

Infrastructure Sector Stock Returns – An Analysis

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Abstract: This study aims to compare the stocks of top market capitalization companies from the infrastructure sector in the form of risk, returns and their volatility. This is a basic concept not only in financial analysis but also helps the investors to predict the risk and return of stocks prior to investment. This analysis uses tools such as standard deviation and average return tools to quantify the volatility of infrastructure stocks.

Keywords: Infrastructure sector, Risk, Return, Public Private Partnerships, Stocks, Standard deviation, Beta, Variance.

1. Introduction

Infrastructure is the framework of facilities and organizational structure through which the needs for the economy to function is provided. The growth of other sectors is affected by the absence of Infrastructure. By providing amenities and through increased productivity, the Infrastructure sector contributes a major part of it to the economic development. The infrastructure sector mainly features of services such as communication, transportation (roads, railways, airways and water), irrigation facilities, transmission and distribution, educational, medical and other primary services. Due to the slower growth in the production of coal, steel and electricity, the annual growth has been dragged down. This drag down also includes the decline in manufacturing, mining and power generation sector in June 2019.

The overall growth and the growth of manufacturing sectors also get affected because of the gap between electricity production and demand. The other concern is the transportation, where road transport is inadequate in terms of quality, quantity and connectivity. The private sectors should supplement the public investments for boosting the infrastructure sector in India.

2. Review of Literature

Purusottam Nayak (2006) has given an appraisal on “Infrastructure Development in India”. He says that, the infrastructure privatization is successful. The appropriate allocation of the risk is the key problem in commercialization of infrastructure projects. He shows that the annual investment in infrastructure sector was to increase from about Rs.870 billion to Rs.1782 billion, but it is necessary to reduce the reality of risk and perception. He insists that privatization of

infrastructure investment would bring economic growth but the managerial and commercial risk should be held by the private sector sponsor. He expected that the net foreign capital flow into infrastructure.

Nandini Choudhary (2018) has explored about delivering “Effective and Inclusive Infrastructure in India”. She says that infrastructure is given lesser importance at early stages of economic growth. This study also shows the impact of: Foreign Direct Investment (FDI), Internet of Things (IOT), Public Private Partnership and Smart cities for inclusive infrastructure. The capital formation and the technological change show the relation between the infrastructure sector and the economic development.

M. A. Ravindhar Raja (2015) has made a study on “Risk analysis of infrastructure projects under public private partnerships”. He has developed a fuzzy logic model and validated it to quantify the risks involved in infrastructure projects. The study shows that the risk in public private partnership in the infrastructure sector is low and this will be successful if carried out in Tamilnadu.

L. K. Singh (2017) has made an analytical study on “Infrastructure sectors in India”. His study was about the market size of infrastructure sector in India, recent development in infrastructure industry and the initiatives of government in promoting the sector. His study says that the construction industry in India is reviving after 4 years and has the potential to reach US\$5 billion by 2020, the power sector where there is a raise of 5.39 lakh crore out of 7 lakh crore provided by the government of India.

3. Research Methodology

Source of data: The study is based on the secondary data collected from BSE. The leading stocks in the infrastructure sector is collected and also sources such as magazines, newspaper and internet (www.moneycontrol.com) are used for the collection of data's. The data will be available in news papers, reports by management, websites, books, journals, etc.

The monthly market prices are considered for the analysis in order to find out the short term fluctuations so that accuracy can be improved which helps in finding out accurate results. Long time data collection is difficult and hence monthly prices are considered.

Sample Size: The total number of stocks taken for the sample size is 10 which requires a detailed study and helps in predicting the results easily.

Data collection method: The stocks from the infrastructure sector are chosen based on the top market capitalization in BSE. Simple random samples are taken for the collection of secondary data.

Method of sampling: Systematic sampling is used where the stocks are taken in an orderly basis mentioned in the top market capitalization of stocks in the infrastructure sector. The following infrastructure companies are taken for the study.

Larsen & Toubro	Adani Ports
Thermax	Siemens
ABB India	IL and FS Transportation Networks
Punj Lloyd	Max. heights Infrastructure
Reliance Industrial Infrastructure	IVRCL

Period of study: The period of study covers from August 2018 to August 2019.

4. calculation

Return: The return is calculated based on the beginning and ending portfolio values. In this study the returns for each day is calculated for a period of 1 year and summed to get monthly returns.

$$\text{Returns} = \left[\frac{\text{Closing stock price} - \text{opening stock price}}{\text{opening stock price}} \right]$$

Risk: The fluctuations in price of a security or portfolio that happens beyond the investor's control and that affects the overall market is called as risk.

$$\beta = \left[\frac{n\sum XY - (\sum x)(\sum y)}{n\sum x^2 - (\sum x)^2} \right]$$

- 1) The negative returns show that the returns have gone down beyond the actual market price of the stocks, where the company or business faces lackluster returns on investment.
- 2) The positive returns mean the business or the company enjoys profit and the efficiency of the investment will be higher.
- 3) When the company's shares remain idle without increase or decrease in the price of shares, it is soon going to face risk on negative returns.

Variance: Risk from an average can be measured by variance and this can help the investor during the purchase of securities.

Standard deviation: Standard deviation measures the volatility of stocks by considering the stock's average returns.

5. Analysis and Interpretation

Table 1
Return Analysis of Larsen & Toubro

S. No.	Month	Returns
1	Aug-18	0.007997
2	Sep-18	-0.11006
3	Oct-18	0.02443
4	Nov-18	0.043665
5	Dec-18	0.028122
6	Jan-19	-0.12433
7	Feb-19	-0.01958
8	Mar-19	0.03227
9	Apr-19	-0.07015
10	May-19	0.106745
11	Jun-19	0.056266
12	Jul-19	-0.14588
13	Aug-19	-0.05633

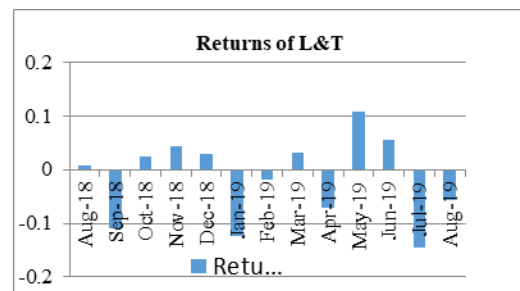


Chart 1: Return Analysis of Larsen & Toubro

It is inferred from the above table that the share price of L&T has gone up 7 times and came down 6 times, but compared to the actual profit the loss is more. Hence the sum of all the returns is -0.22683, which shows that the company is facing loss according to the data's collected from Aug 2018 till Aug 2019.

Table 2
Return Analysis of Adani Ports

S. No.	Month	Returns
1	Aug-18	-0.02841
2	Sep-18	-0.21788
3	Oct-18	0.316858
4	Nov-18	-0.07287
5	Dec-18	0.046404
6	Jan-19	-0.15916
7	Feb-19	0.004091
8	Mar-19	0.045465
9	Apr-19	-0.13489
10	May-19	0.015209
11	Jun-19	0.013026
12	Jul-19	-0.15367
13	Aug-19	0.099535

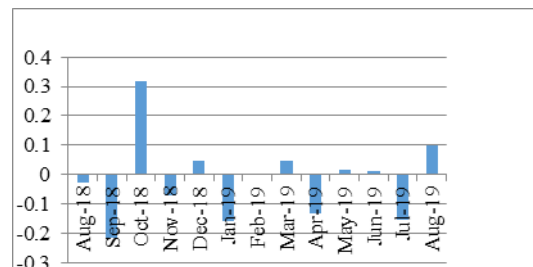


Chart 2: Return Analysis of Adani Ports

It is inferred from the above table that the share price of Adani Ports has gone up 6 times and came down 6 times, which is equal. But compared to the actual profit the loss is more. Hence the sum of all the returns is -0.22629, which shows that the company is facing loss according to the data's collected from Aug 2018 till Aug 2019.

Table 3
Return Analysis of Thermax

S. No.	Month	Sum
1	Aug-18	0.02343
2	Sep-18	-0.11838
3	Oct-18	0.016314
4	Nov-18	0.011989
5	Dec-18	0.105615
6	Jan-19	0.018576
7	Feb-19	-0.09175
8	Mar-19	-0.03723
9	Apr-19	-0.03774
10	May-19	-0.0147
11	Jun-19	0.007086
12	Jul-19	-0.01565
13	Aug-19	-0.12827

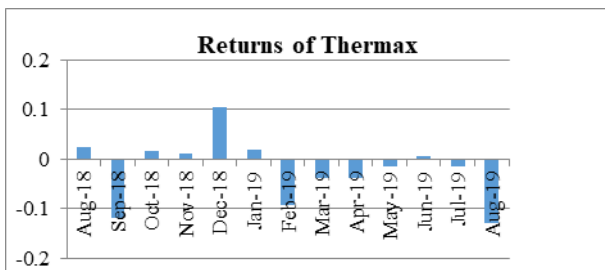


Chart 3: Return Analysis of Therma

It is inferred from the above table that the share price of Adani Ports has gone up 5 times and came down 7 times, which shows the company's growth is declining. The statistics also shows that after Jan 2019, the company is in declining stage even though there is a small raise during June 2019, which doesn't help anymore and in Aug 2019, there is a huge decrease of 12%.

Table 4
Return Analysis of Siemens

S. No.	Month	Returns
1	Aug-18	-0.00938
2	Sep-18	-0.00539
3	Oct-18	-0.06886
4	Nov-18	-0.00978
5	Dec-18	-0.02802
6	Jan-19	0.020291
7	Feb-19	0.001969
8	Mar-19	-0.02348
9	Apr-19	0.10735
10	May-19	-0.08486
11	Jun-19	0.043161
12	Jul-19	-0.06863
13	Aug-19	-0.07041

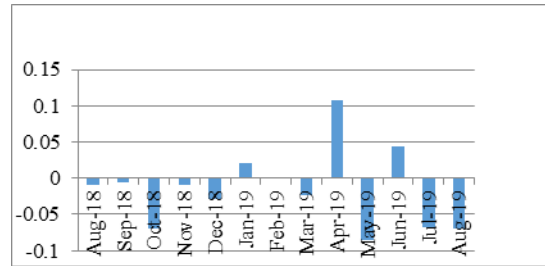


Chart 4: Return Analysis of Siemens

It is inferred from the above table that the share price of Siemens has gone up 4 times and came down 9 times, which shows the company's growth is declining. The statistics also shows that only during Apr 2019, the company's share has raised to 11% and during June 2019 to 4%, which doesn't help anymore in compensating the losses occurred in July 2019 and Aug 2019 where the decline is more.

Table 5
Return Analysis of ABB India

S. No.	Month	Returns
1	Aug-18	-0.02469
2	Sep-18	0.002594
3	Oct-18	-0.16219
4	Nov-18	-0.00274
5	Dec-18	-0.10383
6	Jan-19	-0.0926
7	Feb-19	-0.10219
8	Mar-19	0.003145
9	Apr-19	0.129352
10	May-19	0.021536
11	Jun-19	0.019389
12	Jul-19	-0.22781
13	Aug-19	-0.02023

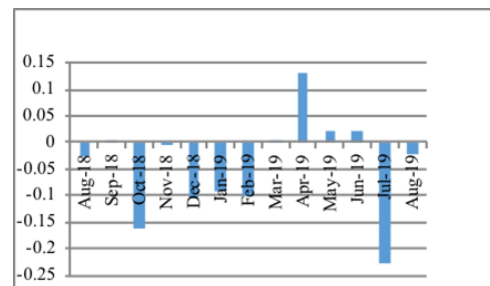


Chart 5: Return Analysis of ABB India

It is inferred from the above table that the share price of ABB India has gone up 5 times and came down 8 times, which shows the company's growth is in declining stage. The statistics also shows that only during Apr 2019, the company's share has raised to 13% and during May & June 2019 to 2%, which doesn't help anymore in compensating the losses occurred in July 2019 where the decline is more than usual loss.

Table 6
Return Analysis of IL & FS Transportation Networks

S.No.	Month	Returns
1	Aug-18	-0.02659
2	Sep-18	-0.22554
3	Oct-18	-0.20478
4	Nov-18	-0.40632
5	Dec-18	-0.01068
6	Jan-19	-0.28042
7	Feb-19	-0.11108
8	Mar-19	-0.24692
9	Apr-19	-0.10889
10	May-19	-0.25253
11	Jun-19	-0.30373
12	Jul-19	-0.33883
13	Aug-19	-0.4821

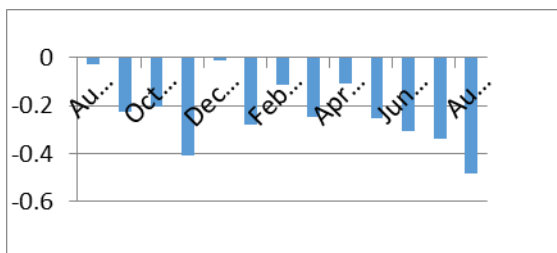


Chart 6: Return Analysis of IL and FS Transportation Networks

The above statistics shows that, there is no increase in the share prices of the company and the company only faces loss and this will not help the company sustain any more.

Table 7
Return Analysis of Punj Lloyd

S. No.	Month	Returns
1	Aug-18	0.005681
2	Sep-18	-0.56903
3	Oct-18	-0.14114
4	Nov-18	-0.35099
5	Dec-18	-0.46553
6	Jan-19	-0.15978
7	Feb-19	0.185247
8	Mar-19	0.00402
9	Apr-19	-0.38522
10	May-19	-0.13125
11	Jun-19	-0.04871
12	Jul-19	-0.29874

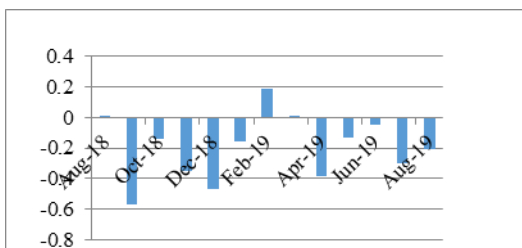


Chart 7: Return Analysis of Punj Lloyd

The above statistics shows that, there is no increase in the share prices of the company except on Feb 2019 & a small increase during March 2019, and the company only faces loss

and this will not help the company sustain any more.

Table 8
Return Analysis of Max heights Infrastructure

S. No.	Month	Returns
1	Aug-18	0
2	Sep-18	-0.08426
3	Oct-18	0
4	Nov-18	0.001166
5	Dec-18	-0.04799
6	Jan-19	-0.12069
7	Feb-19	0.122533
8	Mar-19	0.275973
9	Apr-19	0.011947
10	May-19	-0.36101
11	Jun-19	-0.02922
12	Jul-19	-0.05411

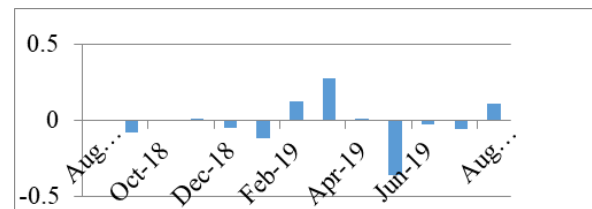


Chart 8: Return Analysis of Max Heights Infrastructure

It is inferred from the above table that the share price of Max heights Infrastructure has gone up 4 times and came down 9 times, which shows the company's growth is in declining stage. The statistics also shows that only during Feb & March 2019 has increased 11% & 28%, which doesn't help anymore in compensating the losses occurred in May 2019 where the decline is more than usual loss.

Table 9
Return Analysis of Reliance Industrial Infrastructure

S. No.	Month	Returns
1	Aug-18	0.084838
2	Sep-18	-0.45017
3	Oct-18	0.333034
4	Nov-18	-0.11118
5	Dec-18	-0.00792
6	Jan-19	-0.19286
7	Feb-19	-0.60566
8	Mar-19	0.020125
9	Apr-19	-0.22622
10	May-19	-0.24168
11	Jun-19	-0.10555
12	Jul-19	-0.13724
13	Aug-19	-0.16324

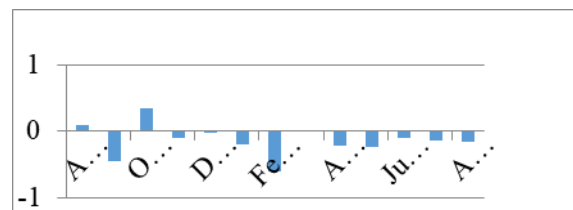


Chart 8: Return Analysis of Reliance Industrial Infrastructure

It is inferred from the above table that the share price of Reliance Industrial Infrastructure has gone up 3 times and came

down 9 times, which shows the company’s growth is in declining stage. The statistics also shows that only during Aug & Oct 2018 has increased to 11% & 36%, which doesn’t help anymore in compensating the losses occurred in Feb 2019 where the decline is more than usual loss.

Table 10
Return Analysis of IVRCL

S. No.	Month	Returns
1	Aug-18	0.04
2	Sep-18	-0.08084
3	Oct-18	0.200991
4	Nov-18	0.013008
5	Dec-18	-0.08806
6	Jan-19	0.055013
7	Feb-19	-0.38695
8	Mar-19	0.010317
9	Apr-19	-0.05298
10	May-19	0.646465
11	Jun-19	0.273573
12	Jul-19	-0.4969
13	Aug-19	1.015873

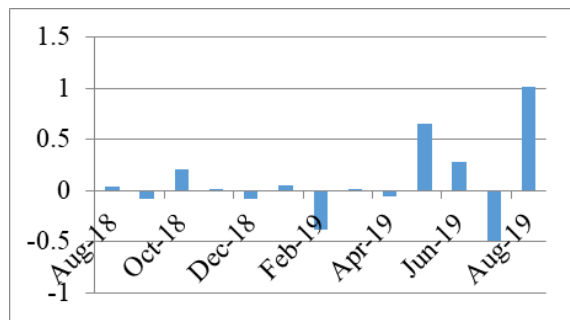


Chart 10: Return Analysis of IVRCL

It is inferred from the above table that the share price of Reliance Industrial Infrastructure has gone up 3 times and came down 9 times, which shows the company’s growth is in declining stage. The statistics also shows that only during Aug & Oct 2018 has increased to 11% & 36%, which doesn’t help anymore in compensating the losses occurred in Feb 2019 where the decline is more than usual loss.

6. Risk analysis

Table 11
Risk Analysis of the Infrastructure Sector Stocks

Company Name	Risk (σ)	Variance
ABB India	0.092	0.008
Adani Ports	0.139	0.019
IL&FS Transportations	0.140	0.019
IVRCL	0.396	0.156
Punj Lloyd	0.211	0.044
L&T	0.078	0.006
Reliance Industrial Infrastructure	0.233	0.054
Siemens	0.053	0.002
Thermax	0.064	0.004
Max heights Infrastructure	0.146	0.021

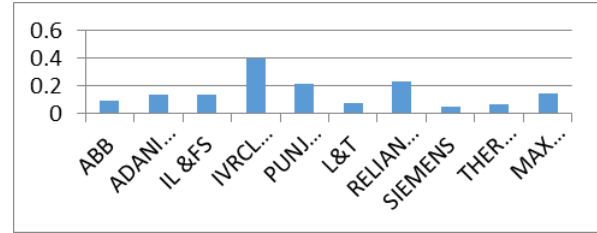


Chart 11: Risk analysis of the top companies in the infrastructure sector

The above table and graph shows the overall returns of the company which shows the performance of all the 10 companies mentioned above. Through this we can easily understand that the performance of IVRCL is high compared to the other companies. Siemens has the lower returns since for the past 1 year there is no increase in its share price.

Table 12
Correlation between market return and individual stock returns

Company Name	r (Correlation)
ABB India	0.049
Adani Ports	0.122
IL&FS Transportations	0.007
IVRCL	0.051
Punj Lloyd	0.009
L&T	0.077
Reliance Industrial Infrastructure	0.076
Siemens	0.101
Thermax	-0.072
Max heights Infrastructure	0.039

It is inferred from the above table that the correlation between Market return (NSE 100) and individual stock return shows that comparatively Adhani Port and Siemens stocks returns correlation with the market is higher and Thermax returns is negatively correlated with the Market return.

7. Conclusion

During Dec. 2018, infrastructure sector witnessed PE/VC twelve deals worth 500 million and eight US\$ 1 billion plus deals. All villages in India will be connected through a road network by 2019 under Pradhan Mantri Gram Sadak Yojana (PMGSY). Road building in India has become the second cheapest in Asia.

It is expected that the Projects such as industrial corridors, DFC, Bharatmala, Sagarmala and UDAN schemes will continue to improve connectivity and increase competitiveness will improve the infrastructure industry in India.

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