



## International Journal of Economic Research

ISSN : 0972-9380

available at <http://www.serialsjournal.com>

© Serials Publications Pvt. Ltd.

Volume 14 • Number 8 • 2017

## Impact of Macroeconomic Variables on the Stock Performance of Select Companies in Manufacturing Industry

M. Appala Raju<sup>1</sup>

<sup>1</sup>Professor, Department of Management Studies, Christ University, E-mail: [middi.raju@christuniversity.in](mailto:middi.raju@christuniversity.in)

**Abstract:** The efficient functioning of a stock market is influenced by different macro economic factors like Inflation, Interest rates, exchange rate etc. The favourable Macro Economic Variables both domestic economy and global economy inspire the organisations to go for strategic investment activities in domestic and global markets and reflect positively on the company financial performance and firms fundamentals like Revenues, Operating margins, Earnings Per Share, the Economic Value, Market value, and the Firms overall Value. These positive indicators in the fundamentals of the firms send positive signals into stock markets and generate positive perceptions about the company's stock prices in the market. Markets become so attractive to domestic and foreign investors which drive the share price of different companies, specially Blue chips upwards and creates value to the shareholders. According to the study organized the impact of macro economic variables is not uniform and the impact varies between various macro economic variables on the stock market performance.

**Keywords:** Economic Value Added ; Market Value Added ; Strategic Investment ; Financial Performance ; shareholders Value; Firm Value.

### INTRODUCTION

Financial markets play a crucial role in the foundation of a stable and efficient financial system of an economy. Numerous domestic and international factors directly or indirectly affect the performance of the stock prices of a particular sector or company. The relation between macroeconomic variables and stock performance of a particular sector is being continuously studied by different academic, economists and practitioners. It is often believed that the stock performance is determined by a number of fundamental macroeconomic variables such as interest rate, industrial production index and inflation rate.

### OBJECTIVE

- To investigate the impact of macroeconomic variables on Indian stock market performance.
- To study the direction and degree of relationship between selected macroeconomic factors and stock returns.

## DATA AND METHODOLOGY

The monthly averages of respective stock prices, interest rate and industrial production index between January 2005 and January 2015 is collected. To investigate the impact of selected macroeconomic fundamentals on stock performance, the multiple regression technique has been applied. The below regression model will be applied to determine the relationship between the dependent variable (stock performance) and independent variables (industrial production index and interest rate).

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5$$

## REVIEW OF LITERATURE

The impact of macro economic variables on stock market performance has been investigated by different authors specific to a country and the results are variant as the macro factors influence differ from country to country depending on the conditions prevailing in the respective countries. One study done by Joseph Tagne Talla (2013) has investigated the impact of select macro economic variables on stock market prices of Stockholm Stock Exchange. It is established through the study that inflation and currency depreciation have a significant negative influence on stock markets. On the otherhand money supply is positively associated to stock prices although not significant. Samveg Patel (2012) through the study of effect of macro economic determinants on the performance of Indian stock Market found that there is a long term relationship between macro economic variables and the stock market indices. The study organized by Robert d. Gay Jr. (2008) has investigated the relationship between stock market index prices and the macro economic variables of exchange rate and oil prices for four emerging economies viz., Brazil, Russia, India and China and found no significant relationship between respective exchange rate and stock market index of either Bric country. Gaoxiang Wang; Lim; Christine (2010) through the study examine the effects of macro economic variables on the industry stock returns in Australia showed macro economic factors are important determinants of the ASX industry returns. Mondher Ballalah and Umie Habiba (2013) investigated the long term relationship between macro economic indicators of trade, oil prices, interest, money supply and the stock exchange price indices of U.S.A., Japan and China focusing on the global financial recession. An explanation of the difference in behaviour between the three markets may lie USA as most affected, Japanese economy under the influence of slump and china is least affected economy by financial crisis. H.M. Nijam, SMM Ismail and AMM Mustafa (2011) investigated through the study macro economic variables on stock market performance :evidence from Sri Lanka reveals the macro economic variables and the stock market index significantly positively related to GDP , Exchange Rate and Interest rate., while it is negatively related to inflation. inflation, balance of payments found to be not of much impact.

## ANALYSIS

### Titan Company Limited

Dependent Variable - Titan Stock

Independent Variables- Inflation rate, Exchange rate and Gold Price

Since Titan Company Limited manufactures gold jewelry and engages in importing of gold as well, we chose to consider inflation rate, exchange rate and gold price as the macroeconomic variables that have an effect on the performance of Titan Company Limited.

## Hypothesis

**H<sub>0</sub>**: The macroeconomic (as mentioned above) variables impact the stock performance of Titan Company Limited.

**H<sub>1</sub>**: The macroeconomic (as mentioned above) variables does not impact the stock performance of Titan Company Limited.

	<i>Exchange Rate</i>	<i>Gold Price</i>	<i>Inflation Rate</i>
Mean	63.90579	14.494187	4.613264
Median	63.90000	12.834054	4.210000
Maximum	73.40000	57.964938	11.15000
Minimum	53.20000	50.9953.6	-0.396463
Std. Dev	4.693263	98.49748	2.131460
Skewness	-0.519522	1.362130	0.886311
Kurtosis	3.033272	6.578093	4.666681
Jarque-bera	5.448627	101.9644	29.84675
Probability	0.065591	0.000000	0.000000
Sum	7732.600	1.754678	558.2050
Sum Sq. Dev	2643.206	1.169866	545.1744
Observations	121	121	121

The summary statistics for the dependent variable (Y), Titan stock Price and the independent variables ( $X, X_1, X_2$ ), Inflation rate, Exchange rate and Gold Price respectively are shown in the above table. For each series, the mean and median values are quite high. However, since the mean values of each series are greater than the median it can be interpreted that the distribution is skewed to the right-bunched up toward the left and with a 'tail' stretching toward the right.

From the table, it is evident that the standard deviation of inflation rate is minimum compared to that of exchange rate and gold price. This indicates that inflation rate has had a lesser impact on the performance of Titan when compared to the Gold price which has had the strongest impact on Titan.

The probability of each series is insignificant. Hence, we accept the null hypothesis, H<sub>0</sub>: The macroeconomic (as mentioned above) variables impact the stock performance of Titan Company Limited.

### Results of multiple regression for TITAN

#### *Summary measures*

Multiple R	0.7091
R-Square	0.5028
Adj. R-Square	0.4857
StErr of Est	77.4393

#### *ANOVA Table*

*Contd. table*

Source	df	SS	MS	F	p-value
Explained	4	703504.3389	175876.0847	29.3281	0.0000
Unexplained	116	695634.5625	5996.8497		

  

Regression coefficients						
	Coefficient	Std. Err	t-value	p-value	Lower limit	Upper limit
Constant	216.1625	112.7945	1.9164	0.0578	-7.2412	439.5662
Gold Price	0.0000	0.0000	-0.9971	0.3208	0.0000	0.0000
Inflation Rate	-1.8955	3.5532	-0.5335	0.5947	-8.9330	5.1421
Exchange rate	4.1149	1.5888	2.5899	0.0108	0.9681	7.2618

The multiple regression analysis for Titan Company Limited signifies the R-squared values of the dependent variable *i.e.* stock prices isn't impacted much by the independent variable *i.e.* Inflation rate, gold price and exchange rate. The R-squared values is 50% which clearly shows the minimal extent to which inflation affects stock prices but Interest rate has more impact on the stock price.

$R^2 = 0.5028$  this means the coefficient of determinacies which measures the fit of the model. Only 50% of the variations of Y is explained by the regression X. Hence the model is a moderate fit.

The *t*-statistic is -0.53352 which is lesser than the *t*-value 1.96 at 5% level of significance. Hence, we accept the  $H_0$ .

The *F*-statistic value is 29.382, the value is very large the model is significant.

### Tata Steel Company Ltd.

	Date	Exchange Rate	Inflation Rate	Interest Rate	Steel Prices	Tata Steel
Mean	733771.8	63.90579	4.613264	3.281628	116.5306	481.3207
Median	733772.0	63.90000	4.210000	3.305000	90.60000	462.4000
Maximum	735598.0	73.40000	11.15000	5.138000	282.5000	1426.800
Minimum	731948.0	53.20000	-0.390000	1.492000	41.70000	151.4000
Std. Dev.	1067.460	4.693263	2.131460	1.037426	58.55662	191.0852
Skewness	0.000228	-0.519522	0.886311	0.028581	0.902866	1.568805
Kurtosis	1.799805	3.033272	4.666681	1.824903	2.807667	7.965865
Jarque-Bera	7.262363	5.448627	29.84675	6.978272	16.62570	173.9597
Probability	0.026485	0.065591	0.000000	0.030527	0.000245	0.000000
Sum	88786382	7732.600	558.2050	397.0770	14100.20	58239.80
Sum Sq. Dev.	1.37E+08	2643.206	545.1744	129.1504	411465.4	4381628.
Observations	121	121	121	121	121	121

### Interpretation

Dependent Variable- TATA STEEL

Independent Variables- Inflation rate and interest rates

We have considered inflation rate and exchange rate as the macroeconomic variables that have an effect on the performance of Tata steel.

### Hypothesis

$H_0$ : The macroeconomic (as mentioned above) variables impact the stock performance of Tata steel

$H_1$ : The macroeconomic (as mentioned above) variables does not impact the stock performance of Tata steel.

The summary statistics for the dependent variable (Y), Tata steel stock Price and the independent variables ( $X, X_1, X_2$ ), Inflation rate, Exchange rate and steel price respectively are shown in the above table. For each series, the mean and median values are quite high. However, since the mean values of each series are greater than the median it can be interpreted that the distribution is skewed to the right-bunched up toward the left and with a 'tail' stretching toward the right.

From the table, it is evident that the standard deviation of inflation rate is minimum compared to that of exchange rate and steel price this indicates that inflation rate has had a lesser impact on the performance of Tata steel when compared to the steel price which has had the strongest impact on tata steel

The probability of each series is insignificant. Hence, we accept the null hypothesis,  $H_0$ : The macroeconomic (as mentioned above) variables impact the stock performance of Tata steel company ltd.

### Regression

#### Results of multiple regression for tata steel

<i>Summary measures</i>						
Multiple R	0.6331					
R-Square	0.4008					
Adj R-Square	0.3802					
StErr of Est	150.4389					
<i>ANOVA Table</i>						
<i>Source</i>	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p-value</i>	
Explained	4	1756331.0933	439082.7733	19.4011	0.0000	
Unexplained	116	2625297.0000	22631.8707			
<i>Regression coefficients</i>						
	<i>Coefficient</i>	<i>Std Err</i>	<i>t-value</i>	<i>p-value</i>	<i>Lower limit</i>	<i>Upper limit</i>
Constant	412.0439	191.7499	2.1489	0.0337	32.2591	791.8288
Interest Rate	-109.1049	14.1311	-7.7209	0.0000	-137.0934	-81.1164
Steel prices	0.0359	0.2469	0.1456	0.8845	-0.4531	0.5250
Inflation Rate	-38.8283	6.7833	-5.7241	0.0000	-52.2635	-25.3930
Exchange rate	9.4241	3.0761	3.0637	0.0027	3.3315	15.5167

The multiple regression analysis for Tata steel signifies the R-squared values of the dependent variable *i.e.* stock prices isn't impacted much by the independent variable *i.e.* Inflation rate, Steel rate and exchange rate. The R-squared values is 40% which clearly shows the minimal extent to which inflation affects stock prices but Interest rate has more impact on the stock price.

$R^2 = 0.4008$ , this means the coefficient of determinacies which measures the fit of the model. Only 40% of the variations of  $Y$  is explained by the regression  $X$ . Hence the model is not a good fit.

The  $t$ -statistic is  $-0.57241$  which is lesser than the  $t$ -value  $1.96$  at 5% level of significance. Hence, we accept the  $H_0$ .

The  $F$ -statistic value is  $19.4011$ , the value is very large the model is significant.

### BEML

Dependent Variable: BEML Stock

Independent Variables: Exchange rate, Inflation rate, Interest rate, Steel price

### Hypothesis

$H_0$ : The macroeconomic (as mentioned above) variables impact the stock performance of BEML.

$H_1$ : The macroeconomic (as mentioned above) variables does not impact the stock performance of BEML.

	<i>Exchangerate</i>	<i>Inflationrate</i>	<i>Interest Rate</i>	<i>Steel Prices</i>
Mean	63.90579	4.613264	3.281628	116.5306
Median	63.90000	4.210000	3.305000	90.60000
Maximum	73.40000	11.15000	5.138000	282.5000
Minimum	53.20000	-0.390000	1.492000	41.70000
Std. Dev.	4.693263	2.131460	1.037426	58.55662
Skewness	-0.519522	0.886311	0.028581	0.902866
Kurtosis	3.033272	4.666681	1.824903	2.807667
Jarque-bera	5.448627	29.84675	6.978272	16.62570
Probability	0.065591	0.000000	0.030527	0.000245
Sum	7732.600	558.2050	397.0770	14100.20
Sum sq. Dev.	2643.206	545.1744	129.1504	411465.4
Observations	121	121	121	121

The summary statistics for the dependent variable ( $Y$ ), BEML stock price and the independent variables ( $X, X_1, X_2, X_3$ ), Exchange rate, Inflation rate, Interest rate and Steel prices respectively are shown in the above table. For each series, the mean and median values are quite high. However, since the mean values of each series are greater than the median it can be interpreted that the distribution is skewed to the right-bunched up toward the left and with a 'tail' stretching toward the right.

From the table, it is evident that the standard deviation of interest rate is minimum compared to that of other macroeconomic variables. This indicates that interest rate has had a lesser impact on the performance of BEML when compared to the other variables which have had the strongest impact on BEML.

The probability of each series is insignificant. Hence, we accept the null hypothesis,  $H_0$ : The macroeconomic (as mentioned above) variables impact the stock performance of BEML.

**Results of multiple regressionf for BEML**

<i>Summary Measures</i>						
Multiple R	0.8456					
R-square	0.7150					
Adj R-square	0.7051					
Sterr of Est	209.0258					
<i>ANOVA Table</i>						
<i>Source</i>	<i>Df</i>	<i>Ss</i>	<i>Ms</i>	<i>F</i>	<i>p-value</i>	
Explained	4	12712338.9829	3178084.7457	72.7387	0.0000	
Unexplained	116	5068247.0000	43691.7845			
<i>Regression Coefficients</i>						
	<i>Coefficient</i>	<i>Std Err</i>	<i>T-value</i>	<i>P-value</i>	<i>Lower Limit</i>	<i>Upper Limit</i>
Constant	-230.9628	266.4249	-0.8669	0.3878	-758.6509	296.7253
Interest Rate	198.1336	19.6344	10.0912	0.0000	159.2453	237.0220
Steel Prices	3.3237	0.3431	9.6877	0.0000	2.6442	4.0032
Inflation Rate	-22.9786	9.4250	-2.4380	0.0163	-41.6460	-4.3111
Exchange Rate	0.7472	4.2741	0.1748	0.8615	-7.7181	9.2125

The multiple regression analysis for BEML signifies the R-squared values of the dependent variable *i.e.* stock prices has impacted by the independent variables *i.e.* Exchange rate, Inflation rate, Interest rate and Steel prices. The R-squared value is 71% clearly shows that there is more impact of the macroeconomic factors on the stock prices.

$R^2 = 0.715$ , this means the coefficient of determinacies which measures the fit of the model. 71% of the variation of  $Y$  is explained by the regression  $X$ . Hence the model is a good fit.

The  $t$ -statistic is lesser than the  $t$ -value 1.96 at 5% level of significance. Hence, we accept the  $H_0$ . The  $F$ -statistic value is 72.7387, the value is very large the model is highly significant.

The results clearly indicates that macro economic variables influence on three different companies have influence on the stock market performance and at the same time the difference in impact of multiple macro economic factors . It is very much significant that fundamentals of the both domestic economy and global economy are to be analysed and need to be related to the individual stock performances of the various companies, so that performance of stocks can better be assessed and facilitate the investors to take wise investment decisions.

## REFERENCES

- Amanulla S. and Kamaiah B. (1995), Market Integration as an Alternative test of Market Efficiency: A case of Indian stock Market. *Artha Vijana*, September N 3 PP 215-230.
- Arun Jeth Malani (1999), "Risky Business", *The Economics Times, Daily*, Vol. 39, No. 119, July 1st, p. 12.
- Avijith Banerjee, (1998), "A Glimpse of Portfolio Management", *The Management Accountant, Monthly* Vol. 39, No. 10, p. 774.
- Bhanu Pant and Dr. Bishnoy (2001), "Testing Random Walk Hypothesis for Indian Stock Market Indices, paper presented at IICM conference in 2002, pp. 1-15.
- Fama, E. F. (1970), "Efficient Capital Markets: A Review of Theory and Empirical Work." *The Journal of Finance* 383-417.
- James Riedel (1997), "Capital Market Integration in Developing Asia". Blackwell Publishers Ltd.
- Juhi Ahuja (2012), "Indian Capital Market: An Overview with Its Growth" *VSRD International Journal of Business & Management Research* Vol. 2 (7), pp. 386-399.
- L. C. Gupta (1992), "Stock Trading in India", Society for Capital Market Research and Development, Delhi.
- Madhusoodan, T. P. (1998), "Persistence in the Indian Stock Market Returns: An application of Variance Ratio Test", *Vikalpa*, Vol. 23(4), pp. 61-73.
- Nath G.C and Verma S. (2003), Study of Common Stochastic trend and Co integration in the Emerging Markets: A case study of India, Singapore and Taiwan", Research paper, NSE- India.
- Asiyah Abdul Rahman, Noor Zahirah. Mohd. Sidek and Fauziah Hanim Tafri (2009), "Macro Economic Determinants of Malaysian Stock Markets, *African Journal of Business Management*", Vol. 3(3) pp. 095-106.
- Mark J. Flannery and Aris A. Protopadakis (2002), Macro Economic Factors influence aggregate stock returns, *Oxford Journals, Social Sciences Review of Financial Studies*, Vol: 15 (3) PP: 751-782.
- Pramod Kumar Naik, Puja Padhi (2012), The impact of Macro Economic Fundamentals on Stock Prices, *Eurasian Journal of Business and Economics*, 5 (10) pp. 25-44.
- Saeed Samadi, Ozra Bayami and Mehsam Ghalandari (2012), The relationship between Macro Economic Variables and Stock Returns in the Tehran Stock Exchange, *International Journal of Academic Research in Business and Social Studies* Vol 2 (6).
- Tarika Singh, Seema Mehta and M.S. Varsha (2011), Macro Economic Factors and Stock Returns: Evidence from Taiwan, *Journal of Economics and International Finance*, Vol 2 (4) pp. 217-227.