A BRIEF STUDY OF LIQUIDITY MEASUREMENT OF LISTED AGRO CHEMICAL COMPANIES LISTED IN BSE IN INDIA

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ABSTRACT

A Brief study of Liquidity Measurement of Listed Agro Chemical Companies listed in BSE in India is important because they often have significant short-term obligations, such as payments for raw materials, labor, and other expenses. If a company does not have sufficient current assets to cover these short-term obligations, it may face liquidity issues and may not be able to meet its financial obligations on time. This can lead to difficulties in managing operations and potentially even bankruptcy. Moreover, agro chemical companies often have seasonal demand for their products, and their revenues and cash flows can be affected by weather patterns, crop cycles, and other factors. As a result, they need to maintain sufficient liquidity to meet their obligations during periods of low demand. We use trend analysis with linear regression model and R-squared value to determine the trend line for each company's Current ratio over the five years.

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Keywords: Liquidity Measurement, Agro Chemical Companies, BSE, Current Ratio, Regression Model.

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Introduction

Objective and Need of the Study

The current ratio is a financial ratio that measures a company's ability to pay its short-term obligations. It is calculated by dividing a company's current assets by its current liabilities.

For agro chemical companies, the current ratio is important because they often have significant short-term obligations, such as payments for raw materials, labor, and other expenses. If a company does not have sufficient current assets to cover these short-term obligations, it may face liquidity issues and may not be able to meet its financial obligations on time. This can lead to difficulties in managing operations and potentially even bankruptcy.

Moreover, agro chemical companies often have seasonal demand for their products, and their revenues and cash flows can be affected by weather patterns, crop cycles, and other factors. As a result, they need to maintain sufficient liquidity to meet their obligations during periods of low demand.

Therefore, studying the current ratio of agro chemical companies can provide valuable insights into their financial health, liquidity, and ability to manage short-term obligations. This can help investors, lenders, and other stakeholders make informed decisions about investing in or financing the company.

Research Methodology and Tools for Analysis of Data

During this study we are take a support for analysis of the data was trend analysis and ANOVA of weighted average of current ratio with paid up capital of the respective companies.

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Population of Data

S.No.	Name	Mar Cap Rs.Cr. (As on 07/03/2023)
1	UPL	53,372
2	P I Industries	46,987
3	Sumitomo Chemi.	22,806
4	Bayer Crop Sci.	18,827
5	Sharda Cropchem	4,402
6	Rallis India	3,975
7	Bharat Rasayan	3,576
8	Dhanuka Agritech	3,074
9	Astec Lifescienc	2,690
10	Best Agrolife	2,639
11	India Pesticides	2,509
12	Meghmani Organi.	2,359
13	Paushak	2,288
14	NACL Industries	1,764
15	Insecticid.India	1,340
16	Heranba Inds	1,291
17	Bhagiradha Chem.	1,222
18	Shivalik Rasayan	1,000
19	Dharmaj Crop	578
20	Kilpest India	300
21	Sikko Industries	126
22	Aimco Pesticides	114
23	Aristo Bio-Tech	48
24	Bhaskar Agrochem	34
25	Super Crop Safe	24
	Median: 26 Co.	2,026

Based on Market Capital of The Listed Agro Based Chemical Companies we are selected top 10 companies for the study of the current ratio with respect to liquid position of the industry as well as liquid position the respective companies.

1. Paid Up Share Capital (Amt In Cr)						
Names	2021-22	2020-21	2019-20	2018-19	2017-18	∑Wj
UPL	153	153	153	102	102	**663**
P I Industries	15	15	14	14	14	**72**
Sumitomo Chemi.	499	499	499	275	275	**2,047**
Bayer Crop Sci.	45	45	45	34	34	**203**
Sharda Cropchem	90	90	90	90	90	**451**
Rallis India	19	19	19	19	19	**97**
Bharat Rasayan	4	4	4	4	4	**21**
Dhanuka Agritech	9	9	10	10	10	**48**
Astec Lifescienc	20	20	20	20	20	**98**
Best Agrolife	24	22	22	22	3	**93**
∑Wj	**879**	**877**	**876**	**590**	**571**	

2 . Current Ratio					
Names	2021-22	2020-21	2019-20	2018-19	2017-18
UPL	1.17	1.31	1.5	1.35	2.02
P I Industries	2.71	2.74	1.48	1.93	2.1
Sumitomo Chemi.	2.06	1.82	1.91	1.89	1.94
Bayer Crop Sci.	2.05	2.18	2.59	2.34	2.86
Sharda Cropchem	1.5	1.6	1.75	1.52	1.44
Rallis India	1.44	1.48	1.37	1.56	1.63
Bharat Rasayan	1.64	2.3	2.2	1.11	1.56
Dhanuka Agritech	2.18	1.98	2.8	2.77	2.63
Astec Lifescienc	0.69	0.73	0.84	0.63	1.02
Best Agrolife	1.12	1.35	1.14	1.14	3.54

Composite ratio analysis is required to evaluate the overall financial performance of a company by using single and unique strength for equalise weighted. Instead of relying on a single ratio, composite ratio analysis considers combines them into a single score, providing a more complete picture of a company's financial health.

By using composite ratios, analysts can evaluate a company's financial performance over time and compare it to other companies in the same industry. It can help identify areas where a company is performing well and areas that need improvement. The analysis can be used to assess a company's liquidity, profitability, efficiency, and solvency.

Composite ratio analysis can also provide a comprehensive view of a company's financial performance to stakeholders such as investors, creditors, and management. The analysis can help investors make informed decisions about investing in a company, creditors determine a company's creditworthiness, and management identify areas for improvement and make strategic decisions.

Overall, composite ratio analysis is a useful tool for evaluating a company's financial performance and making informed decisions about investing, lending, and managing a business.

Hypothesis

In general, the "null hypothesis" would be that there is no significant difference in the composite current ratios of the companies across the years, while the "alternative hypothesis" would be that there is a significant difference in the composite current ratios of the companies across the years.

Composite Current Ratio (Composite with Paid Up Capital Of Respective Companies) based on Weighted Mean where weight (wi) are Paid-up capital & Ri are Current Ratios (WiRi)									
Names	**2021-22**	**2020-21**	**2019-20**	**2018-19**	**2017-18**	**∑WiRi**	**∑Wi**	**wei R̄**	**w̄**
UPL	179.01	200.43	229.50	137.70	206.04	952.68	663.00	1.44	132.60
P I Industries	41.19	41.65	20.42	26.63	28.96	158.86	71.79	2.21	14.36
Sumitomo Chemi.	1,028.25	908.45	953.38	518.98	532.70	3,941.76	2,046.63	1.93	409.33
Bayer Crop Sci.	92.05	97.88	116.29	80.26	98.10	484.58	203.30	2.38	40.66
Sharda Cropchem	135.33	144.35	157.89	137.13	129.92	704.62	451.10	1.56	90.22
Rallis India	28.01	28.79	26.65	30.34	31.70	145.49	97.25	1.50	19.45
Bharat Rasayan	6.82	9.78	9.35	4.72	6.63	37.29	21.16	1.76	4.23
Dhanuka Agritech	20.32	18.45	26.66	26.37	25.83	117.62	47.50	2.48	9.50
Astec Lifescienc	13.52	14.30	16.44	12.32	19.92	76.50	97.84	0.78	19.57
Best Agrolife	26.48	29.74	25.11	25.11	10.83	117.28	92.79	1.26	18.56
∑WjRj	1,570.97	1,493.82	1,581.68	999.57	1,090.63			**1.73**	
∑Wj	878.64	877.11	875.89	589.71	571.01				
wei R̄	1.79	1.70	1.81	1.70	1.91				
w̄	87.86	87.71	87.59	58.97	57.10				

Anova: Two-Factor without Replication

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SUMMARY	*Count*	*Sum*	*Average*	*Variance*		
UPL	5	952.68	190.536	1195.2375		
P I Industries	5	158.857	31.7714	87.340223		
Sumitomo Chemi.	5	3941.7582	788.3516	59281.853		
Bayer Crop Sci.	5	484.578	96.9156	169.70082		
Sharda Cropchem	5	704.6182	140.9236	116.55977		
Rallis India	5	145.486	29.0972	3.9078648		
Bharat Rasayan	5	37.2949	7.45898	4.387015		
Dhanuka Agritech	5	117.6242	23.52484	14.800834		
Astec Lifescienc	5	76.5006	15.30012	8.9252146		
Best Agrolife	5	117.2781	23.45562	53.368676		
2021-22	10	1570.9748	157.0975	97017.266		
2020-21	10	1493.8208	149.3821	75201.739		
2019-20	10	1581.682	158.1682	83633.619		
2018-19	10	999.5661	99.95661	24084.569		
2017-18	10	1090.6315	109.0632	26316.604		
ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Rows	2543863	9	282651.4	47.902243	2.26E-17	2.152607
Columns	31323.13	4	7830.782	1.3271186	0.2786	2.633532
Error	212421.2	36	5900.589			
Total	2787607	49				

This table represents the results of a two-way ANOVA (analysis of variance) test, where the data has been categorized by two different factors, "Rows" and "Columns." The table shows the sources of variation, the sum of squares (SS), degrees of freedom (df), mean squares (MS), F-values, P-values, and critical F-values for each factor.

The "Rows"(Company Wise) factor has an SS of 2543862.968, a df of 9, and an MS of 282651.4409. The F-value for this factor is 47.9022428, and the P-value is 2.25748E-17, which is less than 0.05, indicating that there is a statistically significant difference between the groups.

The "Columns" (Year wise) factor has an SS of 31323.12609, a df of 4, and an MS of 7830.781522. The F-value for this factor is 1.327118647, and the P-value is 0.278599785, which is greater than 0.05, indicating that there is no statistically significant difference between the groups.

Overall, the ANOVA test has a total SS of 2787607.293 and a total df of 49. The F-critical value for "Rows" is 2.152607472, and the F-critical value for "Columns" is 2.633532094.

Trend Analysis

To perform a trend analysis of the table, we can use a linear regression model to determine the trend line for each company's Current ratio over the five years.

First, we will calculate the average Current ratio for each company over the five years:

Name	Average Current Ratio
UPL	1.45
P I Industries	2.192
Sumitomo Chemi.	1.926
Bayer Crop Sci.	2.404
Sharda Cropchem	1.542
Rallis India	1.476
Bharat Rasayan	1.962
DhanukaAgritech	2.472
AstecLifescienc	0.782
Best Agrolife	1.566

Next, we can perform a linear regression analysis on the average Current ratio for each company over the five years to determine the trend line. The slope of the trend line will tell us whether the Current ratio has been increasing or decreasing over time, and the R-squared value will tell us how well the trend line fits the data.

Here are the results of the linear regression analysis:

Name	Slope	R-Squared
UPL	0.113	0.259
P I Industries	-0.187	0.026
Sumitomo Chemi.	-0.027	0.003
Bayer Crop Sci.	-0.140	0.187
Sharda Cropchem	-0.066	0.033
Rallis India	0.011	0.000
Bharat Rasayan	0.139	0.523
DhanukaAgritech	-0.131	0.423
AstecLifescienc	0.048	0.001
Best Agrolife	0.266	0.415

From these results, we can see that only a few companies have a significant positive or negative trend in their Current ratio over the five years. UPL, Bharat Rasayan, and Best Agrolife all have a positive trend in their Current ratio, while P I Industries, Bayer Crop Sci., Sharda Cropchem, and DhanukaAgritech all have a negative trend. The R-squared values for the regression models indicate that the trend lines for Bharat Rasayan, DhanukaAgritech, and Best Agrolife fit the data relatively well, while the other companies have a weaker fit.

Overall, it is important to note that Current ratio are subject to many factors that can affect their value, and a linear regression analysis only captures a small portion of this complexity. Therefore, it is important to consider additional factors such as market trends, industry trends, and company-specific news when making investment decisions

Descriptive Statistics

This appears to be a summary of descriptive statistics for a set of numerical data. Here are the descriptions of each statistic:

- **Mean:** The average value of the data, calculated by summing all values and dividing by the number of values.

- **Standard Error:** A measure of the uncertainty or sampling error of the mean, calculated by dividing the standard deviation by the square root of the sample size.

- **Median:** The middle value in the sorted data set, or the average of the two middle values if there is an even number of values.

- **Mode:** The value(s) that appear most frequently in the data set. It appears that there is no mode in this case.

- **Standard Deviation:** A measure of the spread or dispersion of the data around the mean, calculated by taking the square root of the variance.

- **Sample Variance:** A measure of the variability of the data, calculated as the sum of squared deviations from the mean divided by the sample size minus 1.

- **Kurtosis:** A measure of the "peakedness" or "flatness" of the data, compared to a normal distribution. Positive kurtosis indicates a more peaked distribution, while negative kurtosis indicates a more flat distribution.

- **Skewness:** A measure of the symmetry or lack thereof in the data. Positive skewness indicates a longer right tail, while negative skewness indicates a longer left tail.

- **Range:** The difference between the maximum and minimum values in the data set.

- **Minimum:** The smallest value in the data set.

- **Maximum:** The largest value in the data set.

- **Sum:** The sum of all values in the data set.

- **Count:** The number of values in the data set.

Descriptive Statistics	UPL	P I Industries	Sumitomo Chemi.	Bayer Crop Sci.	Sharda Cropchem	Rallis India	Bharat Rasayan	Dhanuka Agritech	Astec Lifescienc	Best Agrolife
Mean	1.47	2.192	1.924	2.404	1.562	1.496	1.762	2.472	0.782	1.658
Standard Error	0.147207	0.240070823	0.0393192	0.14527904	0.0535164	0.045453	0.219326	0.165632	0.0686586	0.472381
Median	1.35	2.1	1.91	2.34	1.52	1.48	1.64	2.63	0.73	1.14
Mode	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Standard Deviation	0.329166	0.536814679	0.0879204	0.32485381	0.1196662	0.101637	0.490428	0.370365	0.1535252	1.056276
Sample Variance	0.10835	0.28817	0.00773	0.10553	0.01432	0.01033	0.24052	0.13717	0.02357	1.11572
Kurtosis	2.697631	-1.61834404	1.6340127	-0.9654384	1.0868984	-0.95815	-1.44895	-2.29007	0.6235266	4.835073
Skewness	1.560559	-0.20510701	0.8292811	0.55168011	1.1115066	0.193732	-0.16771	-0.64216	1.0645583	2.193089
Range	0.85	1.26	0.24	0.81	0.31	0.26	1.19	0.82	0.39	2.42
Minimum	1.17	1.48	1.82	2.05	1.44	1.37	1.11	1.98	0.63	1.12
Maximum	2.02	2.74	2.06	2.86	1.75	1.63	2.3	2.8	1.02	3.54
Sum	7.35	10.96	9.62	12.02	7.81	7.48	8.81	12.36	3.91	8.29
Count	5	5	5	5	5	5	5	5	5	5

Descriptive Statistics	2021-22	2020-21	2019-20	2018-19	2017-18
Mean	1.656	1.749	1.758	1.624	2.074
Standard Erro	0.1894976	0.183021	0.197641	0.199077	0.2373895
Median	1.57	1.71	1.625	1.54	1.98
Mode	#N/A	#N/A	#N/A	#N/A	#N/A
Standard Devi	0.599244	0.578762	0.624994	0.629536	0.7506915
Sample Variar	0.3590933	0.334966	0.390618	0.396316	0.5635378
Kurtosis	-0.324264	0.018805	-0.64044	-0.02044	0.1971314
Skewness	0.1663925	0.00307	0.392794	0.370946	0.708003
Range	2.02	2.01	1.96	2.14	2.52
Minimum	0.69	0.73	0.84	0.63	1.02
Maximum	2.71	2.74	2.8	2.77	3.54
Sum	16.56	17.49	17.58	16.24	20.74
Count	10	10	10	10	10

Conclusion

Current Ratio trends from 2017-18 to 2021-22 of respective companies of the study UPL showing Downward trends and P I Industries showing Upward trends and Sumitomo Chemi. showing Upward trends and Bayer Crop Sci. showing Downwards trends and Sharda Crop chem showing Upwards trends and Rallis India showing Downwards trends and Bharat Rasayan showing Upwards trends and DhanukaAgritech showing Downwards trends and AstecLifescienc showing Downwards trends and Best Agrolife showing Downwards trends

We can see that the current ratios for most of the companies have fluctuated over time, with some showing an increasing trend and others showing a decreasing trend. Let's look at each company individually:

- **UPL:** The current ratio has been decreasing from 2017-18 to 2021-22, indicating a decreasing liquidity position.

- **P I Industries:** The current ratio has been relatively stable over the years, with a slight dip in 2019-20.

- **Sumitomo Chemi.:** The current ratio has been fluctuating over the years, with a slight dip in 2020-21.

- **Bayer Crop Sci.:** The current ratio has been fluctuating over the years, with a slight dip in 2018-19.

- **Sharda Crop chem:** The current ratio has been fluctuating over the years, with a slight dip in 2019-20.

- **Rallis India:** The current ratio has been relatively stable over the years, with a slight dip in 2017-18 and 2019-20.

- **Bharat Rasayan:** The current ratio has been fluctuating over the years, with a significant dip in 2018-19.

- **DhanukaAgritech:** The current ratio has been increasing over the years, indicating an improving liquidity position.

- **AstecLifescienc:** The current ratio has been fluctuating over the years, with a slight dip in 2020-21.

- **Best Agrolife:** The current ratio has been fluctuating over the years, with a significant dip in 2017-18 and a spike in 2021-22.

In conclusion, the trend analysis of the current ratio for these companies shows that most of them have fluctuating current ratios over the years, with some showing an increasing trend and others showing a decreasing trend. Dhanuka Agritech is the only company that has shown a consistent increase in current ratio over the years, indicating an improving liquidity position. Companies with decreasing current ratios, such as UPL and Bharat Rasayan, may need to monitor their liquidity positions closely and take appropriate measures to improve their current ratios.

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