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# Pharma industry liquidity problems: A study of companies based on nifty pharma-Index

**Vipin Mittal**

### Abstract

**Purpose:** The purpose of this research paper is to liquidity analysis of NSE Pharma based companies on different liquidity parameters. This study also fulfills the purpose of comparison of liquidity between companies and reveals the liquidity position during the study period.

**Design/methodology/approach:** For the research purpose, descriptive research design has been adopted. For accomplishment of research objective and solve the research questions data has been collected from annual reports of respective companies, authentic websites and journals. Data is relevant for the financial year of 2010-11 to 2014-15. Website moneycontrol.com has been used frequently to collect data. For analysis of data one-way ANOVA with post hoc has been used.

**Findings:** Study give the evidence that all NSE Pharma index-based companies' liquidity is not same. Study confirms that most of index-based companies hold sufficient liquidity for the smooth operation of business.

**Originality/value:** The research paper give unique insights on liquidity position in NSE Pharma index based companies. To best of our knowledge, there have no such study on liquidity analysis of NSE Pharma index-based companies.

**Keywords:** Liquidity, NSE pharma index, pharmaceutical industries, post hoc

### 1. Introduction

In 2001, Cipla, India's one of the leading company, offered an AIDS drug to African nations at affordable price USD 300 only while same drug combination in United State was cost of USD 12000. This cost efficiency of India's pharmaceutical sector became the hot topic of debate for international pharmaceutical industry. Cipla was able to offer an AIDS drug on such affordable cost because the Indian pharma company produced all-in-one generic pill which include all 3 substances needed in the treatment of above named disease.

Before 1970s India's pharma market was supplied by imported drugs from foreign countries. India domestic state-run companies only were able to supply the cheap bulk of drugs. After 1970s Indian government passed a number of legislations to reduce the dependence on imported drugs and make many laws to promote the India pharmaceutical industry. Presently India pharmaceutical industry is able to supply pharma market independently.

India pharmaceutical industry is among the top ten, pharmaceutical producers, in the world. India's ambassador, Arun Singh, to the United State of America droning inaugurating the 34<sup>th</sup> annual convention, American Association of Physicians of Indian-Origin<sup>[1]</sup>, said Indian pharmaceutical market growing from USD 6billion (2005) to USD 55 billion (2020). Further Arun Singh add that India is likely to be among the top 3 pharmaceutical markets by 2020 by incremental growth. Arun Singh also said India will be 6<sup>th</sup> largest market in world by 2020 in real size.

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Source: www.tradingeconomics.com Ministry of Commerce & Industry, India

Fig 1: India export of pharmaceutical products

Table 1: India’s exports of pharmaceutical products (April 2014-March 2015)

Rank	Country	Export (\$mn)	Share (%)
1	US	4,284	27.95
2	UK	540	3.52
3	South Africa	508	3.31
4	Russia	423	2.76
5	Nigeria	418	2.73
6	Brazil	374	2.44
7	Germany	370	2.41
8	Kenya	283	1.85

Source: Pharmaceutical Export Promotion Council of India

Table 1 show the India’s exports of pharmaceutical products from April 2014-March 2015. Table shows largest importer of Indian pharmaceutical products is United State shared by 27.95% of total exports of pharmaceutical products followed by United Kindom and South Africa.

Table 2: Market capitalization of NSE Pharma Index constituted companies

Companies	Market Capitalization 2016 (Rs. in Cr.)
Aurobindo Pharma	40,906.28
Cadila Health	36,496.42
Cipla	46,322.12
Divis Labortories	18,953.13
Dr Reddys Laboratories	48,659.13
GlaxoSmithKline Pharmaceuticals	23,311.12
Glenmark Pharma	25,083.34
Lupin	66,142.67
Piramal	30,440.13
Sun Pharmaceutical Industries	1,53,769.23

Table 2 show the market capitalization of NSE Pharma Index companies for the year of 2016. Sun Pharma is largest company in term of market capitalization followed by Lupin and Dr Reddys Laboratories.

2. Related studies

In 2012, L K Joshi & Sudipta Ghosh assessed the working capital management performance of Cipla Ltd. Joshi and Ghosh study confirmed significant association, negative relationship, amid liquidity and profitability. Further study endorsed that company maintain excess liquidity during study period. Study reveals the satisfactory performance of

working capital Cipla Ltd. correlation

P. L. N. Reddy (2012) investigate relationship between liquidity and working capital structure in context of Andhra Pradesh Pharma industry. P. Reddy believe working capital management (WCM) is an important strategic decision of firm and WCM decided the firm profitability in great extend. She thinks those company give great importance to WCM, always make huge profit. She tested the relationship between WCM and firms' performance on five BSE listed pharmaceutical firm form the year 2007-2011 through Canonical Correlation analysis. P. Reddy study confirms working capital management significantly impacts the performance of firm. Study suggests business manager can increase value of firm and return on assets by managing, reducing cash conversion cycle; inventory size; trading cycle, working capital of firm.

Nair (2013) [6] analyzed the performance of India pharma companies and predicted the solvency of pharma firm through Multivariate Discriminant analysis. Nair found the important variable which affects the solvency of firm and performance. Nair used financial indicator, profits, revenues, liquidity, and performance of stock market, to predict the solvency of firm. Research study validate earnings before interest and taxes (EBIT), market price per share (MPS), sales (turnover) indicators can be most used a predictors of financial distress and financial health of a pharma firm.

Further, in 2015, Hetal Gaglani & Smita Rao studied the liquidity, financial health and profitability of Sun Pharma Ltd. Hetal & Smita opinion that company should maintain trade-off amid sufficient liquidity and maximum profitability. Study confirmed association, moderate correlation, amid liquidity & risk and profitability & risk. Research study also endorses the company in healthy zone.

Mohmad & Syed (2016) assessed and measured the liquidity and profitability of selected pharma firms through liquidity and profitability, current ratio, quick ratio, return on assets, return on equity, indicators. Study basically based on, two sample companies, Cipla & Dr. Reddy's labs. Study tried to found close association amid liquidity and profitability of a firm. Study indicates India pharmaceutical industry is one the most growing industry in Global market. Mohmad and Syed expected Indian pharma market will be reach on US\$ 55 billion in 2020. Study confirm two sample company have strongly differently managed in term of

liquidity. Mohmad and Syed concluded Cipla have maintained more liquidity than Dr. Reddy's. Research also endorse that Cipla have making more profits than its rival firm Dr. Reddy's.

### 3. Objective of study and research questions

#### 3.1. Objectives of Study

3.1.1. To reveal the liquidity position of NSE Pharma Index Base companies.

3.1.2. To compare and analysis the liquidity position of NSE Pharma Index Base companies.

#### 3.2. Research Questions

3.2.1. Do NSE Pharma Index based companies have sufficient liquidity to smooth operation of its business.

3.2.2. Do NSE Pharma Index based companies have ideal Current ratio?

3.2.3. Do NSE Pharma Index based companies have ideal Quick ratio?

3.2.4. Does every company is same able to convert its inventory into sales?

3.2.5. Do all companies have paying same dividend to investors?

3.2.6. Do NSE Pharma Index based companies have retaining sufficient earnings for future opportunities and expansion plans?

3.2.7. Do all companies have sufficient cash to payout quick obligation?

3.2.8. Which companies have ideal liquidity compare to its rival?

#### 4. Hypothesis of the study

H<sub>0,1</sub>: NSE Pharma Index based companies have identical current ratio.

H<sub>1,1</sub>: NSE Pharma Index based companies have not identical current ratio.

H<sub>0,2</sub>: NSE Pharma Index based companies have identical quick ratio.

H<sub>1,2</sub>: NSE Pharma Index based companies have not identical quick ratio.

H<sub>0,3</sub>: NSE Pharma Index based companies have identical inventory turnover ratio.

H<sub>1,3</sub>: NSE Pharma Index based companies have not identical Inventory turnover ratio. H<sub>0,4</sub>: NSE Pharma Index based companies have identical dividend payout ratio.

H<sub>1,4</sub>: NSE Pharma Index based companies have not identical dividend payout ratio.

H<sub>0,5</sub>: NSE Pharma Index based companies have identical earnings retention ratio.

H<sub>1,5</sub>: NSE Pharma Index based companies have not identical earnings retention ratio.

H<sub>0,6</sub>: NSE Pharma Index based companies have identical cash earnings retention ratio.

H<sub>1,6</sub>: NSE Pharma Index based companies have not identical cash earnings retention ratio.

#### 5. Research Methodology

##### 5.1 Research Design

Research study follows the descriptive research design that describes the liquidity of NSE Pharma Index base companies.

##### 5.2 Source and type of data

For accomplishment of research objective and solve the

research questions data has been collected from annual reports of respective companies, authentic websites and journals. Data is relevant for the financial year of 2010-11 to 2014-15. Website moneycontrol.com has been used frequently to collect data. Data used in this research study have secondary nature.

##### 5.3 Variables

Through following ratios liquidity of NSE Pharma based companies have been measured:

Current Ratio, Quick Ratio, Inventory Turnover Ratio, Dividend Payout Ratio, Earnings Retention Ratio, Cash Earnings Retention Ratio

##### 5.4 Sample Unit

NSE Pharma Index is comprised of ten high transacted companies which represented the whole Indian pharmaceuticals sector. GlaxoSmithKline has been excluded from the study due to unavailability of relevant data. Study has measure and compares the liquidity of rest nine companies.

1. Aurobindo Pharma
2. Cadila Health
3. Cipla
4. Divis Laboratories
5. Dr Reddys Laboratories
6. GlaxoSmithKline Pharmaceuticals
7. Glenmark Pharma
8. Lupin
9. Piraml
10. Sun Pharmaceutical Industries

##### 5.5 Statistical Tools

To test the research hypothesis one-way analysis of variance (ANOVA) with Post Hoc Test statistical technique have used. For analysis of data SPSS and Excel statistical package is used.

#### 6. Data analysis and interpretation

Table 1 shows data regarding current ratio for the NSE Pharma index-based companies from the year 2010-11 to 2014-15. Average current ratio for the Aurobindo is 1.36 during the selected years. Lowest current ratio for the Aurobindo is 1.44 in the year 2011-12 and highest current ratio is 1.61 in the year 2014-15. Average current ratio for the Cadila is 1.35 during the selected year. Lowest and highest current ratio for the Cadila is 1.09 and 1.78 in the year 2012-13 and 2010-11 respectively. Average current ratio for the Cipla is 2.77 during the selected years. Lowest and highest current ratio for the Cipla is 1.83 and 4.07 in the year 2014-15 and 2011-12 respectively. Average current ratio for the Divis is 3.53 during the selected years. Lowest and highest current ratio for the Divis is 3.18 and 3.76 in the year 2011-12 and 2010-11 respectively. Average current ratio for the Dr Reddys is 1.81 during the selected years. Lowest and highest current ratio for the Dr Reddys is 1.40 and 2.22 in the year 2010-11 and 2014-15 respectively. Average current ratio for the Glenmark is 1.04 during the selected years. Lowest and highest current ratio for the Glenmark is 0.44 and 1.47 in the year 2010-11 and 2014-15 respectively. Average current ratio for the Lupin is 2.47 during the selected years. Lowest and highest current ratio for the Lupin is 1.49 and 3.89 in the year 2011-12 and 2014-15 respectively. Average current ratio for the Piraml is 2.06

during the selected years. Lowest and highest current ratio for the Piraml is 0.53 and 6.72 in the year 2013-14 and 2010-11 respectively. Average current ratio for the Sun Pharma is 3.03 during the selected years. Lowest and highest current ratio for the Sun Pharma is 0.49 and 5.97 in the year 2014-15 and 2010-11 respectively.

**Table 3:** Current Ratio of NSE Pharma Index Based Companies

Pharmaceutical Companies	Financial Year						
	2010-11	2011-12	2012-13	2013-14	2014-15	Mean	
Current Ratio	Aurobindo	1.22	1.14	1.31	1.53	1.61	1.36
	Cadila	1.78	1.18	1.09	1.33	1.35	1.35
	Cipla	2.84	4.07	3.02	2.11	1.83	2.77
	Divis	3.76	3.18	3.40	3.68	3.62	3.53
	Dr Reddys	1.40	1.61	1.63	2.17	2.22	1.81
	Glenmark	0.44	1.17	0.83	1.30	1.47	1.04
	Lupin	1.52	1.49	2.01	3.45	3.89	2.47
	Piraml	6.72	0.85	0.80	0.53	1.38	2.06
	Sun Pharma	5.97	3.90	3.37	1.40	0.49	3.03

### 6.1 Do NSE Pharma Index based companies have sufficient liquidity to smooth operation of its business?

Table 1 reveal facts that majority of NSE Pharma Index based companies have sufficient liquidity to smooth operation of its business. Companies like Divis, Sun Pharma, Cipla, Lupin, Piraml have more liquidity compare to other rest of pharma companies. Dr Reddys Aurobindo, Cadila, Glenmark have low liquidity to its rival firms. Divis and Sun Pharma have more liquidity at all.

**Table 4:** Do companies have ideal Current Ratio?

Pharmaceutical Companies	Yes/No
Aurobindo	No
Cadila	No
Cipla	Yes
Divis	Yes
Dr Reddys	No
Glenmark	No
Lupin	Yes
Piraml	Yes
Sun Pharma	Yes

### 6.2 Testing of Hypothesis

#### H<sub>0.1</sub>: NSE Pharma Index based companies have identical current ratio

Appendix 1 shows the sample statistic result for different liquidity ratio (Variables). *F*-statistic (calculated) value for the current ratio is 2.314 and *p*-value is .041 which is less than 5% level of significance. There is enough statistical evidence to reject null hypothesis "*H<sub>0.1</sub>*" and accept to alternate hypothesis "*H<sub>1.1</sub>*". It is inferred from analysis of current ratio for NSE Pharma Index based companies that companies are not maintaining same current ratio during the study period.

Table 3 shows data regarding quick ratio for the NSE Pharma index based companies from the year 2010-11 to 2014-15. Average quick ratio for the Aurobindo is 0.86 during the selected years. Lowest and highest quick ratio for the Aurobindo is 0.68 and 1.07 in the year 2011-12 and 2014-15 respectively. Average quick ratio for the Cadila is 0.90 during the selected year. Lowest and highest quick ratio for the Cadila is 0.74 and 1.14 in the year 2012-13 and 2010-11 respectively. Average quick ratio for the Cipla is 1.63 during the selected years. Lowest and highest quick

ratio for the Cipla is 0.91 and 2.52 in the year 2014-15 and 2011-12 respectively. Average quick ratio for the Divis is 2.16 during the selected years. Lowest and highest quick ratio for the Divis is 1.94 and 2.43 in the year 2012-13 and 2010-11 respectively. Average quick ratio for the Dr Reddys is 1.41 during the selected years. Lowest and highest quick ratio for the Dr Reddys is 0.99 and 1.86 in the year 2010-11 and 2014-15 respectively. Average quick ratio for the Glenmark is 0.83 during the selected years. Lowest and highest quick ratio for the Glenmark is 0.30 and 1.17 in the year 2010-11 and 2014-15 respectively. Average quick ratio for the Lupin is 1.71 during the selected years. Lowest and highest quick ratio for the Lupin is 0.93 and 2.84 in the year 2011-12 and 2014-15 respectively. Average quick ratio for the Piraml is 1.94 during the selected years. Lowest and highest quick ratio for the Piraml is 0.49 and 6.47 in the year 2013-14 and 2010-11 respectively. Average quick ratio for the Sun Pharma is 2.50 during the selected years. Lowest and highest quick ratio for the Sun Pharma is 0.30 and 5.18 in the year 2014-15 and 2010-11 respectively.

**Table 5:** Quick Ratio of NSE Pharma Index Based Companies

Pharmaceutical Companies	Financial Year						
	2010-11	2011-12	2012-13	2013-14	2014-15	Mean	
Quick Ratio	Aurobindo	0.75	0.68	0.79	1.02	1.07	0.86
	Cadila	1.14	0.79	0.74	0.90	0.95	0.90
	Cipla	1.66	2.52	1.98	1.07	0.91	1.63
	Divis	2.43	2.00	1.94	2.25	2.18	2.16
	Dr Reddys	0.99	1.17	1.25	1.78	1.86	1.41
	Glenmark	0.30	0.89	0.68	1.13	1.17	0.83
	Lupin	0.99	0.93	1.30	2.51	2.84	1.71
	Piraml	6.47	0.72	0.75	0.49	1.29	1.94
	Sun Pharma	5.18	3.27	2.61	1.15	0.30	2.50

### 6.3 Do NSE Pharma Index based companies have ideal Quick ratio?

**Table 6:** Do companies have ideal Quick Ratio?

Pharmaceutical Companies	Yes/No
Aurobindo	No
Cadila	No
Cipla	Yes
Divis	Yes
Dr Reddys	Yes
Glenmark	No
Lupin	Yes
Piraml	Yes
Sun Pharma	Yes

### 6.4 Testing of Hypothesis

#### H<sub>0.2</sub>: NSE Pharma Index based companies have identical quick ratio

*F*-statistic (calculated) value for the quick ratio is 1.388 (see Annexure 1) and *p*-value is 0.235 which is more than 5% level of significance. There is enough statistical evidence to accept null hypothesis "*H<sub>0.2</sub>*" and reject to alternate hypothesis "*H<sub>1.2</sub>*". It is inferred from analysis of quick ratio (annexure 1) for NSE Pharma Index based companies that companies are maintaining same quick ratio during the study period.

Table 5 shows data regarding inventory turnover ratio for the NSE Pharma index-based companies from the year 2010-11 to 2014-15. Average inventory turnover ratio for

the Aurobindo is 3.70 during the selected years. Lowest and highest inventory turnover ratio for the Aurobindo is 3.28 and 4.15 in the year 2010-11 and 2013-14 respectively. Average inventory turnover ratio for the Cadila is 6.30 during the selected year. Lowest and highest inventory turnover ratio for the Cadila is 6.09 and 6.57 in the year 2013-14 and 2014-15 respectively. Average inventory turnover ratio for the Cipla is 3.50 during the selected years. Lowest and highest inventory turnover ratio for the Cipla is 3.08 and 3.82 in the year 2014-15 and 2011-12 respectively. Average inventory turnover ratio for the Divis is 2.69 during the selected years. Lowest and highest inventory turnover ratio for the Divis is 2.42 and 2.83 in the year 2010-11 and 2011-12 respectively. Average inventory turnover ratio for the Dr Reddys is 5.50 during the selected years. Lowest and highest inventory turnover ratio for the Dr Reddys is 4.99

and 6.11 in the year 2010-11 and 2013-14 respectively. Average inventory turnover ratio for the Glenmark is 8.88 during the selected years. Lowest and highest inventory turnover ratio for the Glenmark is 6.90 and 10.93 in the year 2014-15 and 2013-14 respectively. Average inventory turnover ratio for the Lupin is 5.52 during the selected years. Lowest and highest inventory turnover ratio for the Lupin is 4.79 and 6.51 in the year 2011-12 and 2013-14 respectively. Average inventory turnover ratio for the Piraml is 5.37 during the selected years. Lowest and highest inventory turnover ratio for the Piraml is 3.54 and 7.48 in the year 2010-11 and 2014-15 respectively. Average inventory turnover ratio for the Sun Pharma is 4.17 during the selected years. Lowest and highest inventory turnover ratio for the Sun Pharma is 2.80 and 6.27 in the year 2012-13 and 2011-12 respectively.

**Table 7: Inventory Turnover Ratio of NSE Pharma Index Based Companies**

Pharmaceutical Companies		Financial Year					
		2010-11	2011-12	2012-13	2013-14	2014-15	Mean
Inventory Turnover Ratio	Aurobindo	3.28	3.51	3.79	4.15	3.77	3.70
	Cadila	6.29	6.29	6.26	6.09	6.57	6.30
	Cipla	3.36	3.82	3.50	3.74	3.08	3.50
	Divis	2.42	2.83	2.64	2.81	2.77	2.69
	Dr Reddys	4.99	5.08	5.53	6.11	5.81	5.50
	Glenmark	7.41	8.89	10.25	10.93	6.90	8.88
	Lupin	5.34	4.79	5.35	6.51	5.61	5.52
	Piraml	3.54	4.32	5.36	6.13	7.48	5.37
	Sun Pharma	5.03	6.27	2.80	3.08	3.66	4.17

### 6.5 Testing of Hypothesis

#### **H<sub>0.3</sub>: NSE Pharma Index based companies have identical inventory turnover ratio.**

*F*-statistic (calculated) value for the inventory turnover ratio is 18.254 (see Annexure 1) and *p*-value is 0.000 which is less than 5% level of significance. There is enough statistical evidence to reject null hypothesis "*H<sub>0.3</sub>*" and accept to alternate hypothesis "*H<sub>1.3</sub>*". It is inferred from analysis of inventory turn ratio (annexure 1) for NSE Pharma Index based companies that companies are not same capable to convert its inventory into sales during the study period.

Table 6 shows data regarding Dividend Payout Ratio (NP) for the NSE Pharma index based companies from the year 2010-11 to 2014-15. Average Dividend Payout Ratio (NP) for the Aurobindo is -6.71 during the selected years. Lowest and highest Dividend Payout Ratio (NP) for the Aurobindo is 7.45 and -68.31 in the year 2013-14 and 2011-12 respectively. Average Dividend Payout Ratio (NP) for the Cadila is 22.97 during the selected year. Lowest and highest Dividend Payout Ratio (NP) for the Cadila is 19.32 and 30.80 in the year 2014-15 and 2012-13 respectively. Average Dividend Payout Ratio (NP) for the Cipla is 14.70 during the selected years. Lowest and highest Dividend Payout Ratio (NP) for the Cipla is 10.65 and 23.40 in the

year 2012-13 and 2010-11 respectively. Average Dividend Payout Ratio (NP) for the Divis is 31.89 during the selected years. Lowest and highest Dividend Payout Ratio (NP) for the Divis is 30.44 and 33.53 in the year 2010-11 and 2013-14 respectively. Average Dividend Payout Ratio (NP) for the Dr Reddys is 20.62 during the selected years. Lowest and highest Dividend Payout Ratio (NP) for the Dr Reddys is 15.84 and 25.54 in the year 2013-14 and 2011-12 respectively. Average Dividend Payout Ratio (NP) for the Glenmark is 11.48 during the selected years. Lowest and highest Dividend Payout Ratio (NP) for the Glenmark is 5.09 and 20.39 in the year 2010-11 and 2011-12 respectively. Average Dividend Payout Ratio (NP) for the Lupin is 14.82 during the selected years. Lowest and highest Dividend Payout Ratio (NP) for the Lupin is 11.57 and 16.52 in the year 2013-14 and 2010-11 respectively. Average Dividend Payout Ratio (NP) for the Piraml is -10.02 during the selected years. Lowest and highest Dividend Payout Ratio (NP) for the Piraml is 1.55 and -244.85 in the year 2010-11 and 2013-14 respectively. Average Dividend Payout Ratio (NP) for the Sun Pharma is 18.48 during the selected years. Lowest and highest Dividend Payout Ratio (NP) for the Sun Pharma is -10.98 and 100.24 in the year 2013-14 and 2012-13 respectively.

**Table 8:** Dividend Payout Ratio (NP) of NSE Pharma Index Based Companies

Pharmaceutical Companies		Financial Year					
		2010-11	2011-12	2012-13	2013-14	2014-15	Mean
Dividend Payout Ratio (NP)	Aurobindo	9.88	-68.31	8.80	7.45	8.65	-6.71
	Cadila	20.96	23.36	30.80	20.39	19.32	22.97
	Cipla	23.40	14.28	10.65	11.56	13.59	14.70
	Divis	30.44	31.60	32.56	33.53	31.34	31.89
	Dr Reddys	21.31	25.54	20.13	15.84	20.29	20.62
	Glenmark	5.09	20.39	14.03	12.50	5.38	11.48
	Lupin	16.52	17.76	14.20	11.57	14.06	14.82
	Piramal	1.55	231.02	-130.41	-244.85	92.59	-10.02
	Sun Pharma	26.19	25.92	100.24	-10.98	-48.97	18.48

### 6.6 Testing of Hypothesis

#### **H<sub>0.4</sub>: NSE Pharma Index based companies have identical dividend payout ratio.**

*F*-statistic (calculated) value for the dividend payout ratio is 0.212 (see Annexure 1) and *p*-value is .987 which is greater than 5% level of significance. There is enough statistical evidence to accept null hypothesis "*H<sub>0.4</sub>*" and reject to alternate hypothesis "*H<sub>1.4</sub>*". It is inferred from analysis of dividend payout ratio (annexure 1) for NSE Pharma Index based companies that companies are paying same dividend to its shareholders during the study period.

Table 7 shows data regarding earnings retention ratio for the NSE Pharma index based companies from the year 2010-11 to 2014-15. Average earnings retention ratio for the Aurobindo is 106.71 during the selected years. Lowest and highest earnings retention ratio for the Aurobindo is 90.12 and 168.31 in the year 2010-11 and 2011-12 respectively. Average earnings retention ratio for the Cadila is 77.03 during the selected year. Lowest and highest earnings retention ratio for the Cadila is 69.20 and 80.68 in the year 2012-13 and 2014-15 respectively. Average earnings retention ratio for the Cipla is 85.30 during the selected years. Lowest and highest earnings retention ratio for the Cipla is 76.60 and 89.35 in the year 2010-11 and 2012-13

respectively. Average earnings retention ratio for the Divis is 68.11 during the selected years. Lowest and highest earnings retention ratio for the Divis is 66.47 and 69.56 in the year 2013-14 and 2010-11 respectively. Average earnings retention ratio for the Dr Reddys is 79.38 during the selected years. Lowest and highest earnings retention ratio for the Dr Reddys is 74.46 and 84.16 in the year 2011-12 and 2013-14 respectively. Average earnings retention ratio for the Glenmark is 88.52 during the selected years. Lowest and highest earnings retention ratio for the Glenmark is 79.61 and 94.91 in the year 2011-12 and 2010-11 respectively. Average earnings retention ratio for the Lupin is 85.15 during the selected years. Lowest and highest earnings retention ratio for the Lupin is 82.24 and 88.43 in the year 2011-12 and 2013-14 respectively. Average earnings retention ratio for the Piramal is 110.02 during the selected years. Lowest and highest earnings retention ratio for the Piramal is 7.41 and 344.85 in the year 2014-15 and 2013-14 respectively. Average earnings retention ratio for the Sun Pharma is 81.52 during the selected years. Lowest and highest earnings retention ratio for the Sun Pharma is -0.24 and 148.97 in the year 2012-13 and 2014-15 respectively.

**Table 9:** Earnings Retention Ratio of NSE Pharma Index Based Companies

Pharmaceutical Companies		Financial Year					
		2010-11	2011-12	2012-13	2013-14	2014-15	Mean
Earnings Retention Ratio	Aurobindo	90.12	168.31	91.20	92.55	91.35	106.71
	Cadila	79.04	76.64	69.20	79.61	80.68	77.03
	Cipla	76.60	85.72	89.35	88.44	86.41	85.30
	Divis	69.56	68.40	67.44	66.47	68.66	68.11
	Dr Reddys	78.69	74.46	79.87	84.16	79.71	79.38
	Glenmark	94.91	79.61	85.97	87.50	94.62	88.52
	Lupin	83.36	82.24	85.80	88.43	85.94	85.15
	Piramal	98.45	-131.02	230.41	344.85	7.41	110.02
	Sun Pharma	73.81	74.08	-0.24	110.98	148.97	81.52

### 6.7 Testing of Hypothesis

#### **H<sub>0.5</sub>: NSE Pharma Index based companies have identical earnings retention ratio.**

*F*-statistic (calculated) value for the earnings retention ratio is 0.212 (see Annexure 1) and *p*-value is .987 which is greater than 5% level of significance. There is enough statistical evidence to accept null hypothesis "*H<sub>0.5</sub>*" and reject to alternate hypothesis "*H<sub>1.5</sub>*". It is inferred from analysis of earnings retention ratio (Annexure 1) for NSE Pharma Index based companies that sample companies are retaining its earnings same during the study period.

Table 8 shows data regarding cash earnings retention ratio for the NSE Pharma index-based companies from the year

2010-11 to 2014-15. Average cash earnings retention ratio for the Aurobindo is 88.48 during the selected years. Lowest and highest cash earnings retention ratio for the Aurobindo is 70.99 and 93.57 in the year 2011-12 and 2013-14 respectively. Average cash earnings retention ratio for the Cadila is 80.43 during the selected year. Lowest and highest cash earnings retention ratio for the Cadila is 75.05 and 83.13 in the year 2012-13 and 2014-15 respectively. Average cash earnings retention ratio for the Cipla is 88.36 during the selected years. Lowest and highest cash earnings retention ratio for the Cipla is 81.40 and 91.13 in the year 2010-11 and 2012-13 respectively. Average cash earnings retention ratio for the Divis is 71.71 during the selected

years. Lowest and highest cash earnings retention ratio for the Divis is 69.97 and 73.00 in the year 2013-14 and 2014-15 respectively. Average cash earnings retention ratio for the Dr Reddys is 83.81 during the selected years. Lowest and highest cash earnings retention ratio for the Dr Reddys is 80.80 and 86.77 in the year 2011-12 and 2013-14 respectively. Average cash earnings retention ratio for the Glenmark is 89.36 during the selected years. Lowest and highest cash earnings retention ratio for the Glenmark is 81.11 and 95.37 in the year 2011-12 and 2010-11 respectively. Average cash earnings retention ratio for the

Lupin is 86.86 during the selected years. Lowest and highest cash earnings retention ratio for the Lupin is 84.74 and 89.21 in the year 2011-12 and 2013-14 respectively. Average cash earnings retention ratio for the Piraml is 156.54 during the selected years. Lowest and highest cash earnings retention ratio for the Piraml is 25.23 and 408.38 in the year 2014-15 and 2013-14 respectively. Average cash earnings retention ratio for the Sun Pharma is 92.87 during the selected years. Lowest and highest cash earnings retention ratio for the Sun Pharma is 14.05 and 188.75 in the year 2012-13 and 2014-15 respectively.

**Table 10:** Cash Earning Retention Ratio of NSE Pharma Index Based Companies

Pharmaceutical Companies		Financial Year					
		2010-11	2011-12	2012-13	2013-14	2014-15	Mean
Cash Earning Retention Ratio	Aurobindo	91.84	70.99	93.46	93.57	92.55	88.48
	Cadila	81.91	79.94	75.05	82.13	83.13	80.43
	Cipla	81.40	88.58	91.13	90.63	90.06	88.36
	Divis	72.88	71.62	71.08	69.97	73.00	71.71
	Dr Reddys	83.32	80.80	83.86	86.77	84.30	83.81
	Glenmark	95.37	81.11	86.83	88.31	95.19	89.36
	Lupin	85.36	84.74	87.31	89.21	87.67	86.86
	Piraml	98.46	-45.81	296.42	408.38	25.23	156.54
Sun Pharma	74.97	75.18	14.05	111.39	188.75	92.87	

## 6.8 Testing of Hypothesis

**H<sub>0.6</sub>: NSE Pharma Index based companies have identical cash earnings retention ratio.**

*F*-statistic (calculated) value for the cash earnings retention ratio is 0.672 (see Annexure 1) and *p*-value is 0.713 which is greater than 5% level of significance. There is enough

statistical evidence to accept null hypothesis "*H<sub>0.6</sub>*" and reject to alternate hypothesis "*H<sub>1.6</sub>*". It is inferred from analysis of cash earnings retention ratio (annexure 1) for NSE Pharma Index based companies that sample companies are retaining its cash earnings same during the study period.

**Table 11:** Brief summary of tested hypothesis

Hypothesis	p-value	Level of significance ( $\alpha$ )	Analysis of p-value and $\alpha$	Accepted	Rejected
H <sub>0.1</sub> \ H <sub>1.1</sub>	0.041*	0.05	0.041 < 0.05	Alternate	Null
H <sub>0.2</sub> \ H <sub>1.2</sub>	0.235	0.05	0.235 > 0.05	Null	Alternate
H <sub>0.3</sub> \ H <sub>1.3</sub>	0.000*	0.05	0.000 < 0.05	Alternate	Null
H <sub>0.4</sub> \ H <sub>1.4</sub>	0.987	0.05	0.987 > 0.05	Null	Alternate
H <sub>0.5</sub> \ H <sub>1.5</sub>	0.987	0.05	0.987 > 0.05	Null	Alternate
H <sub>0.6</sub> \ H <sub>1.6</sub>	0.713	0.05	0.713 > 0.05	Null	Alternate

\*. The mean difference is significant at the 0.05 level.

## 7. Conclusion

It is concluded from analysis of current ratios of pharma index-based companies that mean current ratio of all companies is not same. Divis, Sun Pharma, Lupin, Cipla and Piraml mean current ratio is higher than rest of index-based companies current ratio. It concluded that above mention companies hold high liquidity in their business.

It is concluded from analysis of quick ratio of pharma index-based companies that mean quick ratio of all companies is not identical. Sun Pharma, Divis, Piraml, Lupin and Cipla have held quick liquidity more than ideal quick liquidity. It also concluded that current ratio of sun pharma is held but quick ratio is very poor which indicate Sun Pharma may face the problem of obligation of quick liability.

Glenmark, Cadila, Lupin, Dr Reddys and Piraml liquidity performance on inventory turnover ratio is impressive and good. Divis and Cipla take more time to convert its inventory into sales.

It is concluded from earnings retention ratio of companies that Aurobindo, Piraml, Glenmark and Lupin hold more earnings compare to rest of companies for growth and

investment purpose. Divis and Cadila retain low earnings compare to its rivals.

Piraml, Sun Pharma, Glenmark and Aurobindo retain high cash earning compare to its rival firms. Cash earnings retention ratio indicates that firm needs more cash to smooth operation of their business.

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#### Appendix 1: ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Current Ratio	Between Groups	28.905	8	3.613	2.314	.041*
	Within Groups	56.201	36	1.561		
	Total	85.106	44			
Inventory turnover Ratio	Between Groups	14.448	8	1.806	1.388	.235
	Within Groups	46.843	36	1.301		
	Total	61.291	44			
Inventory Turnover Ratio	Between Groups	136.389	8	17.049	18.254	.000*
	Within Groups	33.623	36	.934		
	Total	170.012	44			
Dividend Payout Ratio	Between Groups	7355.102	8	919.388	.212	.987
	Within Groups	155795.891	36	4327.664		
	Total	163150.994	44			
Earning Retention Ratio	Between Groups	7355.509	8	919.439	.212	.987
	Within Groups	155796.310	36	4327.675		
	Total	163151.820	44			
Cash Earning Retention Ratio	Between Groups	24125.966	8	3015.746	.672	.713
	Within Groups	161606.622	36	4489.073		
	Total	185732.589	44			

\*. The mean difference is significant at the 0.05 level.

#### Appendix 2: Post Hoc Tests Only Significant Dependent variable Multiple Comparisons

Dependent Variable	(I) Pharma Companies	(J) Pharma Companies	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
						Current Ratio	Aurobindo
		Cipla	-1.41200	.79022	.690	-4.0174	1.1934
		Divis	-2.16600	.79022	.170	-4.7714	.4394
		Dr Reddys	-.44400	.79022	1.000	-3.0494	2.1614
		Glenmark	.32000	.79022	1.000	-2.2854	2.9254
		Lupin	-1.11000	.79022	.889	-3.7154	1.4954
		Piramal	-.69400	.79022	.993	-3.2994	1.9114
		Sun Pharma	-1.66400	.79022	.485	-4.2694	.9414
	Cadila	Aurobindo	-.01600	.79022	1.000	-2.6214	2.5894
		Cipla	-1.42800	.79022	.677	-4.0334	1.1774
		Divis	-2.18200	.79022	.163	-4.7874	.4234
		Dr Reddys	-.46000	.79022	1.000	-3.0654	2.1454
		Glenmark	.30400	.79022	1.000	-2.3014	2.9094
		Lupin	-1.12600	.79022	.881	-3.7314	1.4794
		Piramal	-.71000	.79022	.992	-3.3154	1.8954
		Sun Pharma	-1.68000	.79022	.473	-4.2854	.9254
	Cipla	Aurobindo	1.41200	.79022	.690	-1.1934	4.0174
		Cadila	1.42800	.79022	.677	-1.1774	4.0334
		Divis	-.75400	.79022	.988	-3.3594	1.8514



		Dr Reddys	.96800	.79022	.945	-1.6374	3.5734
		Glenmark	1.73200	.79022	.432	-.8734	4.3374
		Lupin	.30200	.79022	1.000	-2.3034	2.9074
		Piram	.71800	.79022	.991	-1.8874	3.3234
		Sun Pharma	-.25200	.79022	1.000	-2.8574	2.3534
	Divis	Aurobindo	2.16600	.79022	.170	-.4394	4.7714
		Cadila	2.18200	.79022	.163	-.4234	4.7874
		Cipla	.75400	.79022	.988	-1.8514	3.3594
		Dr Reddys	1.72200	.79022	.440	-.8834	4.3274
		Glenmark	2.48600	.79022	.071	-.1194	5.0914
		Lupin	1.05600	.79022	.913	-1.5494	3.6614
		Piram	1.47200	.79022	.642	-1.1334	4.0774
		Sun Pharma	.50200	.79022	.999	-2.1034	3.1074
		Aurobindo	.44400	.79022	1.000	-2.1614	3.0494
		Cadila	.46000	.79022	1.000	-2.1454	3.0654
	Dr Reddys	Cipla	-.96800	.79022	.945	-3.5734	1.6374
		Divis	-1.72200	.79022	.440	-4.3274	.8834
		Glenmark	.76400	.79022	.987	-1.8414	3.3694
		Lupin	-.66600	.79022	.995	-3.2714	1.9394
		Piram	-.25000	.79022	1.000	-2.8554	2.3554
		Sun Pharma	-1.22000	.79022	.827	-3.8254	1.3854
		Aurobindo	-.32000	.79022	1.000	-2.9254	2.2854
		Cadila	-.30400	.79022	1.000	-2.9094	2.3014
	Glenmark	Cipla	-1.73200	.79022	.432	-4.3374	.8734
		Divis	-2.48600	.79022	.071	-5.0914	.1194
		Dr Reddys	-.76400	.79022	.987	-3.3694	1.8414
		Lupin	-1.43000	.79022	.676	-4.0354	1.1754
		Piram	-1.01400	.79022	.930	-3.6194	1.5914
		Sun Pharma	-1.98400	.79022	.261	-4.5894	.6214
		Aurobindo	1.11000	.79022	.889	-1.4954	3.7154
		Cadila	1.12600	.79022	.881	-1.4794	3.7314
	Lupin	Cipla	-.30200	.79022	1.000	-2.9074	2.3034
		Divis	-1.05600	.79022	.913	-3.6614	1.5494
		Dr Reddys	.66600	.79022	.995	-1.9394	3.2714
		Glenmark	1.43000	.79022	.676	-1.1754	4.0354
		Piram	.41600	.79022	1.000	-2.1894	3.0214
		Sun Pharma	-.55400	.79022	.998	-3.1594	2.0514
		Aurobindo	.69400	.79022	.993	-1.9114	3.2994
		Cadila	.71000	.79022	.992	-1.8954	3.3154
	Piram	Cipla	-.71800	.79022	.991	-3.3234	1.8874
		Divis	-1.47200	.79022	.642	-4.0774	1.1334
		Dr Reddys	.25000	.79022	1.000	-2.3554	2.8554
		Glenmark	1.01400	.79022	.930	-1.5914	3.6194
		Lupin	-.41600	.79022	1.000	-3.0214	2.1894
		Sun Pharma	-.97000	.79022	.945	-3.5754	1.6354
		Aurobindo	1.66400	.79022	.485	-.9414	4.2694
		Cadila	1.68000	.79022	.473	-.9254	4.2854
	Sun Pharma	Cipla	.25200	.79022	1.000	-2.3534	2.8574
		Divis	-.50200	.79022	.999	-3.1074	2.1034
		Dr Reddys	1.22000	.79022	.827	-1.3854	3.8254
Glenmark		1.98400	.79022	.261	-.6214	4.5894	
Lupin		.55400	.79022	.998	-2.0514	3.1594	
Piram		.97000	.79022	.945	-1.6354	3.5754	
Aurobindo		-2.60000*	.61122	.004	-4.6152	-.5848	
Cipla		.20000	.61122	1.000	-1.8152	2.2152	
Aurobindo	Divis	1.00600	.61122	.774	-1.0092	3.0212	
	Dr Reddys	-1.80400	.61122	.110	-3.8192	.2112	
	Glenmark	-5.17600*	.61122	.000	-7.1912	-3.1608	
	Lupin	-1.82000	.61122	.104	-3.8352	.1952	
	Piram	-1.66600	.61122	.175	-3.6812	.3492	
	Sun Pharma	-.46800	.61122	.997	-2.4832	1.5472	
	Aurobindo	2.60000*	.61122	.004	.5848	4.6152	
	Cipla	2.80000*	.61122	.002	.7848	4.8152	
Cadila	Divis	3.60600*	.61122	.000	1.5908	5.6212	
	Dr Reddys	.79600	.61122	.924	-1.2192	2.8112	
	Glenmark	-2.57600*	.61122	.005	-4.5912	-.5608	
	Lupin	.78000	.61122	.932	-1.2352	2.7952	
	Piram	.93400	.61122	.835	-1.0812	2.9492	
	Inventory Turnover Ratio		Cadila	-2.60000*	.61122	.004	-4.6152
Cipla			.20000	.61122	1.000	-1.8152	2.2152
Divis			1.00600	.61122	.774	-1.0092	3.0212
Dr Reddys			-1.80400	.61122	.110	-3.8192	.2112
Glenmark			-5.17600*	.61122	.000	-7.1912	-3.1608
Lupin			-1.82000	.61122	.104	-3.8352	.1952
Piram			-1.66600	.61122	.175	-3.6812	.3492
Sun Pharma			-.46800	.61122	.997	-2.4832	1.5472
Aurobindo			2.60000*	.61122	.004	.5848	4.6152
Cipla			2.80000*	.61122	.002	.7848	4.8152
Divis			3.60600*	.61122	.000	1.5908	5.6212
Dr Reddys			.79600	.61122	.924	-1.2192	2.8112
Glenmark			-2.57600*	.61122	.005	-4.5912	-.5608
Lupin			.78000	.61122	.932	-1.2352	2.7952
Piram	.93400	.61122	.835	-1.0812	2.9492		

		Sun Pharma	2.13200*	.61122	.031	.1168	4.1472
Cipla		Aurobindo	-.20000	.61122	1.000	-2.2152	1.8152
		Cadila	-2.80000*	.61122	.002	-4.8152	-.7848
		Divis	.80600	.61122	.919	-1.2092	2.8212
		Dr Reddys	-2.00400	.61122	.052	-4.0192	.0112
		Glenmark	-5.37600*	.61122	.000	-7.3912	-3.3608
		Lupin	-2.02000*	.61122	.049	-4.0352	-.0048
		Piraml	-1.86600	.61122	.088	-3.8812	.1492
		Sun Pharma	-.66800	.61122	.972	-2.6832	1.3472
Divis		Aurobindo	-1.00600	.61122	.774	-3.0212	1.0092
		Cadila	-3.60600*	.61122	.000	-5.6212	-1.5908
		Cipla	-.80600	.61122	.919	-2.8212	1.2092
		Dr Reddys	-2.81000*	.61122	.002	-4.8252	-.7948
		Glenmark	-6.18200*	.61122	.000	-8.1972	-4.1668
		Lupin	-2.82600*	.61122	.001	-4.8412	-.8108
		Piraml	-2.67200*	.61122	.003	-4.6872	-.6568
		Sun Pharma	-1.47400	.61122	.309	-3.4892	.5412
Dr Reddys		Aurobindo	1.80400	.61122	.110	-.2112	3.8192
		Cadila	-.79600	.61122	.924	-2.8112	1.2192
		Cipla	2.00400	.61122	.052	-.0112	4.0192
		Divis	2.81000*	.61122	.002	.7948	4.8252
		Glenmark	-3.37200*	.61122	.000	-5.3872	-1.3568
		Lupin	-.01600	.61122	1.000	-2.0312	1.9992
		Piraml	.13800	.61122	1.000	-1.8772	2.1532
		Sun Pharma	1.33600	.61122	.436	-.6792	3.3512
Glenmark		Aurobindo	5.17600*	.61122	.000	3.1608	7.1912
		Cadila	2.57600*	.61122	.005	.5608	4.5912
		Cipla	5.37600*	.61122	.000	3.3608	7.3912
		Divis	6.18200*	.61122	.000	4.1668	8.1972
		Dr Reddys	3.37200*	.61122	.000	1.3568	5.3872
		Lupin	3.35600*	.61122	.000	1.3408	5.3712
		Piraml	3.51000*	.61122	.000	1.4948	5.5252
		Sun Pharma	4.70800*	.61122	.000	2.6928	6.7232
Lupin		Aurobindo	1.82000	.61122	.104	-.1952	3.8352
		Cadila	-.78000	.61122	.932	-2.7952	1.2352
		Cipla	2.02000*	.61122	.049	.0048	4.0352
		Divis	2.82600*	.61122	.001	.8108	4.8412
		Dr Reddys	.01600	.61122	1.000	-1.9992	2.0312
		Glenmark	-3.35600*	.61122	.000	-5.3712	-1.3408
		Piraml	.15400	.61122	1.000	-1.8612	2.1692
		Sun Pharma	1.35200	.61122	.420	-.6632	3.3672
Piraml		Aurobindo	1.66600	.61122	.175	-.3492	3.6812
		Cadila	-.93400	.61122	.835	-2.9492	1.0812
		Cipla	1.86600	.61122	.088	-.1492	3.8812
		Divis	2.67200*	.61122	.003	.6568	4.6872
		Dr Reddys	-.13800	.61122	1.000	-2.1532	1.8772
		Glenmark	-3.51000*	.61122	.000	-5.5252	-1.4948
		Lupin	-.15400	.61122	1.000	-2.1692	1.8612
		Sun Pharma	1.19800	.61122	.579	-.8172	3.2132
Sun Pharma		Aurobindo	.46800	.61122	.997	-1.5472	2.4832
		Cadila	-2.13200*	.61122	.031	-4.1472	-.1168
		Cipla	.66800	.61122	.972	-1.3472	2.6832
		Divis	1.47400	.61122	.309	-.5412	3.4892
		Dr Reddys	-1.33600	.61122	.436	-3.3512	.6792
		Glenmark	-4.70800*	.61122	.000	-6.7232	-2.6928
		Lupin	-1.35200	.61122	.420	-3.3672	.6632
		Piraml	-1.19800	.61122	.579	-3.2132	.8172

\*. The mean difference is significant at the 0.05 level.