	.235		
	pricearning	141.757	17.806	.317	7.961	.000	.166	6.021
	pricetobook	327.619	55.163	.193	5.939	.000	.248	4.037
	dividendyield	-7.558	167.154	-.002	-.045	.964	.137	7.277
	gdp	.021	.045	.036	.468	.643	.456	2.939
	excrate	-37.790	10.930	-.141	-3.458	.001	.157	6.359
	moneysupply	.061	.006	.926	9.513	.000	.277	3.046

a. Dependent Variable: stockindex

a. The β value for independent variable price earning was 0.317 with t-test value of 7.961 which is significant at 0%, indicating that price earning contribute significantly to the Stock price movements.

b. The β value for independent variable price to book value is .193 with t-test value of 5.939 which is significant at 0% level of significance, indicating that price to book value contributes significantly to the Stock price movements.

c. The β value for independent variable dividend Yield was .045 with t-test value of .964 which is insignificant at 0%, indicating that Dividend yield does not contribute significantly to the Stock price movements.

d. The β value for independent variable price to GDP is .036 with t-test value of .468 which is significant at 64.3% level of significance, indicating that GDP does not contribute significantly to the Stock price movements.

e. The β value for independent variable exchange rate was .141 with t-test value of 3.48 which is significant at 0%, indicating that exchange rate contribute significantly to the Stock price movements.

f. The β value for independent variable money supply was .926 with t-test value of 9.513 which is significant at 0% level of significance, indicating that money supply contributes significantly to the Stock price movements. Our study is similar to the results of Mukherjee and Naka (1995) as well as Cheung and Ng (1998) they reported a positive and significant relationship between money supply and stock prices.

LIMITATIONS & SUGGESTIONS

The study aimed to find out the determinants of stock prices and it is limited to stock price listed under NSE 50 index for the time period of 2003-04 to 2013-14. Economic and financial factors as per review of literature suggested were taken but only few macroeconomic variables were studied such as GDP, exchange rate and money supply.

Study also restricted to chosen financial factors i.e. Dividend payout ratio, price earning ratio and book value per share. The study could be carried out by taken other financial factors and economic factors. The study also could be done by taking different stock prices list under national market or international market. In this study Multiple linear regression model was applied using SPSS, In further research, researcher could apply simple linear regression and Granger causal relationship among the variables.

CONCLUSION

This study has tested empirically the impact of financial and economic determinants on stock price movements. The multiple Linear regression was applied between the Stock Index prices and P/E Ratio, Price to book ratio, dividend yield, GDP, money supply and exchange rates and found that there is a significant association between them. The results further revealed that only GDP and dividend yield are not contributing much in this association while other variables are significantly contributing.

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