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AN EMPIRICAL RELATIONSHIP BETWEEN SELECTED INDIAN STOCK MARKET INDICES AND MACROECONOMIC INDICATORS

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ABSTRACT

This paper tends to convey the relationship between macroeconomic variables and Indian stock market. The Pearson's correlation and multivariate stepwise regression is applied to understand the impact of macroeconomic indicators on the performance of stock market. Granger's causality test is applied for the dynamic causal relationship among the variables. The explained variables in the study includes average monthly closing price of BSE 100 and CNX 100 while the explanatory variables are Index of Industrial Production (IIP), Wholesale Price Index (WPI), Money Supply (M3), Interest Rates (IR), Trade Deficit (TD), Foreign Institutional Investment (FII), Exchange rate (ER), Crude Oil Price (CP) and Gold Price (GP). The data used in the study is in the monthly frequency and period of the study includes from January 2011 to December 2012. The empirical results exhibit significant impact of macroeconomic variables on Indian stock market. The Indian Stock market improves with the increase in the inflow of foreign investment. Thus foreign capital is value addition to the market as it has significantly positive impact on stock market. The gold prices are used as best alternative for investment which hampers the stock prices of share market.

The Granger causality test signifies that there exists causal relationship from FII to stock market. Apart from this, there is no any causal relationship among the variables. Thus, any movement in the value of foreign investment has influence on stock market. The negative impact exchange rates on stock market appear during the period of study. With the strengthening of dollar, Indian currency depreciates in the international market. The stock market declines due to the decrease in the value of rupee with respect to US dollar. The appreciation in the value of Indian rupee with respect to US dollar needs to improve so as to facilitate bullish trend in the market.

KEYWORDS: Stock Exchanges, Industrial Production, Growth Rate, Macroeconomic Variables

INTRODUCTION

The stock market is the major indicator of growth and development of the country. Indian stock market has developed in terms of number of stock exchanges and other intermediaries, the number of listed stocks, market capitalization, trading volumes, turnover of the stock exchanges, investor population and price indices. The development in the stock market, which supports corporate initiatives, finance the exploitation of new ideas and facilitate management of financial risks, hold out necessary drive for growth and strength of the emerging market economy of India.

The process of reforms has led to a pace of growth almost unparalleled in the history of any country. The shape and structure of the market has undergone tremendous change in the recent past. The market has witnessed essential institutional changes resulting in radical and significant improvement in efficiency, transparency and safety.

Stock market performs as a barometer of the economy. It is expected that the markets and their indicators in the form of indices, reflect the potential of the corporate listed on them and, in the process, the direction and health of the economy. There is comprehensive group of macroeconomic variables that influences the stock prices in the share market of any country. If a country's economy is performing well and expected to grow at vigorous pace, the market is frequently anticipated to reflect the same. The stock market of emerging economics like India carries huge expectations of the investors. The trading in the Indian stock market proceeds on its two stock exchanges namely Bombay Stock Exchange (BSE) and the National Stock Exchange (NSE). The BSE has been in existence since 1875. The inception of NSE occurred in 1992 and started trading in 1994. These exchanges track the same trading mechanism, trading hours and settlement process. BSE has more than 5000 listed companies while NSE has comparatively less than this number that lies near to 3000. Out of all the listed firms on the BSE, only about 500 firms constitute more than 90% of its market capitalization and rest involves extremely illiquid shares.

REVIEW OF LITERATURE

The literature reveals plethora of studies carried out to study the relationship between stock market and macroeconomic variables. In a study of **Darrat (1990)** analyzed and tested that the stock market of Canada, its efficiency and the expected returns are constant over time using the multivariate Granger-causality technique. This study considered that the Canadian stock prices fully reflect all available information on monetary policy moves. **Kwon and Shin (1999)** used Granger causality tests and Engle-Granger co-integration test through vector error correction model and started that Korean stock market index of economic variables such as production; exchange rates, trade balances and the money supply are co-integrated.

Maghayereh (2003) investigated the long run relationship between the Jordanian stock prices and selected macroeconomic variables using cointegration analysis and monthly time series data from January 1987 to December 2000. This study treasures that macroeconomic variables as exports, foreign reserves, interest rates, inflation, and industrial production are reflected in stock prices in the Jordanian capital market. The study concludes that macroeconomic variables are significant in predicting changes in stock prices.

Erdogan and Ozlale (2005) investigated the influence of varying macroeconomic variables on stock return of Turkey and found that industrial production and exchange rates were positively related with the stock return. On the other hand, Circulation in Money (M1) had no any significant impact on stock return. **Gan, Lee, Yong and Zhang (2006)** examined the relationship between stock prices and macroeconomic variables for New Zealand. The variables are long-run and short-run interest rate, inflation rate, exchange rate, GDP, money supply and domestic retail oil price. Their findings suggest that there exist a long term relationship between stock prices and selected variables in New Zealand. However, the Granger causality test suggests that New Zealand stock exchange is not a good indicator for macroeconomic variables in New Zealand.

In a study of **Tripathy, (2011)** exhibits relationship between macroeconomic variables and Indian stock market from the month of January 2005 to February 2011 applying several tests such as Ljung-Box Q test, Breusch-Godfrey LM test, Unit root test and Granger causality test. This test brings bidirectional relationship in interest rate, exchange rate, international market with Indian stock market. The study brings significant impact of international market on Indian stock market. This study also confirms the impact of exchange rate and interest rate on stock price.

Naik and Padhi (2012) studies association between the Indian stock market index (BSE Sensex) and various macroeconomic variables as industrial production index, wholesale price index, money supply, treasury bills rates and exchange rates from the time period 1994 to 2011. The analysis reveals that macroeconomic variables and the stock market index are cointegrated and, hence, a long-run equilibrium relationship exists between them.

This study perceived that the stock prices are positively relate to the money supply and industrial production but negatively relate to inflation. The exchange rate as well as short-term interest rate is found to be insignificant in determining stock prices. There is bidirectional causation exists between industrial production and stock prices but unidirectional causation from money supply to stock price, stock price to inflation and interest rates to stock prices is established.

Ray (2013) examined the relationship between macroeconomic variables and stock prices. The Industrial production presents a measure of overall economic activity in a country and moves stock prices through its influence on expected future cash flows. Thus, it is expected that an increase in industrial production index is positively related to stock price. The causal relationship between industrial production and stock price in India is covered for a period, 1990-91 to 2010-11. The findings specified that there exist no significant causal relationship between industrial production and share price in India. The result of regression, of course, suggests that there may have been positive relation between stock price and real industrial production. The increase in production of industry can enhance stock price and vice versa.

Sireesha (2013) examined the impact of macroeconomic factors upon the movements of the Indian stock market index Nifty, gold and silver prices through linear regression technique. Gold returns, Silver returns are selected for the analysis as they are important now a days and are studied along with the stock returns. The performance of internal variables shows the interdependence between these variable with returns on stock, gold and silver. Stock return is significantly influenced by GDP and inflation while gold return is significantly influenced by money supply. External variables show significant impact on dependent variables.

Luthra and Mahajan (2014) studied the impact of macroeconomic factors on BSE Bankex. Macroeconomic variables involved GDP growth rate, inflation, gold prices and exchange rate. Bombay Stock Exchange Limited launched "BSE BANKEX Index". This index includes major public and private sector banks listed on BSE. The BSE BANKEX Index is displayed online on the BOLT trading terminals nationwide. The results conclude that inflation, exchange rate and GDP growth rate affect the Bankex positively. However Gold Prices affect BSE Bankex negatively but none of these variables have a significant impact on the stock prices of banks. **Mishra and Gupta (2014)** studied the major factors responsible for up-down movement in Indian stock market. The relationship between Sensex and macroeconomic variables- IIP, WPI, Interest Rate and Morgan Stanley Capital International Index of India during the period from 2006 to 2012. Multiple correlation and multiple regressions is used to analyze the relationship among variables. The results show very high and positive correlation with Sensex and are significant during the period of study.

OBJECTIVE OF THE STUDY

The study has been performed to meet the following objectives:

- To examine the relationship among macroeconomic variables and Indian stock market.
- To analyze the impact of macroeconomic variables on Indian Stock market.

- To identify the causal relationship among Indian stock market and macroeconomic variables.

The null hypothesis that is considered in the study includes:

Ho: There is no significant impact of macroeconomic variables on the stock market**.**

Ho: There is no any causal relationship among macroeconomic variables and stock market.

RESEARCH METHODOLOGY

The maximum trade of Indian stock market is confined to the two popular stock exchanges namely Bombay Stock Exchange (BSE) and National Stock Exchange (NSE). The two stock indices are selected from both the exchanges so as to represent maximum industrial coverage of both the stock exchanges. BSE 100 index of BSE and CNX 100 index of NSE are selected for the study both including 100 stocks of each exchange.

The explanatory variables are Index of Industrial Production (IIP), Wholesale Price Index (WPI), Money Supply (M3), Interest Rates (IR), Trade Deficit (TD), Foreign Institutional Investment (FII), Exchange rate (ER), Crude Oil Price (CP) and Gold Price (GP). The data has been taken in the monthly frequency and the period of study has been considered from **January 2011 to December 2012**.

The dependent variable that has been used in the study includes average monthly closing price of BSE 100 index of Bombay Stock Exchange and CNX 100 index of National Stock Exchange. The correlation, multivariate stepwise regression and Granger causality test is applied in this study to analyze the impact of macroeconomic variables on Indian stock market. The monthly frequency of the data is used in this study. The data has been collected from various sources like RBI website, data base of Indian economy (dbie.rbi.org.in) and annual reports of RBI.

The proposed model for this study is as follows:

- $\mathbf{BSE100 = \alpha_0 + \beta_1 IIP + \beta_2 WPI + \beta_3 M3 + \beta_4 IR + \beta_5 TD + \beta_6 FII + \beta_7 ER + \beta_8 CP + \beta_9 GP + \epsilon}$
- $\mathbf{CNX100 = \alpha_0 + \beta_1 IIP + \beta_2 WPI + \beta_3 M3 + \beta_4 IR + \beta_5 TD + \beta_6 FII + \beta_7 ER + \beta_8 CP + \beta_9 GP + \epsilon}$

α_0 =Constant

ϵ = Error term

β_1, β_2, β_3, β_4, β_5, β_6, β_7, β_8 and $\beta_9$are the coefficients of independent variables IIP, WPI, M3, IR, TD, FII, ER, CP and GP respectively. The dependent variables are average monthly closing price of BSE 100 index and CNX 100 index while independent variables includes.

ANALYSIS & INTERPRETATION OF THE STUDY

The analysis of the study involves correlation, multivariate stepwise regression, unit root test and Granger's causality test.

CORRELATION ANALYSIS

The correlation results reveal the positive association of BSE 100 index with Index of Industrial Production, Wholesale Price Index, Money Supply, Foreign Institutional Investments and Crude oil Prices while negative with Interest Rate, Exchange Rate and Gold price. But significantly positive relationship (0.475) exists among FII and BSE 100

index at 5% level of significance. Thus it demonstrates that foreign investors may have favorable effect on the index during the period of study. The table 1 shows the correlation matrix of BSE 100 index with the selected set of macroeconomic variables.

Highly significant positive association exists among inflation rate and money supply (0.993). As from the Fisher's equation there is relationship among money supply and inflation rates. Significantly positive relationship also exists among inflation and trade deficit (0.762). This suggests that as trade deficit increases, inflation in the country also increases. The exchange rate is also highly significantly associated with inflation. As the value of Indian currency declines with respect to dollars, the inflation rates increases in the country. Gold prices are another variable that exhibits positive association with inflation rate. With more consumption of gold, the inflation rate would increase as the India has to import the commodity that accounts about 8 to 10% of the import bills.

The exchange rate and trade deficit has highly significant association which is 0.666 at 1% level of significance. The appreciation in the exchange rate leads to the decline in the value of Indian rupee with respect to US dollars. Thus the currency become weaker in the international market which makes adversely affects the balance of trade of India. The exchange rate is also in positive association with gold price in India.

As the second largest country in the world in the consumption of gold after china, India has huge demand of gold in the national market due to several reasons. This yellow metal has emerged as safe investment avenue for the investors due to its huge return and high liquidity. As an importing country of gold, appreciation in exchange rate would depreciate the value of rupee that would lead to the increase in gold prices.

Thus, it brings the issues of multicollinearity among independent variables. It may bring spurious results if they are regressed in the model.

Table 1: Correlations Matrix of BSE 100 Index with Selected Macroeconomic Variables

Variables	BSE100	IIP	WPI	M3	IR	TD	FII	ER	CP	GP
BSE100	**1**									
IIP	0.135	**1**								
WPI	0.042	-0.164	**1**							
M3	0.023	-0.107	0.993**	**1**						
IR	-0.285	-0.151	-0.461*	0.479*	**1**					
TD	-0.101	-0.365	0.762**	0.743**	0.460*	**1**				
FII	0.475*	0.281	0.552**	0.551**	0.320	0.310	**1**			
ER	-0.186	-0.069	0.911**	0.926**	0.352	0.666**	0.411*	**1**		
CP	0.120	0.260	-0.042	-0.050	0.405*	-0.040	0.251	-0.224	**1**	
GP	-0.199	-0.172	0.944**	0.939**	0.551**	0.758**	0.476*	0.908**	-0.072	**1**

Source: Computed; * Correlation is Significant at the 5% level (2-tailed), ** Correlation is Significant at the 1% Level (2-tailed).

The table 2 exhibits that CNX 100 has positive association with IIP, FII, and crude prices but no any relationship is significant. There exists negative association of index with WPI, M3, IR, TD, ER and GP but significant relationship exists among interest rate and CNX 100. It reveals that with the increase in interest rate, the value of the index would decline. It can be explained as the interest rate increases, the corporates have large portion of profit in the form of interest to the lenders, and this would erode the profit of the firm. Thus overall performance of index may decline. Apart from interest rate, no any other variable has significant relationship with the index during the overall period of study.

Table 2: Correlations Matrix of CNX 100 Index with Selected Macroeconomic Variables

Variables	CNX 100	IIP	WPI	M3	IR	TD	FII	ER	CP	GP
CNX 100	**1**									
IIP	0.111	**1**								
WPI	-0.038	-0.164	**1**							
M3	-0.059	-0.107	0.993*	**1**						
IR	-0.450*	-0.151	0.461*	0.479*	**1**					
TD	-0.131	-0.365	0.762**	0.743**	0.460*	**1**				
FII	0.319	0.281	0.552*	0.551**	0.320	0.310	**1**			
ER	-0.270	-0.069	0.911**	0.911**	0.352	0.666*	0.411*	**1**		
CP	0.114	0.260	-0.042	-0.050	0.405*	-0.040	0.251	-0.224	**1**	
GP	-0.278	-0.172	0.944**	0.939**	0.551**	0.758**	0.476*	0.908**	-0.072	**1**

Source: Computed; * Correlation is Significant at the 5% level (2-tailed), ** Correlation is Significant at the 1% Level (2-tailed).

MULTIVARIATE STEPWISE REGRESSION ANALYSIS

The impact of macroeconomic determinants on the stock price is analyzed using regression analysis. As the independent variables have strong association among them that may bring spurious results, multivariate stepwise regression analysis is used in the study for each of the regression models.

BSE 100 AND MACROECONOMIC VARIABLES

The year 2011 brings two variables that are included in the model is gold prices and inflation rates. Rest all the selected variables are excluded from the model. The model is best fit as the value of F is 25.09 which are highly significant. The gold price has negative impact on the stock prices that exhibits that gold has negative impact on stock prices. **The hypothesis rejected in case of two variables i.e. GP and WPI while accepted in case of all the variables during the year 2011.**

In the year 2012, gold prices and exchange rate has emerged as two significant variables while all the variables are excludes from the model. The model is best fit as the F value is 13.36 which is highly significant. The R^2 is 0.748 that signifies that model explains 74.8 % variations in the index during the year. **The hypothesis rejected in case of two variables i.e. GP and ER while accepted in case of all the variables during 2012.**

The result of regression is shown in table 3. The gold and exchange rate has negative impact on BSE 100 index that signifies that market react in adversely with the increase in exchange rate as well as gold price. As the value of Indian currency declines in the year with the appreciation in exchange rate, the market reacts negatively with this impact. The increasing demand of gold due to high liquidity, safety issues and high return has made it as safe heaven for investment for the investors. Thus investment shifts from stock market to this precious commodity. With the increase in the import of gold, the trade deficit would increase and this is adverse situation for the market.

Table 3: Regression Analysis Including BSE100 Index and Macroeconomic Variables

Year	R^2	F	P	R^2Change	Regression Model
2011	0.848	25.09	<0.001	GP = 0.745 WPI = 0.103	BSE100 = -5596.93 – 0.21 GP +1.0452 WPI
2012	0.748	13.36	<0.001	GP = 0.512 ER = 0.227	BSE100 = 2796.84 - 0.25 GP – 88.57 ER

Source: Computed.

CNX 100 AND MACROECONOMIC VARIABLES

The table 4 shows the result of regression analysis of the year 2011 divulges the significant impact of only one variable on the CNX 100 index. It suggests that gold has negative effect of the index during the year. The coefficient of determination signifies that 81.8 % of the variation in the index is explained due to this variable. All the other variables are excluded from the model except gold. **The hypothesis rejected in case of GP while accepted in case of all the variables during the year 2011.**

The year 2012 has four significant variables includes gold price, exchange rate, money supply and foreign investments. The negative impact is due to gold and exchange rates while money supply and FII has significantly positive effect. The R^2 for the model is 99.0% that signifies that maximum variation in the index has been explained by the significant variables. The regression models for both years are best fit as the value of F is highly significant ($P < 0.001$). **The hypothesis rejected in case of GP, ER, M3 and FII while accepted in case of all the variables during the year 2012.**

Table 4: Regression Analysis Including CNX 100 Index and Macroeconomic Variables

Year	R^2	F	P	R^2 Change	Regression Model
2011	0.818	44.98	<0.001	GP = 0.818	CNX100 = 7585.93 – 0.10GP
2012	0.990	136.65	<0.001	GP = 0.465 ER = 0.244 M3 = 0.217 FII = 0.064	CNX100 = 42.58 – 0.06 GP – 127.22 ER + 0.18 M3 + 1.17 FII

Source: Computed.

UNIT ROOT TEST

The unit root test is applied to test the stationarity of the data. There exist several test to test the presence of unit root in the series among them, the most commonly used in the literature is the Augmented Dickey-Fuller (ADF) test to analyze stationarity in the time series. The application of unit root test is initial step before proceeding to the Granger's causality test. All the selected variables are not stationary at the level but they all are stationary at the first difference. This analyzes that the series is integrated of order one, I (1). The result of unit root test is given in table 5.

Table 5: Result of Unit Root Test for Selected Variables

Variable	At Level		At First Difference	
	ADF Test Statistics	P	ADF Test Statistics	P**
BSE 100	-1.766	0.386	-4.576	0.002
CNX 100	-1.699	0.418	-4.938	0.000
IIP	-2.204	0.312	-5.007	0.000
WPI	-0.930	0.759	-4.258	0.003
M3	-0.973	0.744	-5.569	0.000
IR	-2.422	0.106	-6.198	0.000
TD	-2.799	0.075	-6.422	0.000
FII	-2.615	0.105	-5.777	0.000
ER	-0.687	0.827	-4.003	0.007
CP	-1.761	0.381	-4.422	0.002
GP	-4.424	0.553	-5.011	0.000

Source: Computed; ** at 1% Level of Significance.

GRANGER CAUSALITY TEST

The Granger's causality test is applied to check the direction of causation existing among the variables. As the study includes two set of variables, so there appears the likelihood of either side of relationship in the explained and explanatory variables. There may be three type of relationship among the variables - unidirectional, bidirectional no relationship among the variables.

In case of BSE 100 index, the null hypothesis of no causal relationship is accepted in all the cases except in FII. The hypothesis is rejected in case of FII as unidirectional relationship is from the variable to the stock market. This signifies that causality is running from FII to BSE 100 index. Thus the foreign investment do Granger cause index. Any change in FII can be used to predict BSE 100 index. There is no any bidirectional relationship among the macroeconomic determinants and BSE 100 index as shown in table 6.

Table 6: Granger Causality Test of BSE 100 Index with Macroeconomic Variables

Null Hypothesis	Observation	F-Statistic	P
CP does not Granger Cause BSE100	22	0.52918	0.5985
BSE100 does not Granger Cause CP		2.03021	0.1619
ER does not Granger Cause BSE100	22	0.63634	0.5414
BSE100 does not Granger Cause ER		2.56447	0.1063
FII does not Granger Cause BSE100	22	6.48780	0.0050
BSE100 does not Granger Cause FII		0.52362	0.6016
GP does not Granger Cause BSE100	22	0.43012	0.6573
BSE100 does not Granger Cause GP		0.32296	0.7283
IIP does not Granger Cause BSE100	22	0.65539	0.5319
BSE100 does not Granger Cause IIP		0.11060	0.8959
IR does not Granger Cause BSE100	22	2.84379	0.0860
BSE100 does not Granger Cause IR		1.65846	0.2198
M3 does not Granger Cause BSE100	22	0.25198	0.7801
BSE100 does not Granger Cause M3		0.05159	0.9499
TD does not Granger Cause BSE100	22	0.19889	0.8215
BSE100 does not Granger Cause TD		0.97947	0.3957
WPI does not Granger Cause BSE100		1.37247	0.2802
BSE100 does not Granger Cause WPI		0.28790	0.7534

Source: Computed.

The Granger causality test result in table 7 shows that there is only one causal relationship among CNX 100 index and FII. The causality is running from FII to CNX 100. Thus during the period of study it signifies that there is causal relationship among FII and the index. No any other causal relationship appears in the study.

The null hypothesis of no causal relationship among macroeconomic determinants and stock market has been accepted in in all the variables but not in FII. This shows that all the other variables apart from FII do not share any causal relationship with the stock market. It confirms that any movement in FII has significant causal relationship with Indian stock market. The entries as well as the exit of foreign investment do effects stock market.

Table 7: Granger Causality Test of CNX 100 with Macroeconomic Variables

Null Hypothesis	Observation	F-Statistic	P
CP does not Granger Cause CNX100	22	1.09141	0.3581
CNX100 does not Granger Cause CP		0.16579	0.8486
ER does not Granger Cause CNX100	22	2.60286	0.1032
CNX100 does not Granger Cause ER		0.37749	0.6912

Table 7: Contd.,

FII does not Granger Cause CNX100	22	7.41631	0.0048
CNX100 does not Granger Cause FII		1.39679	0.2744
GP does not Granger Cause CNX100	22	0.79286	0.4686
CNX100 does not Granger Cause GP		0.03661	0.9641
IIP does not Granger Cause CNX100	22	1.55197	0.2404
CNX100 does not Granger Cause IIP		0.17880	0.8378
IR does not Granger Cause CNX100	22	2.09221	0.1541
CNX100 does not Granger Cause IR		1.75869	0.2022
M3 does not Granger Cause CNX100	22	1.63541	0.2241
CNX100 does not Granger Cause M3		0.02459	0.9757
TD does not Granger Cause CNX100	22	0.72070	0.5007
CNX100 does not Granger Cause TD		2.13957	0.1483
WPI does not Granger Cause CNX100	22	0.70245	0.5092
CNX100 does not Granger Cause WPI		0.17750	0.8389

Source: Computed.

CONCLUSIONS

The study infers that Indian stock market has significant influence of gold prices, inflation, money supply, exchange rates and foreign institutional investments. The gold has adverse effect on Indian Stock market that shows the increasing interest of investors in the precious metal. The investors need to regain their faith in the market as the market need to perform upon the expectations of the investors. The increasing investment in gold would create huge burden on import of India as the precious metal accounts nearly 8 to 10 % of the import bills. The negative impact exchange rates on stock market appear during the period of study. With the strengthening of dollar, Indian currency depreciates in the international market. The stock market declines due to the decrease in the value of rupee with respect to US dollar. The appreciation in the value of Indian rupee with respect to US dollar needs to improve so as to facilitate bullish trend in the market.

The money supply has positive impact on the stock market that reveals that lager money in circulation has favorable impact on stock market during the period of study. The inflow of foreign capital is value addition to the market as it has significant impact over stock market. The empirical results exhibit significant impact of macroeconomic factors on Indian stock market. The study also signifies long run equilibrium relationship among the variables. The performance of Indian Stock market improves with the increase in the performance of industrial concerns and with the high level performance of industrial sector of India. The gold prices are used as best alternative for investment which hampers the performance of Indian Stock market.

The Granger causality test signifies that there exists causal relationship from FII to stock market. Apart from this, there is no any causal relationship among the variables. Thus, any movement in the value of foreign investment has influence on stock market. The initiatives need to be taken by the government to reduce the consumption of gold and enhance the investment in share market through improving the confidence of investors in the share market. The foreign investors need to remain stable in the Indian market as their movement effects the stock prices. The foreign capital has become the major factor that accelerates the stock prices.

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