

# A Research on Profitability and Dividend using Arima Model with Reference to Steel Sector

P.Venkatesh, A.Krishna Sudheer, D.Sathya Prasad Kumar, Senthil Murugan.P

**Abstract**— In India Indian, Iron and Steel Industry plays significantly for the overall growth and development of the country. Based on the budget of Ministry of Steel declares that steel industry contributes 2% of the Indias GDP, and its weight is 6.2% in the Index of Industrial Production(IPP). The sector able to grow by itself globally. In India steel production in one Million Tones in 1947, now its become the world's 2<sup>nd</sup> largest producer next to China. India's GDP declines 5% in 2019 on account of rising Inflation, GST and strict monetary control. This medium made the domestic demand weaker which grew 3.3% in 2019, Despite the rise in last Quater.

**Key Words:** Steel, Production, Inflation, Demand....etc.,

## I. INTRODUCTION OF THE STUDY

In the present context, the Steel sector is to be considered as the dominating industry in the tremendous growth of the economy. Based on the forecasting of the bureau of steel, Steel sector at the moment contributes to 2% in India's National Income and its impact in the official directory of Industrial Production (IPP) is 6.2%. The steel sector creates an increasing impact globally. At the time of Independence steel sector produces one million tones, now manufacturing in the highest capacity and developed into the world's 4<sup>th</sup> most prominent manufacturer of rough steel behind next to China, Japan, and the US. Crude steel manufacturing grew by 5.6% to 82.2 million tonnes and steel demand enlarged by 1.08%. The country's GDP growth has melt downward to 6% in 2019 on the account of rise in the price, GDP and Tough monetary policy. From the Figures indicated to pathetic home steel requirement, that increased by 3.03% in 2016, in respect of growth in productivity in the last segment of the year.

With the help of infrastructure construction and urbanization rising as serious development indicators, the country realizing the growth in import of steel in upcoming years. These will consequence in India converting into the largest exporter of crude steel in Year 2015-16 after 6 years. The overall quantity of steel exports by country for the Financial Year stands at 6.59 million tonnes, and it did imports of 6.44 million tonnes as per the data published by the Joint Plant Committee (JPC). India's GDP is forecasted to grow by 5.01%, and steel demand is anticipated to rise by 3.03% in 2019. Nevertheless, in the last 3 years,

enlargement in this sector has been just 5.01%. With the development of economic activities, the National Steel Policy 2012 is proposed to gives speedy development and enlargement of the country steel industry by tremendous fast capacity accumulation. In the present context, our country dedicated to sinking GHG Emission Extractions of its GDP to 20-25% by 2010 over the 2006 level, from adaptation of positive strategies.

## OBJECTIVES OF THE ANALYSIS

1. To analyze the various impact of profit indicators on equity performance of selected steel sector in India.
2. Estimate the growth rate and forecast the impact of the profit and liquid position of the selected steel sector.
3. Recognize the variance between the performance of profitability and liquidity of steel companies in India.
4. To identify the dividend progress and growth percentile of the steel sector in India.
5. To find out the various financial factors that vary for a dividend payment of steel companies.

## III. REVIEW OF LITERATURE

**Krishnamoorthy (2012)**, encompass establish that the sector belongs to the steel and iron ore industry maintain a significant level of profit, the profit growth level determines by variation in gross profit, net profit, operating profit, return on investment and dividend payout ratio. The outcome that there are no similarities among net profit and operating profit between the select companies, and there is no difference in return on Investment of chosen companies in India.

**Venkatesan and Nagarajan (2012)**, investigated that profitability merely depends upon the improved utilization of resources, discontinue expenses and quality of management purpose in the products, customer services and in the workforce, goodwill and market share. It is meaningful to enlarge the production capacity, and use of higher technology to reduce the cost of production and wage progress profitability, not only the investment but also investors' return. These are helping to get better the financing, but also investors return point of view. These are helping to understand better the profitability of selected steel companies in India in prediction.

**Krishnamoorthi M. (2016)**, studied how the dividend payment determined by core steel companies in India, he confidential steel companies as Large-cap and Midcap base on market capitalization, he analyzes concerning the effect

**Revised Manuscript Received on 14, October 2019.**

**Dr. P.Venkatesh**, Assistant Professor, Sri Sairam Engineering College, Chennai, Tamilnadu, India.

**Dr. A.Krishna Sudheer**, Professor & Head, G.Pullaiah College of Engineering & Tech., Kurnool, AndhraPradesh, India.

**Dr. D.Sathya Prasad Kumar**, Assistant Professor, Voorhees College, Vellore, Tamilnadu, India.

**Mr. Senthil Murugan.P**, Assistant Professor, Christ University, Bangalore, Karnataka, India.

# A RESEARCH ON PROFITABILITY AND DIVIDEND USING ARIMA MODEL WITH REFERENCE TO STEEL SECTOR

of liquidity, turnover, and profitability on dividend payment of steel sector and he finished that a lot of factors that influence the factor of dividend namely Return on Assets, Return on net worth, Debtors Turnover Ratio, and Gross Profit Margin and Net profit margin among the large-cap and midcap companies.

**Krishnamoorthy M. and Venkatesh.P (2017)**, assess financial liquidity and profitability location of Select Pharmaceutical Companies in India, and describe the Financial cash is mutual with profitability are the core participant of venture activities which, to function efficiently and effectively, the company should give customary significant. At last, they conclude that the different monetary variables such as liquidity and profitability which persuade in companies' performance throughout the study and there were a few ups and downs in the profitability, but it is not artificial the operations of the company to an immense coverage.

## IV. METHODOLOGY OF RESEARCH

### Research Design

The present analysis is analytical in nature. In this study, stratified random sampling is used. The researcher has taken 10 years to study the financial performance of the steel sector from 2006-2007 to 2015-2016.

### Sampling Design For Selection Of Companies

To examine the profit, dividend performance, and Earning per share of steel companies, the information of 72 companies are evaluated. From the basis of the analysis the steel companies which fulfilled the below criteria which have selected for further study:

- The selected companies are listed and registered in both NSE and BSE.
- The above companies have availability of data for at least 10 years.
- The selected company must attain profit continuously for 3 years through the period of study.
- The companies must be paid a dividend for the last 3 years throughout the study period.
- The below steel companies have divided as large-cap and mid & small-cap companies on the basis of market capitalization.

The selected companies stocks must have with a market capitalization of Rs.10, 000 crores or more are Large-Cap Companies and which are listed below:

**Large-cap companies:** Tata Steel Limited Steel Authority of India Limited (SAIL), JSW Steel Limited.

The selected companies stock with a market capitalization between Rs.1crores to Rs.10 crore is Mid & Small-Cap companies and which are selected below.

**Mid Cap & Small Cap Companies:** Jindal Steel and Power Limited (JSPL), Bhushan Steel Limited, Kalyani Steel Limited, Hisar Metal Industries Limited.

## V. DATA ANALYSIS AND INTERPRETATIONS & RESULTS

### Arima Modeling For Tata Steel

Final parameters:

Number of residuals	10
Standard error	62.437153
Log-likelihood	-54.403183
AIC	116.80637
SBC	118.01671

**Table 4.42. Variables in the ARIMA Model for Tata Steel**

	B	SEB	T-RATIO	APPRO X. PROB
AR1	-.20011	.45025	-.444445 6	.672302 52
MA1	.97719	7.74245	.126211 4	.903687 71
YEAR	-31.34599	3.79745	-.8.25449 45	.000170 94
CONSTANT	63529.820 43	7638.563 02	8.31698 58	.000163 90

### Inference

The above table 4.42 shows the average share price of Tata Steel for the past ten years. The ARIMA model was used to find out significant forecasting of Average share price of Tata steel, the p-value of the constant, first and second lag is very less. This shows that the fit is good, and the log-likelihood is negative.

The model equation is fitted as,

$$\text{Average share, Price (t)} = 63529.82043 + -.20011 * X(t-1) + 62.437153$$

### Arima Modeling For SAIL

Final parameters:

Number of residuals	10
Standard error	52.763382
Log-likelihood	-51.862965
AIC	111.72593
SBC	112.93627

**Table 4.43. Variables in the ARIMA Model for SAIL**

	B	SEB	T-RATIO	APPRO X. PROB
AR1	-.62874	1.388	-.453026 4	.6664508 8
MA1	-.47154	1.571	-.300217 1	.7741414 5
YEAR	-11.06840	5.354	-.2.06714 51	.0842195 0
CONSTANT	22381.885 18	10770.4 60	2.07808 08	.0829547 5

*Inference*

The above table 4.43 shows the average share price of SAIL for the past ten years. The ARIMA model was used to find out significant forecasting of the Average share price of SAIL, the p-value of the constant, first and second lag is very less. This indicates that the fit is excellent, and the log-likelihood is negative.

The model equation is fitted as,

$$\text{Average share, Price (t)} = 22381.88518 + -.62874 * X(t-1) + 52.763382$$

*Arima modeling for jsw steel*

*Final parameters:*

Number of residuals	10
Standard error	183.05672
Log-likelihood	-64.732788
AIC	137.46558
SBC	138.67592

**Table 4.44. Variables in the ARIMA Model for JSW Steel**

	B	SEB	T-RATIO	APPRO X. PROB
AR1	.34681	.88595	.3914516	.70898745
MA1	.95854	5.38453	.1780168	.86456796
YEAR	44.32480	15.01491	2.9520518	.02554487
CONSTANT	-88350.57449	30202.50803	-2.9252728	.02644920

*Inference*

The above table 4.44 shows the average share price of JSW Steel for the past ten years. The ARIMA model was used to find out significant forecasting of Average share price of JSW Steel, the p-value of the constant, first and second lag is very less. This indicates that the fit is excellent, and the log-likelihood is negative.

The model equation is fitted as,

$$\text{Average share, Price (t)} = -88350.57449 + .34681 * X(t-1) + 183.05672$$

*Arima modeling for jindal steel and power ltd*

*Final parameters:*

Number of residuals	10
Standard error	1192.2512
Log-likelihood	-83.582405
AIC	175.16481
SBC	176.37515

**Table 4.45. Variables in the ARIMA Model for Jindal Steel and Power Ltd.**

	B	SEB	T-RATIO	APPRO X. PROB
AR1	.29316	.60025	.4883945	.64260575
MA1	.98315	8.21820	.1196309	.90868067
YEAR	-	95.60913	-	.004574

	420.55786		4.3987205	69
CONSTANT	847159.45777	192317.82721	4.4049970	.00454381

*Inference*

The above table 4.45 shows the average share price of Jindal steel and power ltd. For the past ten years. The ARIMA model was used to find out significant forecasting of the Average share price of Jindal steel and power ltd, the p-value of the constant, first and second lag is very less. This indicates that the fit is excellent, and the log-likelihood is negative.

The model equation is fitted as,

$$\text{Average share, Price (t)} = 847159.45777 + .29316 * X(t-1) + 1192.2512$$

*Arima modeling for bhushan steel*

*Final parameters:*

Number of residuals	10
Standard error	356.68263
Log-likelihood	-71.076485
AIC	150.15297
SBC	151.36331

**Table 4.46. Variables in the ARIMA Model for Bhushan Steel**

	B	SEB	T-RATIO	APPRO X. PROB
AR1	-.90473	1.525	-.5933067	.57464372
MA1	-.99820	30.499	-.0327293	.97495207
YEAR	-61.83953	40.887	-1.5124666	.18117496
CONSTANT	124941.96191	82243.369	1.5191737	.17952439

*Inference*

The above table 4.46 shows the average share price of Bhushan Steel for the past ten years. The ARIMA model was used to find out significant forecasting of Average share price of Bhushan Steel, the p-value of the constant, first and second lag is very less. This indicates that the fit is excellent, and the log-likelihood is negative.

The model equation is fitted as,

$$\text{Average share, Price (t)} = 124941.96191 + -.90473 * X(t-1) + 356.68263$$



# A RESEARCH ON PROFITABILITY AND DIVIDEND USING ARIMA MODEL WITH REFERENCE TO STEEL SECTOR

*Arima modeling for kalyani steel*

*Final parameters:*

Number of residuals	10
Standard error	98.234435
Log-likelihood	-58.197023
AIC	124.39405
SBC	125.60439

**Table 4.47. Variables in the ARIMA Model for KALYANI STEEL**

	B	SEB	T-RATIO	APPRO X. PROB
AR1	-.30292	.69250	-.4374257	.67710849
MA1	-.76140	.60518	-1.2581486	.25508220
YEAR	-25.27985	13.75892	-1.8373424	.11580388
CONSTANT	51006.14836	27676.10404	1.8429671	.11490470

*Inference*

The above table 4.47 shows the average share price of Kalyani Steel for the past ten years. The ARIMA model was used to find out significant forecasting of Average share price of Kalyani Steel, the p-value of the constant, first and second lag is very less. This indicates that the fit is excellent, and the log-likelihood is negative.

The model equation is fitted as,

$$\text{Average share, Price (t)} = 51006.14836 + -.30292 * X(t-1) + 98.234435$$

*Arima modeling for hisar metal*

*Final parameters:*

Number of residuals	10
Standard error	3.9716506
Log-likelihood	-26.227524
AIC	60.455048
SBC	61.665388

**Table 4.48. Variables in the ARIMA Model for HISAR METAL**

	B	SEB	T-RATIO	APPRO X. PROB
AR1	-.75335	.77270	-.9749594	.36723315
MA1	-.99080	7.05453	-.1404490	.89290167
YEAR	-.53346	.48611	-1.0974009	.31454353
CONSTANT	1098.53963	977.81789	1.1234604	.30417302

*Inference*

The above table 4.48 shows the average share price of Hisar Metal for the past ten years. The ARIMA model was used to find out significant forecasting of Average share price of Hisar Metal, the p-value of the constant, first and second lag is very less. This indicates that the fit is good, and the log-likelihood is negative.

The model equation is fitted as,

$$\text{Average share, Price (t)} = 1098.53963 + -.75335 * X(t-1) + 3.97165065.3$$

## VI. CONCLUSION

During the current situation, companies have to meet up the international rivalry and generate profit. It is the most important function of organization to assess the company's financial strength with suitable approach assists in a variety of financial key decision makings, like as Investment assessment and finance decision, Dividend assessment, and profit decision. The assessment creates a essential function in comparing the financial adoptability of steel companies in India. In India steel industries play an essential role in the development of the country's economic system. The usage of steel products is increasing in the industries of automobiles, infrastructure, white goods, machinery, and tools. This sector is the relied of the organization to save excellent financial position by proper operation and handling of assets or funds, which tends to increasing the profit of the organisation. The current study concludes that the profit of choosen steel sectors reasonable, leaving few belongs to mid-cap & small-cap companies, these companies make the attempt to improve their financial position to compete domestic and international competition. The companies that belong to same sector to be different in various aspects.

## REFERENCE:

1. Venkatesh.P (2017) An Evaluation of Liquidity and Profitability of Selected Pharmaceutical Companies in India, Journal of Advanced Research in Dynamical & Control Systems ISSN: 1943-023X, 07-Special issue on Management Studies.
2. Venkatesh.P (2017) "A Descriptive Analysis of Short Term Solvency and Profitability of Selected Pharmaceutical Companies in India" Journal of Advance Research in Dynamical & Control Systems, ISSN: 1943-023X, 07-Special issue on Management Studies.
3. Venkatesh.P (2018) "A Study on Impact of Profit, Earning Per Share And Dividend On Equity Performance On Select Steel Sector Using Discriminant Function Analysis" International Journal of Mechanical and Production Engineering Research and Development (IJMPERD),, ISSN (P): 2249-6890; ISSN (E): 2249-8001 Vol. 8, Special Issue 3, PP: 998-1007
4. Venkatesh.P (2018) "A Study On Customer Perception Towards Mugi Ultra Liquid Detergent" International Journal of Mechanical and Production Engineering Research and Development (IJMPERD), ISSN (P): 2249-6890; ISSN (E): 2249-8001 Vol. 8, Special Issue 3, PP: 978-984.

5. Venkatesh.P (2018) “Saving Habit And Investment Preference Of Government School Teachers In Vellore District” International Journal of Mechanical and Production Engineering Research and Development (IJMPERD), ISSN (P): 2249-6890; ISSN (E): 2249-8001 Vol. 8, Special Issue 3, PP: 922-926.