

## Relationship between Stock Liquidity and Volatility of Stock Returns of selected companies listed on BSE

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### Abstract

Stock Liquidity is the extent to which a security can be purchased or sold without affecting the prices of the stock. Stock return is the yield which a shareholder gets every year on the investments made. These two factors determine the position of the stock and the company. Hence, the study aimed to ascertain if a relationship exists between Stock Liquidity and Stock Returns. 70 companies listed on the Bombay Stock Exchange (BSE) belonging to different sectors were considered for analysis. The values of stock liquidity and stock returns during the period 2014 to 2018 were calculated and desired results were obtained. Pearson Correlation was used to test the hypothesis and no relationship was found between stock liquidity and stock returns.

**KEYWORDS:** Stock Liquidity and Stock Returns

### Introduction

Liquidity refers to the marketability of shares or indices at a price/level very close to the fundamental price level at a transaction cost that lies within the specified range fixed by the SEBI. Liquidity depends on the good governance of the companies. If there is governance failure, the marketability of the share will be very poor and the investors pay high transaction cost to sell their shares even at a throw away price. It may be mentioned here to corroborate the above situations in the market that when the Satyam Scam was disclosed by the founder and Chairman of Satyam Computer Services Ltd. Mr. B. Rama Linga Raju on 7th January 2009 in a letter to Satyam's Board of Directors, the news of the scandal plunged the Indian and the New York Stock Exchanges where Satyam shares were listed.

Following the news, Satyam shares fell to Rs.11.50 on 12th January 2009 from a high of Rs. 544 on December, 2008 in the National Stock Exchange of India. The BSE SENSEX suffered a loss of 13% due to the presence Satyam shares in the Sensex between 17th December 2008 to 23 January 2009. In New York Stock Exchange, the Satyam shares which got peaked at US \$ 29.10 in 2008 declined to US \$ 1.80 in March, 2009. The fall in price may be attributed to the failure of governance by the Board, Audit Committee and Auditors. This failure shattered the confidence of the shareholders and as a result, there was panic disposal of shares by the shareholders of Satyam. Hence, liquidity is considered as an attribute of performance.

## Review of Literature

**Asheesh Pandey and Sanjay Sehgal (2017)** in their study examined if there were any volatility patterns in stock returns for India. Data was employed for 493 companies that form part of BSE 500 index from March 2000 to November 2013. Unlike previous international evidence, no volatility anomaly was observed. Consistent with theory, high volatility stocks significantly outperformed low volatility stocks. Alternative risk models failed to explain the volatility effect. Consistent with prior research, the authors confirmed the role of firm quality factor in explaining these volatility patterns. Cash flow variability seemed to be a more appropriate measure of firm quality compared to profitability.

**Shangkari V et al. (2017)** investigated the link between investor sentiment and stock returns in emerging Asian markets. Two dimensions of sentiment were examined: stock specific sentiment and market wide sentiment. Using panel regression with firm fixed effects, the authors showed that stock specific sentiment strongly and positively affects stock returns after controlling for firm characteristics. Overall, there was a positive relationship between market wide sentiment and returns but the relationship did not hold at the country level. For individual countries, the authors detected substantial country-to-country variations in the influence of market wide sentiment on returns. The evidence also suggested that stock specific sentiment might have had a greater influence on returns than market specific sentiment. Furthermore, the effect of investor sentiment on stock returns in emerging Asian markets generally persisted after accounting for macroeconomic factors.

**Ningbo Cao (2017)** mentioned that GEM stocks were more susceptible to the attention of news media because of their liquidity and high risk characteristics. The paper used Baidu News search and the data of companies listed on GEM from 2009 to 2015 to investigate the impact of media attention and stock liquidity on stock price information content respectively and the impact of stock liquidity on the relationship between media attention and stock liquidity. The results showed that with the number of media news coverage increasing and stock liquidity accelerating, stock information content would also be improved; further studies found that with the acceleration of stock liquidity, liquidity weakened the positive relationship between media attention and shares information content.

**Kee H. Chunga and Chairat Chuwonganantb (2016)** in their study stated that market volatility affects stock returns both directly and indirectly through its impact on liquidity provision and the negative relation between market volatility and stock returns arises not only from greater risk premiums but also greater illiquidity premiums that were associated with higher market volatility. In particular, the authors showed that a stock's return was more sensitive to unexpected changes in market volatility when its liquidity disappeared more in response to volatility shocks, which indicated that liquidity providers played an important role in determining the effect of market volatility on stock returns. Stock returns were more sensitive to volatility shocks in the high-frequency trading era, and after the regulatory changes in the US markets that increased competition between public traders and market makers, reduced the tick size, and decreased the role of market makers.

## Objectives of the Study

The objectives of the study are:

1. To understand the concepts of share liquidity and volatility of stock returns.
2. To determine the relationship between share liquidity and volatility of stock returns.

## Hypothesis of the Study:

$H_0$ : There is no significant relationship between share liquidity and volatility of stock returns.

$H_1$ : There is a significant relationship between share liquidity and volatility of stock returns.

## Research Methodology

The present research work is a combination of both narrative as well as analytical works. The data which has been used in the study was secondary data. For share liquidity and stock return, necessary data was collected from the Bombay Stock Exchange website. Other related data was collected from sources such as Annual Reports of Companies, journals, articles, newspapers, magazines, etc.

In the study, data relating to companies over the period 2013-14 to 2017-18 was used. Companies from 6 different sectors listed on BSE such as Manufacturing, Banking, Housing, Textiles, Information Technology and Telecom sector was chosen for the purpose of the study. The total study period was 5 years.

## Data Analysis and Interpretation

### Stock Liquidity

The value of stock liquidity is calculated for 5 companies listed on BSE as a part of 2 different sectors such as – Manufacturing and Telecom.

### Manufacturing Sector

#### Ambuja Cements Limited

**Table 1: Stock Liquidity of Ambuja Cements Limited**

	2013-14	2014-15	2015-16	2016-17	2017-18
Volume Traded	3605000	2779166.67	5047500	7288333.33	3694166.67
O/s shares	1,547,458,221	1,551,188,572	1,985,645,229	1,985,645,229	1,985,645,229
Share Liquidity	0.23	0.18	0.25	0.37	0.19

The above table shows the stock liquidity/turnover of Ambuja Cements Limited from years 2014 to 2018. Share turnover is a measure of stock liquidity calculated by dividing the total number of shares traded over a period by the average number of shares outstanding for the period. The volume of shares traded and shares outstanding in Ambuja Cements Limited was highest in 2017. The share turnover of the company was highest in the year 2017 showing that the company's shares were more liquid in that year.

### Asian Paints Limited

**Table 2: Stock Liquidity of Asian Paints Limited**

	2013-14	2014-15	2015-16	2016-17	2017-18
Volume Traded	2655000	2606666.67	2373333.33	2041882.5	1907691.67
O/s shares	959197790	959197790	959197790	959197790	959197790
Share liquidity	0.28	0.27	0.25	0.21	0.20

The above table shows the stock liquidity/turnover of Asian Paints Limited from years 2014 to 2018. Share turnover is a measure of stock liquidity calculated by dividing the total number of shares traded over a period by the average number of shares outstanding for the period. The volume of shares traded and shares outstanding in Asian Paints Limited was highest in 2014. The share turnover of the company was highest in the year 2014 showing that the company's shares were more liquid in that year.

### Balmer Lawrie & Co. Limited

**Table 3: Stock Liquidity of Balmer Lawrie & Co. Limited**

	2013-14	2014-15	2015-16	2016-17	2017-18
Volume Traded	350515.8	1396111.67	626492.5	922509.17	574966.67
O/s shares	28500641	28500641	28500641	114002564	114002564
Share Liquidity	1.23	4.90	2.20	0.81	0.50

The above table shows the stock liquidity/turnover of Balmer Lawrie & Co. Limited from years 2014 to 2018. Share turnover is a measure of stock liquidity calculated by dividing the total number of shares traded over a period by the average number of shares outstanding for the period. The volume of shares traded and shares outstanding in Balmer Lawrie & Co. Limited was highest in 2015. The share turnover of the company was highest in the year 2015 showing that the company's shares were more liquid in that year.

### Telecom Sector

#### Bharti Airtel Limited

**Table 4: Stock Liquidity of Bharti Airtel Limited**

	2013-14	2014-15	2015-16	2016-17	2017-18
Average Volume	7197500	6872500	6252500	7926667	55147500
O/s shares	3955000	3997000	3997400	3997400	3997400
Share liquidity	181.98	171.94	156.41	198.30	1379.58

The above table shows the stock liquidity/turnover of Bharti Airtel Limited from years 2014 to 2018. Share turnover is a measure of stock liquidity calculated by dividing the total number of shares traded over a period by the average number of shares outstanding for the period. The volume of shares traded and shares outstanding in Bharti Airtel Limited was highest in 2018. The share turnover of the company was highest in the year 2018 showing that the company's shares were more liquid in that year.

### Vodafone Idea Limited

**Table 5: Stock Liquidity of Vodafone Idea Limited**

	2013-14	2014-15	2015-16	2016-17	2017-18
Average Volume Traded	19980833.33	31809166.67	15506666.67	74839166.7	54769166.67
O/s shares	3316853830	3536845592	3599336054	3601290214	3692852565
Share Liquidity	0.60	0.89	0.43	2.07	1.48

The above table shows the stock liquidity/turnover of Vodafone Idea Limited from years 2014 to 2018. Share turnover is a measure of stock liquidity calculated by dividing the total number of shares traded over a period by the average number of shares outstanding for the period. The volume of shares traded and shares outstanding in Vodafone Idea Limited was highest in 2016. The share turnover of the company was highest in the year 2017 showing that the company's shares were more liquid in that year.

### Stock Return

The value of share return is calculated for 5 companies listed on BSE as a part of 2 different sectors such as – Manufacturing and Telecom.

### Manufacturing Sector

#### Ambuja Cements Limited

**Table 6: Stock Return of Ambuja Cements Limited**

Year/Month	2014	2015	2016	2017	2018
April	186.45	197.45	234.2	220.9	245.95
May	183.25	217.3	237	228.7	241.2
June	186.7	220.7	229.5	254.35	245.85

July	167.3	206.45	232.45	271.15	263.25
August	170.8	206.3	207.4	279	280.6
September	183.15	213.7	205.65	252.8	266
October	188.45	227.45	207.3	240.7	281.75
November	185.35	229.85	198.85	210.4	262.6
December	182.75	228.7	203.3	206.2	271.2
January	159.3	248.8	194.85	229.1	261.05
February	167.35	271.6	187.95	228.8	252.6
March	201.15	255.25	232.15	237.4	233.3
Stock return	0.10	0.31	0.003	0.09	-0.05

The above table shows the calculation of stock return for Ambuja Cements Limited for the period 2014-2018. Closing price of the stock for the period along with the dividends paid by the company per share was considered for the calculation of stock return. It varied every year depending on losses incurred by company or retention of profits with a plan for future investment in assets or projects. The stock return for Ambuja Cements Limited was found to be the highest (0.31) in 2015 when compared to other years. The stock return for Ambuja Cements Limited was found to be the least (-0.05) in 2018.

#### Asian Paints Limited

**Table 7: Stock Return of Asian Paints Limited**

Year/Month	2014	2015	2016	2017	2018
April	467.36	504.27	761.57	868.1	1,117.65
May	485.57	508.56	785.63	982.39	1,150.59
June	462.19	591.67	753.14	1,001.90	1,104.15
July	506.22	628.05	879.92	1,112.76	1,159.45
August	418.75	623.06	848.6	1,157.23	1,168.15
September	458.55	628.3	839.64	1,160.08	1,117.05
October	537.46	655.01	827.26	1,073.48	1,180.70
November	502.47	742.41	838.99	968.16	1,147.75
December	489.9	751.75	882.31	889.8	1,157.90
January	471.43	855.96	867.34	969.11	1,131.05
February	472.13	816.93	847.07	1,022.67	1,118.85
March	545.55	807.34	867.19	1,069.34	1,120.70
Stock Return	0.18	0.61	0.15	0.24	0.01

The above table shows the calculation of stock return for Asian Paints Limited for the period 2014-2018. Closing price of the stock for the period along with the dividends paid by the company per share was considered for the calculation of stock return. It varied every year depending on losses incurred by company or retention of profits with a plan for future investment in assets or projects. The stock return for Asian Paints Limited was found to be the highest (0.61) in 2015 when compared to other years. The stock return for Asian Paints Limited was found to be the least (0.01) in 2018.

**Balmer Lawrie & Co. Limited****Table 8: Stock Return of Balmer Lawrie & Co. Limited**

Year/Month	2014	2015	2016	2017	2018
April	96.54	85.31	141.76	143.5	235.85
May	94.03	111.7	142.88	144.94	235.85
June	94.47	137.69	140.45	150.43	217.75
July	82.2	137.45	158.5	156.01	250.85
August	81.86	143.82	150.25	174.01	240.3
September	76.31	152.38	139.36	168.16	217.8
October	77.19	155.59	145.96	196.85	235.5
November	76.47	152.86	151.59	245.57	279.35
December	79.94	152.45	153.5	234.9	274.55
January	75.19	146.01	143.71	225.1	240.05
February	72.4	145.64	124.56	211.45	231.35
March	76.15	141.29	143.31	235.55	217.2
Stock Return	-0.02	0.87	0.15	0.69	-0.04

The above table shows the calculation of stock return for Balmer Lawrie & Co. Limited for the period 2014-2018. Closing price of the stock for the period along with the dividends paid by the company per share was considered for the calculation of stock return. It varied every year depending on losses incurred by company or retention of profits with a plan for future investment in assets or projects. The stock return for Balmer Lawrie & Co. Limited was found to be the highest (0.87) in 2015 when compared to other years. The stock return for Balmer Lawrie & Co. Limited was found to be the least (-0.04) in 2018.

**Telecom sector****Bharti Airtel Limited****Table 9: Stock Return of Bharti Airtel Limited**

Year/Month	2014	2015	2016	2017	2018
April	292.61	300.78	350.35	333.97	325.52
May	275.9	315.79	390.43	322.81	341.31
June	267.51	309.27	385.47	336.13	348.06
July	316.62	342.05	384.27	332.36	383.54
August	274.07	339.38	325.43	304.64	392.77
September	292.15	371.1	310.28	288.3	356.78
October	334.75	365.64	320.15	292.38	456.84
November	300.37	350.63	307.07	297.89	456.11
December	303.35	323.92	312.03	280.31	485.99
January	289.31	342.18	265.94	319.37	403.6
February	263.93	327.91	290.78	335.21	392.31

March	292.75	361.6	322.13	321.25	366.19
Stock Return	0.0004	0.209	-0.076	-0.035	0.132

The above table shows the calculation of stock return for Bharti Airtel Limited for the period 2014-2018. Closing price of the stock for the period along with the dividends paid by the company per share was considered for the calculation of stock return. It varied every year depending on losses incurred by company or retention of profits with a plan for future investment in assets or projects. The stock return for Bharti Airtel Limited was found to be the highest (0.209) in 2015 when compared to other years. The stock return for Bharti Airtel Limited was found to be the least (-0.076) in 2016.

**Vodafone Idea Limited**

**Table 10: Stock Return of Vodafone Idea Limited**

Year/Month	2014	2015	2016	2017	2018
April	80.09	81.15	105.67	71.45	51.73
May	78.79	82.87	104.61	69.28	48.35
June	85.41	80	106.09	64.36	51.37
July	102.08	94.65	104.4	63.12	55.87
August	96.52	97.76	94.13	56.47	54.96
September	101.62	100.32	90.21	47.87	46.72
October	104.34	98.39	84.41	46.45	56.11
November	105.97	96.22	85.41	46.84	56.93
December	100.78	92.9	86.83	44.67	65.35
January	86.64	93.35	62.27	66.56	56.26
February	77.7	92.05	63.09	69.73	50.55
March	83.05	110.98	66.29	51.76	45.75
Stock Return	0.04	0.37	-0.37	-0.28	-0.12

The above table shows the calculation of stock return for Vodafone Idea Limited for the period 2014-2018. Closing price of the stock for the period along with the dividends paid by the company per share was considered for the calculation of stock return. It varied every year depending on losses incurred by company or retention of profits with a plan for future investment in assets or projects. The stock return for Vodafone Idea Limited was found to be the highest (0.37) in 2015 when compared to other years. The stock return for Vodafone Idea Limited was found to be the least (-0.37) in 2016.

**Test of Correlation**

**Hypothesis 1:** There is no significant relationship between Share Liquidity and Stock Return

**Correlation Test between Share Liquidity and Stock Return**



**Table 11: Correlation Test between Share Liquidity and Stock Return**

		SL_AVG	SR_AVG
SL_AVG	Pearson Correlation	1	-0.049
	Sig. (2-tailed)		0.688
	N	70	70
SR_AVG	Pearson Correlation	-0.049	1
	Sig. (2-tailed)	0.688	
	N	70	70

The results of the above table 11 have been interpreted as follows:

Pearson correlation coefficient for Share Liquidity and Stock Return is -0.49 ( $p=0.688$ ) which is insignificant ( $p > .001$  for a two-tailed test), based on 70 complete observations (i.e., cases with non-missing values for both Share Liquidity and Stock Return). Hence, no relationship between Share Liquidity and Stock Return was found.

### Conclusion

Volatility of returns in financial markets can be a major stumbling block for attracting investment in small developing economies. High returns and low level of volatility is taken to be a symptom of a developed market. There are a number of other things that cause volatility. Amongst other things that cause volatility is arbitrage. When the hypothesis was tested, no relationship between Share Liquidity and Stock Return was found. Hence, null hypothesis was accepted and the alternate hypothesis was rejected. It was observed that these factors behaved according to the position of the stocks in the market. External factors were found to affect the behavior of stocks in terms of returns but this factor did not possess a relationship with liquidity.

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