Dr. Reddy's Liquidity Management And Trade-off Between Liquidity, Risk And Profitability: An Empirical Study

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INTRODUCTION

Solvency or Liquidity refers to the ability of a concern to pay in cash its current obligations when they become due for payment by realizing amounts from current assets. Liquidity implies conversion of current assets into cash during the normal course of business, and to have regular uninterrupted flow of cash to meet outside current liabilities as and when due and payable. It also ensures availability of money for day-to-day business operations. It is an attribute that signifies the capacity to meet current financial obligations as and when required. In other words, liquidity is a concern's ability to meet its maturing obligations. Such liquidity of a firm may be ascertained by assessing its ability to hold necessary cash at the time of meeting obligations. A concern must have a certain level of cash above its needs to act as a reserve to meet emergencies.

The Liquidity management is a prerequisite for the very survival of the concern. The short-term creditors of the firm are primarily interested in knowing the firm's ability to meet its current and short-term obligations. If the firm fails to meet such current obligations due to lack of liquidity position, its goodwill in the market is likely to be affected. Therefore, a concern should have the requisite degree of liquidity. It should be neither excessive nor inadequate. Excessive liquidity means an accumulation of idle liquid funds, which may lead to lower profitability, increased speculation and unjustified expansion, whereas, inadequate liquidity results in interruptions of business operations, lower rate of return and loss of business opportunities. A proper balance between these two extreme situations should be maintained for efficient operation of business through skillful liquidity management. Therefore, the concern's policies for managing liquidity should be designed to achieve the goals of adequate liquidity, minimization of risk, and maximizing the profitability.

❁ **Adequate Liquidity :** A concern should have a requisite degree of liquidity essential for the very survival of the concern. It should neither be excessive nor inadequate.

❁ **Minimization of Risk :** A well-monitored minimum level of liquidity at a calculated risk is always good for better profitability.

❁ **Maximizing The Profitability :** Modern management is engaged in the task of maximizing profits. The efficiency of a business concern is measured by the amount of profits earned. The larger the profit, the more efficient and profitable the business becomes.

❁ **Liquidity, Risk And Profitability Trade-off:** A firm can adopt three types of liquidity policies in connection with the trade-off between liquidity, risk and profitability. These are conservative policy, aggressive policy and moderate policy.

❁ **Conservative Policy :** A firm holds a high proportion of current assets to total assets to play safe. This policy will result in a high current ratio, lower profitability and lower risk of failure to meet the current obligations.

❁ **Aggressive Policy :** A firm opts for a lower level of liquidity, thereby investing in current assets at a lower proportion to total assets. This policy will result in low current ratio with high profitability and high risk in meeting the current obligations.

❁ **Moderate Policy :** A policy adopted in between the conservative policy and aggressive policy is termed as moderate policy. In this case, the investment in current asset is neither too high, nor too low. The profitability and risk are also moderate.

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COMPANY PROFILE : DR. REDDY'S LABORATORIES

Dr. Reddy's Laboratories is a global pharmaceutical business that was established in 1984, committed to providing affordable and innovative medicines. Today, its emphasis is on building profitable revenue from exports to regulated markets like USA and Western Europe. It offers an unparalleled portfolio for the US market, and has tie-ups with large US generic companies. Its state-of the- art infrastructure gives it speed, flexible scale, competitive cost and its excellent process chemistry skills ensure that its portfolio keeps up with market needs. The branded formulations business has evolved from an Indian market player to a global organization. Dr. Reddy's branded formulations are marketed in countries across Russia, CIS, Latin America, South Asia, China and Africa. This company forayed into the rural markets in FY09, with the launch of an exclusive portfolio of products targeted at the needs of people in rural India. Efforts are on to achieve a suitable blend of energy conservation, use of renewable sources of energy, water conservation, control on generation, disposal of hazardous waste and green chemistry.

OBJECTIVES OF THE STUDY

To measure and evaluate the efficiency of liquidity management by using the ratio analysis.

1. To compare the liquidity position of the company from year to year by applying Motaal's Comprehensive test;

2. To assess the trade-off between profitability and risk;

3. To assess the association between the liquidity and profitability of the company with Pearson's Correlation and test its significance;

4. To offer suggestions to improve the liquidity management of the company on this study.

LIMITATIONS OF THE STUDY

1. The study is limited to ten years only (2001-2010);

2. The study used the secondary data for analysis and interpretations collected from the published annual reports of the company.

METHODOLOGY OF THE STUDY

The study used the Secondary data, which have been taken from the published annual reports of Dr. Reddy's Laboratories Ltd. for the ten-year period from 2001-10. The data have been suitably rearranged, classified and tabulated according to the requirements of the study.

❁ **Statistical Tools :** For analyzing the performance of the liquidity management, the management accounting technique ratio analysis is used. And statistical techniques like measures of central tendency, measures of dispersion, Pearson' s correlation, Spearman's rank correlation, Motaal's comprehensive test have been used. The students' t test has been applied to test the significance of rank correlation coefficients.

❁ **Efficacy Of The Liquidity Management:** To assess the qualitative efficacy of the liquidity management of Dr. Reddy's Laboratories, comparison of the size of working capital and important liquidity ratios of the company have been analyzed.

❁ **The Size of Working Capital :** The greater the amount of the working capital, the greater is the liquidity. The Table 1 shows that Dr. Reddy's Lab. had positive net working capital throughout the period of the study, and the quantum of working capital showed a fluctuating trend. The average size of the working capital was ₹ 16548529, which showed a good liquidity position of the company. The standard deviation was ₹ 7611486.37, and the coefficient of variation was 46 per cent. Measures of dispersion indicate how large the spread of the distribution is around the central tendency. CV is the relative spread across groups or segments. It measures the extent of spread in a distribution as a percentage to the mean. Larger the CV, the greater is the percentage spread.

❁ **Current Ratio :** This ratio indicates the extent of soundness of the current financial position of a company, and the degree of safe and security provided for the creditors. However, to the management, it reflects the financial planning or the presence of idle assets. It is the relationship between current assets and current liabilities. It is calculated by dividing current assets by current liabilities. Current ratio of 2:1 is considered to be satisfactory. The average current ratio was 4.14, which showed a good liquidity position of the company. The standard deviation was 1.18, and the co-

Table 1 : Size of Working Capital And Ratio Relating To Liquidity Management At Dr. Reddy's Lab.

Year	WC (in thousands)	CR	ALR	CATTAR	CATTR %	CATR	WCTR	WCSR	WCSR %	DTR	ACP in days
2001	4241414	4.08	0.14	0.63	63	1.75	2.32	0.43	43	3.45	106
2002	10553968	6.26a	2.44	0.76	76	1.24	1.48	0.68	68	3.5	104
2003	12833152	5.69	2.52	0.78	78	1.03	1.25	0.8	80	3.7	99
2004	8896867	3.03	1.02	0.64	64	1.46	2.17	0.46	46	4.84	75
2005	13873540	4.15	2.02	0.75	75	0.85	1.12	0.89	89	3.73	98
2006	17425711	3.86	1.07	0.78	78	0.85	1.15	0.87	87	3.45	106
2007	29681396	5.03	1.98	0.79	79	1.01	1.26	0.79	79	3.55	103
2008	21972243	3.85	0.7	0.71	71	1.12	1.52	0.66	66	3.71	98
2009	26640000	3.25	0.32	0.96	96	1.04	1.5	0.67	67	2.82	130
2010	19367000	2.15	0.22	0.64	64	1.21	2.27	0.44	44	4.15	88
Avg.	**16548529.1**	**4.14**	**1.24**	**0.744**	**74.4**	**1.16**	**1.6**	**0.669**	**66.9**	**3.69**	**100.7**
SD	**7611486.374**	**1.18**	**0.88**	**0.094**	**9.351**	**0.26**	**0.45**	**0.1657**	**16.568**	**0.4964**	**13.305**
CV %	**45.99494207**	**28.4**	**70.6**	**12.57**	**12.57**	**22.8**	**27.8**	**24.765**	**24.765**	**13.452**	**13.212**
Median	**15649625.5**	**3.97**	**1.05**	**0.755**	**75.5**	**1.08**	**1.49**	**0.675**	**67.5**	**3.625**	**101**
Mode				**0.78**	**78**	**0.85**				**3.45**	**106**

WC - Working capital ; CR - Current Ratio ; ALR- Absolute Liquidity Ratio ; CATTAR- Current Assets to total Assets Ratio ; CATR - Current Assets Turnover Ratio. WCTR - Working Capital Turnover Ratio; WCSR - Working Capital to Sales Ratio; DTR - Debtors Turnover Ratio ; ACP - Average Collection Period; S.D - Standard deviation, C.V. - Coefficient of Variation.

efficient of variation was 28.4 per cent.

❁ **Absolute Liquidity Ratio :** This ratio is a more rigorous test of the liquidity position of a concern. It establishes a relationship between absolute liquid assets and quick liabilities. It is calculated by dividing cash and marketable securities by the current liabilities. The accepted norm for this is 0.5:1. The ten-year average of 1.24 times indicates a good position from the creditor's point of view. However, from the management point of view, it indicates poor investment policy because excessive liquidity may lead to lower profitability, increased speculation and unjustified expansion. The standard deviation was 0.88, and the coefficient of variation was 70 per cent.

❁ **Current Assets To Total Assets Ratio :** It indicates the extent of total funds invested for working capital purpose. It helps to assess the importance of current assets of a concern. From the Table 1, it is inferred that the current assets (74%) were in the total assets. It indicates that the most portion of the total investment of the company was made for working capital purpose. Higher investment in current assets will increase the liquidity, but it will decrease profitability. The standard deviation was 9.3, and the coefficient of variation was 12.57 per cent.

❁ **Current Assets Turnover Ratio :** This ratio is applied to measure the turnover and profitability of the total current assets employed to conduct the operation of a firm. It indicates how effectively current assets are being utilized by the concern. It is calculated by dividing sales by Current Assets. Higher the turnover, the better is the use of current assets. Lower the turnover of the current assets, worse is the utilization of current assets. The overall average was 1.16 times , which indicates the unfavorable performance. The standard deviation was 0.26, and the coefficient of variation was 22.8 per cent.

❁ **Working Capital Turnover Ratio :** This ratio measures the effective utilization of working capital that is smooth running of the business. Higher sales in comparison to working capital indicates over trading and lower sales in comparison to working capital indicate under trading. A higher ratio is the indication of lower investment of working capital and more profit. The overall average was 1.6 times, which indicates higher investment of working capital. The standard deviation was 0.45, and the coefficient of variation was 27.8 per cent.

❁ **Working Capital To Sales Ratio:** A high ratio was a sign of possible inefficiency in the use of short-term financial resources by the company. A lower ratio implied, by and large, a more efficient use of funds. The overall average was 0.66 times, which indicates efficient use of funds. The standard deviation was 0.16, and the coefficient of variation

was 24.76 per cent.

❁ **Debtors Turnover Ratio And Average Collection Period :** This ratio indicates the efficiency of credit collection and efficiency of credit policy and operational efficiency of a business concern. Higher the ratio and the shorter is the collection period, the better is the liquidity of debtors. Lower the ratio, the longer is the collection period, which implies that payments by debtors are delayed. Average ratio is 3.69 times, and overall average collection period of 100 days implies liberal credit policy and inefficient credit policy. The standard deviation was 0.49 and 13.3 respectively. The co-efficient of variation was 13.45 per cent.

❁ **Liquidity Ranking**: The liquidity position of a concern is largely affected by the composition of working capital. Therefore, Motaal's Comprehensive test has been applied. In this test, a method of ranking has been applied to arrive at a more comprehensive assessment of liquidity of three different factors viz. debtors to current assets ratio, cash and bank to current assets ratio and loans and advances to current asset ratio. A high ratio indicates relatively favorable position and ranking has been done. Ultimate ranking has been done on the principle that lower the point scored, the more favorable is the liquidity position and vice versa. Liquidity position in the year 2009 is considered the best followed by 2008 (Table 2).

Table 2 : Statement of Liquidity In Order Of Ranking of Dr. Reddy's Laboratories

Year	As % to total Current Assets			Liquidity Rank				
	Debtors	Cash	Loans & Advances	Debtors	Cash	Loans & Advances	Total Rank	Ultimate Rank
2001	50.72	3.46	15.34	1	10	6	17	6
2002	35.43	38.9	9.66	3	4	10	17	6
2003	27.78	44.2	12	8	2	8	18	8
2004	30.09	33.8	13.33	4	5	7	16	5
2005	22.84	48.8	11.77	10	1	9	20	10
2006	24.7	27.7	28.8	9	6	4	19	9
2007	28.5	39.3	19.02	7	3	5	15	3
2008	30.24	18.1	30.06	4	7	3	14	2
2009	36.9	9.99	34.01	2	9	2	13	1
2010	29.25	10.1	35.85	6	8	1	15	3

H_0 : There is no significant correlation between Liquidity and Profitability.

H_1 : There is a significant correlation between Liquidity and Profitability.

Table 3 : Rank Correlation Between Liquidity And Profitability Of Dr. Reddy's Laboratories

Year	Current Assets to total assets %	Liquidity Rank	Return on average capital Employed %	Profitability Rank	Rank Difference (d)	D^2
2001	62.93	10	23.25	6	4	16
2002	76.03	5	32.44	2	3	9
2003	78.04	3	25.05	5	-2	4
2004	64.16	8	16.63	8	0	0
2005	74.6	6	2.207	10	-4	16
2006	77.71	4	10.91	9	-5	25
2007	79.37	2	347.4	1	1	1
2008	70.65	7	17.03	7	0	0
2009	95.96	1	25.81	4	-3	9
2010	63.76	9	27.14	3	6	36

Figure 1: Least Correlation Between Liquidity And Return On Capital Employed

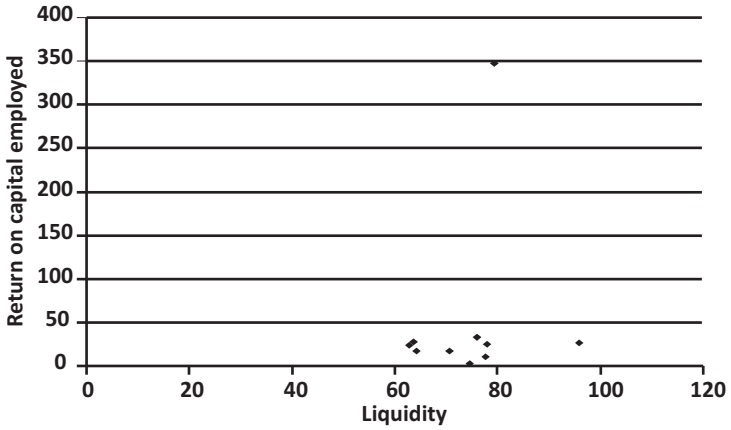

Table 4 : t-Test: Paired Two Sample for Liquidity and Profitability		
	Liquidity	**Profitability**
Mean	5.5	5.5
Variance	9.166666667	9.166667
Observations	10	10
Pearson Correlation	-0.296969697	
Hypothesized Mean Difference	0	
df	9	
t Stat	0	
P(T<=t) one-tail	0.5	
t Critical one-tail	1.833112923	
P(T<=t) two-tail	1	
t Critical two-tail	2.262157158	

❁**Inference:** Calculated t value is less (0) than the t critical (1.833). Hence, the null hypothesis is accepted (Table 4).

❁**Inference:** Calculated f value (0.9, 2.4) is less than the F critical (3.17, 5.11). Hence, the null hypothesis is accepted. There is no significant correlation between liquidity and profitability (Table 5).

H_0 : There is no significant correlation between risk and profitability.

H_1 : There is a significant correlation between risk and profitability.

❁**Inference:** Calculated f value (0.9, 2.4) is less than the F critical (3.17, 5.11). Hence, the null hypothesis is accepted (Table 7).

❁**Inference:** Calculated t value is less and negative (-1.5770547) than the t critical (1.833). Hence, the null

Table 5 : ANOVA						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Rows	50723.8	9	5635.978	1.07256	0.459303	3.178893
Columns	2318.63	1	2318.63	0.441249	0.523172	5.117355
Error	47292.29	9	5254.699			
Total	**100334.7**	**19**				

Table 6 : Rank Correlation Between Risk and Profitability of Dr. Reddy's Laboratories										
Year	Equity+R. Earnings (in thousands)	Long Terms (in thousands)	Fixed Assets (in thousands)	Current Assets (in thousands)	Risk	Risk Rank	Return on average capital employed %	Profitability Rank	Rank difference (d)	D^2
2001	5532567	2461767	3310126	5618283	0.834	3	23.25	6	-3	9
2002	14579874	53014	3959647	12560310	0.85	4	32.44	2	2	4
2003	18069202	126688	4380703	15568828	0.887	5	25.05	5	0	0
2004	19391726	453851	7421666	13286826	0.935	7	16.63	8	-1	1
2005	20740838	32729	6226668	18283767	0.796	2	2.207	10	-8	64
2006	22621417	1451285	6747311	23529013	0.736	1	10.91	9	-8	64
2007	43733566	19225	9626467	37045385	0.921	6	347.4	1	5	25
2008	48118049	34022	12331258	29681692	1.207	8	17.03	7	1	1
2009	52591000	26000	1622000	38477000	1.325	10	25.81	4	6	36
2010	59146000	5624000	20610000	36260000	1.218	9	27.14	3	6	36

Figure 2: Negative Correlation Between Risk And Profitability

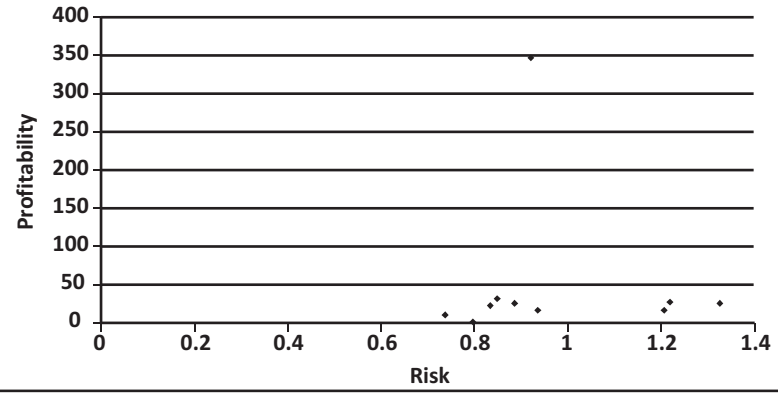

Table 7 : ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Rows	48557.98	9	5395.331	0.999579	0.500245	3.178893
Columns	13424.39	1	13424.39	2.487101	0.149238	5.117355
Error	48578.42	9	5397.603			
Total	**110560.8**	**19**				

hypothesis is accepted. There is no significant correlation between risk and profitability (Table 8).

FINDINGS

1. The average size of the working capital was ₹16548529, which showed a good liquidity position of the company.

2. The ten years average current ratio (4.14) shows that the liquidity position of the companies was very good from the creditors' point of view. But to the management's point of view, it reflects the financial planning and inefficient tie up of funds.

3. The ten years average Absolute Liquid Ratio (ALR) (1.24 times) indicates the inefficiency management of absolute liquid funds.

4. The ten years average Current Assets to Total Assets Ratio(0.74 times /74%) expresses the higher liquidity position, but decreased profitability and lower return on assets as funds are tied up in an idle cash.

Table 8 : t-Test: Paired Two Sample for Risk and Profitability		
	Risk	Profitability
Mean	0.9709	52.7867
Variance	0.0413481	10792.89268
Observations	10	10
Pearson Correlation	-0.0537607	
Hypothesized Mean Difference	0	
df	9	
t Stat	-1.5770547	
P(T<=t) one-tail	0.07461892	
t Critical one-tail	1.83311292	
P(T<=t) two-tail	0.14923784	
t Critical two-tail	2.26215716	

5. The overall average current assets turnover ratio was 1.16 times, indicating worse utilization of current assets.

6. On an average, Dr. Reddy's Lab. maintained working capital turnover ratio at 1.6 times, signifying more liquidity leading to less profit.

7. Average Working Capital to Sales Ratio (WCSR : 0.66 times) indicates efficient utilization of its short-term funds.

8. Average Debtors turnover ratio (3.69 times) implies that payments by debtors are delayed and there is less liquidity.

9. Average collection period indicates the liberal credit policy adopted by the company. Credit management of the company was not satisfactory. However, Coefficient of Variation (CV) of 13 percent showed consistency in relation to credit management.

10. The structural determinants of the working capital reveal that cash balance constitutes 25.7 % followed by loans 24.62%. Highest was Debtors (28%).

11. According to Motaal's Comprehensive test, the liquidity position in the year 2009 is considered to be the best followed by 2008 and 2010.

12. The rank correlation, Pearson's correlation, T test and Anova shows that liquidity and profitability were less correlated to each other.

13. The rank correlation, Pearson's correlation, T test and Anova shows that risk and profitability were negatively correlated to each other.

SUGGESTIONS AND CONCLUSIONS

1. The investment in current assets was much higher at Dr. Reddy's Lab. , and this should be reduced.

2. Excessive liquidity may lead to lower profitability. So negative association between liquidity and profitability should be controlled through skillful liquidity management.

3. The structural determinants of the working capital of the company reveal that the debtors' contributed was the highest to the gross working capital. So, the management should put more stress on the recovery of debts to reduce the number of days its debtors are outstanding.

4. The company should prepare a periodical report of the overdue in order to take effective steps to expedite the collections.

5. The management should try to maintain a definite proportion among the various components of the working capital in relation to the overall current assets in order maintain adequate liquidity and not excess liquidity.

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