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IMPACT OF INDUSTRIAL GROWTH ON INDIAN STOCK MARKET: WITH REFERENCE TO BSE SENSEX AND NSE CNX NIFTY

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Abstract:

The index of Industrial is an indicator which details out the growth rate of various sector in an economy such as mineral mining, electricity and manufacturing etc. It measures also the short-term changes in the volume of production of a basket of industrial production during the given period of time. In this study secondary data from 2012 to 2020 has been used to evaluate the result. The main sources are Ministry of Statistics and Program Implementation (MOSPI), BSE and NSE and regression analysis through SPSS has been used to evaluate the result. The finding of the study revealed that there has been a strongest degree of positive correlation and direct linear relationships between IIP & BSE SENSEX and NSE Nifty. The results of the regression residual analysis revealed that IIP has been significant predictors to measure the bull and market trends in Index of Industrial production in Indian Markets. Since the coefficients of determination is not equal to zero which shows that IIP is one of the predictive variables but there may be some other factors also which drives through the markets. So, It can be concluded that behavior of some other market factors like foreign direct investors will influence the performance of the Industrial production in India.

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Key Words – *Indian Stock Market, BSE - Sensex, NSE-Nifty, IIP , Regression*

1. Introduction

The **Index of Industrial Production (IIP)** is the number denoting the condition of industrial production during a certain period. In other words, it is an index for India which details out the growth of various sectors. It is a combined industrial or sector indicator which measures Industrial growth of Indian economy. This data is published and complied by Central Statistics Organization in India under the "Ministry of Statistics and Program Implementation (MOSPI). This data is published monthly (6 weeks after the reference month ends).

Classification of Index of Industrial Production (IIP) for Calculation Methodology

Based on Sectors

- Manufacturing (79.63%).
- Mining & Quarrying (10.47%)
- Electricity (10.17%)

Based on Use

- Primary Goods (Mining, Electricity, Fuels and Fertilizers etc).
- Capital Goods (Machinery Items etc)
- Intermediate Goods (Yarns, Chemicals, Semi-Furnished Steel items etc)
- Infrastructure /Construction Goods (Paints, Cement , Cables, Bricks and Tiles, Rail Materials etc)
- Consumer Durables (Garments, Telephone ,Passenger,Vehicles etc)
- Consumer Durables (Food Items, Medicines , Toiletries etc)

The base year in Index of Industrial Production (IIP) is always a given value of 100. The base year of Index of Industrial Production (IIP) has been revised to 2011-12 (in the month of May) because IIP data should be at par with GDP data (GDP base year has been revised to 2011-2012. Suppose the value of Index of Industrial Production (IIP) in Jan 2021 was 133 , this means that there has been a 33% increase in industrial activities as compared to the industrial activities in 2011-2012 (in the month of May). The limitations of IIP are base year, data are

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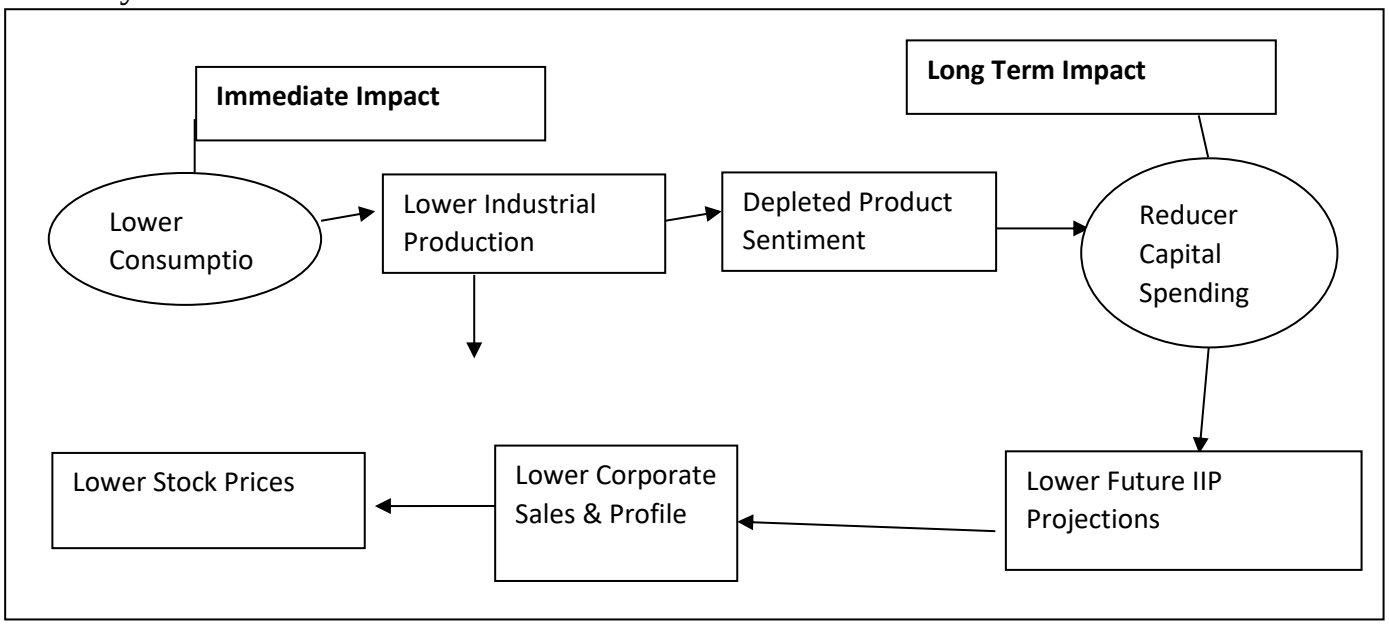
not up to mark, unorganized sector is not taking into account and service sector is also not taking into account.

As we have seen or heard many times that SENSEX (Indian stock market index of Bombay Stock Exchange) and NIFTY(Indian stock market index of National Stock Exchange) tumbles due to weak **Index of Industrial Production (IIP)** data in news paper and news channels . On other hand, we heard or seen SENSEX and NIFTY rallies due to good **Index of Industrial Production (IIP)** growth in news paper and news channels. IIP data is most important macro economic indicator including GDP, Inflation, Balance of Payment (BoP) etc which affects directly the Indian Stock Market because it gives us a clear picture of the supply side of economy.



Source-https://www.moneyworks4me.com/investmentshastra/iip-data-impact-on-stock-markets/

Source -https://www.jagranjosh.com/general-knowledge/detailed-information-about-index-of-industrial-production-1519885592-1

Meaning of IIP:

The index of Industrial Production is an index which shows the growth rates of different group of industry in a given interval of time. The IIP is computed and published by the central statistical organization (CSO) on the monthly basis in any country. It is a composite indicator that measures the growth rate of industry groups which is classified under broad sectors which

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include mining, manufacturing and electricity and used-based sector, basic goods, capital goods and intermediate goods.

2. Review of Literature :

The following are some of relevant literature which has been reviewed.

Naveen RS and N. Shive kumar(2020) examined the impact of " Macro-economic on stock returns on stock return. This study covers the data for 10 years and shows that crude oil prices and forex rate have pervasive significant impact on sectoral indices. Beside this, there are some other macro-economic factors which affect specific sectoral indices. Ranjan Dasgupta(2020) has attempted to explore the long run and short relationship between BSE SENSEX and four key macroeconomic variables of Indian economy by using descriptive statistics, ADF tests, Jhansen and Juselius's coitegration test and Granger causality test. The result shows that all the variable has contained a unit root and integrated of order one. The researcher concludes that Indian stock market had no information efficiency. Ms. Aanchal(2017) has investigated the impact of macroeconomic variables on Indian stock markets to test whether or not the growth in macroeconomic variables lead to growth in stock market in India. The study uses the data for eleven years i.e. from 2004-2015. The empirical results shows that all of the variables are having the unit roots, i.e. that there is no cause and effect relationship between Indian stock markets and five variable such as GDP, Inflation, exports, Imports and investments market indices of CNXnifty-50. Pal, Karam. & Mittal, Ruhee(2011) examines the impact of macroeconomic indicators on Indian capital markets. The purpose of this paper was to find the relationship between the Indian capital markets and macroeconomic variables such as interest rates, inflation rate, exchange rates and gross domestic savings of Indian economy. The finding of the study establishes that there is co-integration between macroeconomic variable and Indian stock indices which is integrator of long run relationship. The ECM shows that the rate of inflation has significant influence on both the BSE sensex and S&P CNX Nifty interest rates on the other hand, have a significant impact on S&P CNX Nifty only. The purpose of this study is to examine the weak form of efficiency of Indian capital market during the period of global financial crises in the form of random walk. The results show that the Indian stock market was efficient in its weak form during the period of recession. It means that investors should not be able consistently earn abnormal gains by analyzing the historical prices. This paper entitled "Impact of Performance of Bombay Stock Exchange (BSE) and National

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Stock Exchange (NSE) on Economic growth: An Empirical Analysis" examines the relationship between stock markets and economic growth in Indian context. In this study , an attempt was made to analyze the relationship between the performance of Bombay stock exchange and national stock exchange on other hand (Nikita, B., Balasubramanian, P., Lakshmi Yermal 2011). The study finds that stock markets indicators explain the variation in economic growth. This paper entitled "Impact of Key Macroeconomic Variables of India and USA on Movement of the Indian Stock Return in case of S&P CNX Nifty" referred that stock market in country is barometer of Indian economy. This study investigates the relationship between the Indian stock returns and macroeconomic variable such as interest rates of India, interest rates of USA, inflation rate of India, GDP growth rate of India and Inflation rate of USA. The study also shows that the GDP growth rate of India and USA are the significant indicator of S&P CNX Nifty return. Gjrde and Saettem (1999) examined the causal relation between stock returns and macroeconomic variables in Norway. Results showed that a positive link exists between oil price, real activity and stock returns. Mokerjee and Qiao (1997) investigated that stock prices co-integrated with both measures of the money supply (M1 and M2) and aggregate foreign exchange reserves. Ibrahim and Aziz (2003) investigated the relationship between stock prices and IPI, money supply, CPI and exchange rate in Malaysia. Stock prices were found to share a positive long-run relationship with IPI and CPI. A study by Flannery and Protopapadakis (2002) concluded that two popular measures of aggregate economic activity (real gross national product and industrial production) were not related to stock returns. Gjrde and Saettem (1999) examined the causal relation between stock returns and macroeconomic variables in Norway. Results showed that a positive link exists between oil price, real activity and stock returns. Mokerjee and Qiao (1997) investigated that stock prices co-integrated with both measures of the money supply (M1 and M2) and aggregate foreign exchange reserves. Ibrahim and Aziz (2003) investigated the relationship between stock prices and IPI, money supply, CPI and exchange rate in Malaysia. Stock prices were found to share a positive long-run relationship with IPI and CPI. Cheng and Ng (1998) and Sharma (2002) investigated the long-run relationship between the fundamental macroeconomic variables and stock prices and the results suggest that in the long run, stock prices will be positively related to growth and output. Ben et. Al. (2007) and Charles (2008) found that saving rate, banking sector development, financial intermediary, stock market

liquidity and the stabilization variable are the important determinants of stock market development. Uddin and Alam (2007, 2009) found that Interest Rate has a significant negative relationship with Share Price. Coleman and Tettey (2008) studied the impact of macroeconomic indicators on the Ghana Stock Exchange (GSE) and concluded that lending rates from deposit money banks and inflation have an adverse impact on stock market performance contradict to the findings of Adam and Tweneboah (2008). Rahman et al. (2009) showed that monetary policy variables have considerable long-term effects on the Malaysian stock exchange. Pal, Karam and Mittal (2011) found that changes in Indian stock markets are affected by change in few selected macroeconomic variables. Ray (2012) draws that there is unidirectional causality exist between stock price and inflation, FDI, GDP, and exchange rate. John Andreas (2) studied the impact of FDI inflow on host country economic growth. The paper says that FDI should have a positive impact on economic growth as a result of technology spillovers and capital inflows. He took almost 90 countries and find out that FDI inflow enhances the economic growth in developing economies but not in developed economies. Jayachandran and Sielan (3) find out the relationship between trade, FDI and economic growth of India over the period 1970-2007. The tests showed that there is a casual relationship between the examined variables. The direction of casual relationship is from FDI to growth rate and there is no causality relationship from growth rated to FDI. Gevit(2007) in his paper "The Relationship Between Stock Market and the Economic Growth: Evidence from International Markets" examined the causal relationship between stock market prices and economic growth using the Granger Causality test. Findings from the study showed a unidirectional causal relationship between stock prices and GDP running from Stock prices to GDP for all the countries under study except Germany.

3. Objective of the Study:

1. To study the trend of Industrial Growth (IIP) and Indian Stock Market Indexes (BSE - SNSEX and CNX –NIFTY).
2. To analyze the impact of Index of Industrial production(IIP) on Indian Stock Market Indexes (BSE - SNSEX and CNX –NIFTY)

4.Hypothesis of the Study:

$H_{01:}$ The impact of IIP inflows on the movements on the BSE SENSEX is statistically insignificant.

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$H_{01:}$ The impact of IIP inflows on the movements on the BSE SENSEX is statistically significant.

$H_{02:}$ The impact of IIP inflows on the movements of NSE CNX Nifty is statistically insignificant.

$H_{02:}$ The impact of IIP inflows on the movements of NSE CNX Nifty is statistically significant.

5. **Research Methodology:**

The following research methodology is followed in the present study-

5.1 **Research design:** The present study is empirical in nature and descriptive research approach is adopted.

5.2. **Period of Study:** The present study covers the period of 8 year. i.e. from 2012 to 2020.

5.3 Types of data: The present study based on secondary data relating to IIP, NSE National stock exchange) and BSE (Bombay stock exchange) SENSEX. The data has been collected from various sources like Bulletins of RBI and facts sheets of the Departments of Industrial policy & Promotion and Ministry of commerce and Industry, Government of India. The BSE SENSEX and NSE Nifty data has been taken from website of www.bseindia,com and www.nseindia.com respectively and then the daily closing index value is averaged to get the index value for each year. The evidences have also been derived from the sources like journals, research paper and articles etc.

5.4. The tools and technique Applied:

The simple linear regression (step-wise-methods), Karl Pearson's coefficients of correlation, Analysis of variance and descriptive statistics(mean and standard deviation) trends percentage are tools applied to evaluate the results using SPSS.

5.5 Limitation of the study:

The following are the majour limitation of the study:-

- The study has been taken only one macroeconomic indicator but there may be some other macroeconomic indicators (GDP,Inflation, FDI, FII, BoP, etc) also which impact on Indian Stock Market .
- The study is limited to time period 8 year only.
- The study mainly involves published secondary data which was assumed to be reliable.

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Table1

YEAR	Index of Industrial Production (IIP)	BSE SENSEX	NSE NIFTY	Trend %
2012-13	622.3	21,170.68	6304	**100**
2013-14	641.5	27,499.42	8282.7	**103.0853286**
2014-15	665.2	26,117.54	7946.35	**106.8937811**
2015-16	685.4	34,056.83	8185.8	**110.139804**
2016-17	715.4	34,056.83	10530.7	**114.9606299**
2017-18	748	36,068.33	10862.55	**120.1992608**
2018-19	778.3	41253.74	12168.45	**125.068295**
2019-20	758.9	45608.51	13392.95	**121.9508276**
SUM	5615	2,65,831.88	77673.5	
AVARAGE	701.875	33,228.99	9709.1875	
STANDARD DEVIATION	51.2511742	57.31725619	57.31725619	

Result Discussion: The beginning and trend percentage of IIP has been 100% level and increased to 2018-19 and then decreased to 121.95 respectively.

Impact of IIP on Indian stock Market: To study the impact of IIP on BSE SENSEX and NSE-CNX nifty during the period of study, IIP is taken as independent variable and BSE SENSEX and NSE- CNX nifty is taken dependent variable. For the purpose of analysis simple linear regression analysis (step-wise- methods) has been applied using SPSS-20.

Modeling Methods: Y=A+ BX

Here A= Intercept B=Slope Y= Dependent Variable and X= Independent Variable

Model (a): BSE SENSEX= A+ B IIP

Model(b): NSE NIFTY= A+B IIP

The result is depicted in the tables below:

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Table2: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.940[a]	.884	.864	888.66066	2.038
2	.931[a]	.867	.844	3184.81368	2.174

a. Predictors: (Constant), IIP

b. Dependent Variable: NIFTY, SENSEX

Table2 indicates the model summary revealed the strength of relationship model and dependent variable. This table provides the Rand R^2 values. The R value represents the simple correlation which is 0.940 and 0.931. This indicates the very strongest degree of correlation between dependent variable NSE Nifty, BSE SENSEX and index of industrial production (IIP). Here R^2 value indicates how much of the variation in the independent variable. In this case 88.4% as well 86.7% indicates the variation in dependent variable NSE, BSE SENSEX and IIP. It shows the positive correlation between NSE and BSE SENSEX with independent variable IIP. Durbin-Watson statics informs the assumption of better correlation. Closure the value is to 2, better is the correlation. The Durbin- Watson coefficient indicates2.038 and 2.174 indicates that there exit no autocorrelation as it is near to 2.

Table3 ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1.	Regression	35943373.426	1	35943373.426	45.514	.001[b]
	Residual	4738306.643	6	789717.774		
	Total	40681680.069	7			
2.	Regression	395026922.124	1	395026922.124	38.946	.001[b]
	Residual	60858229.179	6	10143038.179		
	Total	455885151.303	7			

a. Dependent Variable: NIFTY, SENSEX

b. Predictors: (Constant), IIP

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The above ANOVA table explained the how well the regression equation fits the data. i.e. predicts the dependent variable. This table shows that the regression model that predicts the dependent variable significantly well. Here Significant value p< 0.005, and indicates that regression model statistically significant to predicts the outcome variable data is good fit for the data. This table depicts test for the acceptability of the model from statistical point of view. The regression shows variance in information due to model. The residual row displays information about the variation that has not been accounted by the model i.e. unexplained variance. The regression is much less than residual sums of squares for both the dependent variables, which indicates that variation in SENSEX and NIFTY is explained by the model. The F statistics found significant since the p value are less than 0.05. So null hypothesis, H_{01} and $H_{0,}$ are rejected and alternative hypothesis is H_{a1} and Ha2 accepted. Thus, there exists linear relationship between the variable in the model. Hence it has been concluded that flow of IIP has significant impact on BSE SENSEX and NSE CNX nifty movements.

Table4: Coefficients(NSE_Nifty, BSE_SENSEX)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-18039.010	4125.008		-4.373	
	IIP	39.534	5.860	.940	6.746	.001
2	(Constant)	-58760.610	14783.349	**.931**	-4.373	
	IIP	131.063	21.001		6.241	0.001

a. Dependent Variable: NIFTY, SENSEX

The coefficients table provides us necessary information to predict how dependent variable NSE NIFTY and SENSEX is influenced by index of Industrial production (IIP), as well as determine whether IIP contributes statistically significantly to the model. Furthermore, the value of **"B"** in the given table shows the regression equation as-

NIFTY= -18039.01+39.534(Index of industrial Production)

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SENSEX= -58790.610+ 131.063(Index of industrial Production)

The un-standardized coefficients B= Beta value in table 4 gives the slope value of the regression model and how much the dependent variable(BSE SENSEX and NSE nifty) depends upon the independent variable IIP. In table 4 the beta-value for IIP 39.534 and 131.036 respectively. It means that if IIP increases by 1 unit, the Nifty will increase 39.534. Similarly if IIP will increase 1 unit SENSEX will increase to 131.063 respectively.

6: Finding of the study:

- The flows of IIP have shown increasing trends from 2012 to 2019 and then it decreases in 2020.
- There has been found direct linear relationships between IIP & BSE SENSEX and IIP & NSE Nifty. It means that if IIP increases then BSE and NSE CNX Nifty will increase in the same direction.
- There has been found strong positive correlation between dependent variable NSE Nifty, BSE SENSEX and independent variable IIP.
- There has been found significant impact of IIP inflows in India on index of Industrial production in India.

7. Conclusions:

The finding of the study revealed that there has been a strongest degree of positive correlation and direct linear relationships between IIP & BSE SENSEX and NSE Nifty. The results of the regression residual analysis revealed that IIP has been significant predictors to measure the bull and market trends in Index of Industrial production in Indian Markets. Since the coefficients of determination is not equal to zero which shows that IIP is one of the predictive variables but there may be some other factors also which drives through the markets. So, It can be concluded that behavior of some other market factors like foreign direct investors will influence the performance of the Industrial production in India. Keeping in view of the study, it has been suggested that the government of India should make further effort to attract more and IIP for the smooth and rapid development of the Industrial production along with regulatory bodies in the country.

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