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A Study on Industry Practices Relating To Working Capital Policies

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ABSTRACT

Working capital plays a vital role in the firm's operations and requires the efficient management. Most of the companies have informal working capital policy and company size has an influence on the overall working capital policy and approach -conservative, moderate or aggressive. The objective of the study is to analyze the industry practices relating to working capital policies of the selected firm. The data required for the study have been collected from the 'PROWESS' of CMIE and Capitaline Plus database of Capital Market Publishers India Pvt. Ltd, Mumbai, India. There are twenty one out of thirty large pharmaceutical firms has been selected for the study for the period of ten years from 2000-01 to 2009-10. Ratio analysis, descriptive statistics, one-way ANOVA, Tukey's Honestly Significantly Different (HSD) tests, rank order correlation and regression analysis have been used in the analysis. According to the study, pharmaceutical firms are found to follow conservative investment and financing policies. There is no uniformity in the policies of firms even though they belong to same industry. There is a change in policies of all the firms over the period. There is a strong stability in each industry's relative level of aggressiveness with respect to working capital investment policies over a period of time. It found that there is a negative relationship between working capital policies and profitability.

KEYWORDS : Working capital policies, profitability, Conservative investment and financing policies

1. INTRODUCTION

Working capital policy can be best described as a strategy, which provides the guideline to manage the current assets and the current liabilities in a way that it reduces the risk of default (Brian, 2009). Working capital policy mainly focuses on the liquidity of current assets to meet the current liabilities. Liquidity is very important and if the level of liquidity is too high, the company might have idle resources and it has to bear the cost of these idle resources. At the same time if the liquidity is too low then it has to face the lack of resources to meet its current liabilities (Vishnani & Shah, 2007). Current assets are the key components of the working capital and the working capital policies also depend on the level of current assets against the level of current liabilities (Afza & Nazir 2008). The literature on this aspect classifies the working capital policy into three categories-aggressive, conservative and moderate policies (Arnold, 2008).

A company can follow aggressive policy by financing its current assets with the short term debt because it gives low interest rate but the risk associated with short term debt is higher than the long term debt. This approach is considered risky because the difference between short term or liquid assets and short term liabilities turns to be little. Further few finance managers take risk by financing long term asset with short term debts and this approach pushes the working capital on the negative side. Managers try to enhance the profitability by paying lesser interest rate but this approach can be proved very risky if the short term interest rate fluctuates or the cash inflow is not enough to fulfill the current liabilities (Andrew & Gallagher, 1999, p.427). Such a policy is adopted by the company which is operating in a stable economy and is quite certain about future cash flows. A company with aggressive working capital policy offers short credit period to customers, holds minimal inventory and has a small amount of cash in hand. This policy increases the risk of default because a company might face a lack of resources to meet the short term liabilities but it also yields a high return. However, the high return is associated with high risk.

A company that follows a policy by using long term debt and equity to finance its fixed assets and major portion of current assets is said to adopt conservative policy. Resultantly, the level of working capital is quite high and the company has more current assets then the current liabilities. This approach reduces the risk but it also affects profitability because long term debt offers high interest rate which will increase the cost of financing. It means a company is not willing to take risk and feels it appropriate to keep cash or near cash balances, higher inventories and offering generous credit terms. Mostly the companies that are operating in an uncertain environment prefer to adopt such a policy because they are not sure of the future prices, demand, and short term interest rates. In such a situation it is better to have a high level of current assets e.g. to keep the higher level of inventory in the stock to meet the sudden rise in demand and to avoid the risk of stoppage in the production. This policy is endowed with a longer cash conversion cycle for the company. Conservative policy provides the shield against the financial distress created by the lack of funds to meet the short term liability and earlier long term debt have high interest rate which will increase the cost of financing. Similarly, funds tie up in a business because of generous credit policy of the company also have its opportunity cost. Hence, this policy might reduce the profitability and the cost of following this policy might exceed the benefits of the policy.

2. REVIEW OF LITRATURE

Working capital policy has been major issue in developing countries. In order to explain the relationship between working capital policy and profitability, different research studies have been carried out in different parts of the world especially in developing countries. In this section, it is proposed to review existing literature in the field of working capital policies. For this purpose, the research studies of different countries are reviewed below.

Salawu (2007) has studied the relationship between aggressive and conservative working capital practices of Nigerian firms listed in the Nigerian Stock Exchange. He concluded that the firms in different industries have followed different current asset management policies.

Talat Afza and Mian Sajid Nazir (2007) have investigated the relative relationship between the aggressive or conservative working capital policies and profitability as well as risk of the 208 public limited companies listed at Karachi Stock Exchange for the period of eight years from 1998 to 2005. They found a negative relationship between the profitability measures of firms and degree of aggressiveness of working capital investment and financing policies. The firms yield negative returns if they follow an aggressive working capital policy. The study also found that the significant differences among their working capital investment and financing policies across different industries.

Rahesh Yadav, Vani Kamath and Pradip Manjrekar (2009) analyzed the working capital management of bulk drugs companies listed in Bombay Stock Exchange. Ratio analysis has been used to analyze the data. Results of the study revealed that the working capital policy is not static over the study period. It varied with the changes in the state of

the economy. Therefore, in times of high business volatility, companies tend to adopt a conservative approach, and they tend to adopt an aggressive approach in times of low volatility.

Sushma Vishnani and Bhupesh.Shah (2009) empirically studied the impact of working capital management policies and practices on profitability of 23 listed Indian consumer electronics industry during the period of eleven years from 1994-95 to 2004-05. The data required for the study have been collected from CMIE database – Prowess. For analyzing the data, statistical techniques like simple regression, simple correlation and statistical tests like 'p' – values and't'-values have been used. The results showed that there is no relationship between liquidity and profitability exists for the industry as a whole. The various companies depicted, different types of relationship between liquidity and profitability although majority of them revealed positive association between liquidity and profitability. The study also revealed that the working capital management policies and practices have profound impact on a company's profit performance.

Magpayo (2010) determined the effect of working capital management policy and financial leverage on financial performance of 110 Philippines firms measured in terms of net income, return on equity and return on asset. Results of the study indicated that the firm's working capital management policy, financial leverage and firm size have significant relationship with net income. However working capital management policy has no significant effect on return on equity and return on assets.

Faris Nasif and AL.Shubiri (2011) have investigated the relationship between aggressive and conservative working capital practices and profitability as well as risk of fifty-nine industrial firms and fourteen banks listed on the Amman Stock Exchange, Jordan for the period of five years from 2004 to 2008. Their results indicated that there is a negative relationship between profitability measures and working capital aggressiveness, investment and financing policy. There is no statistically significant relationship between the level of current assets and current liabilities on operating and financial risk in industrial firms.

Sharma and Satish Kumar (2011) empirically analyzed the effect of working capital management on profitability of two hundred and sixty three non-financial Indian firms listed at the Bombay Stock Exchange for the period of nine years from 1999-2000 to 2007-08. In order to analyze the effects of working capital, return on assets has used as a dependent variable. Number of days accounts receivable, account payable and inventory have used as the independent variable and have considered for measuring the working capital. The results revealed that the working capital management and profitability are positively correlated in Indian companies. The study also revealed that the inventory in number of days and number of day's accounts payable are negatively correlated with a firm's profitability, whereas number of days accounts receivables and cash conversion period exhibit a positive relationship with corporate profitability.

Amalendu Bhunia and Amit Das (2012) examined the relationship between the working capital management and profitability of Indian private sector small and medium steel companies for the period of 8 years from 2003-04 to 2010-11. Regression and multiple correlations have been used in the analysis. The study showed a small relationship between working capital cycle and profitability. Multiple regression tests confirmed a lower degree of association between the working capital management and profitability.

3. RESEARCH METHODOLOGY

The data required for the study has been collected from the 'PROWESS' of CMIE and Capitaline Plus database of Capital Market Publishers India Pvt. Ltd, Mumbai, India. There are twenty one out of thirty large pharmaceutical firms has been selected for the study for the period of ten years from 2000-01 to 2009-10. Ratio analysis, descriptive statistics, one-way ANOVA, Tukey's Honestly Significantly Different (HSD) tests, rank order correlation and regression analysis have been used in the analysis.

4.2 Sample

The data have been collected for twenty one large pharmaceutical firms in India due to the availability of data for a period of ten years. Firms taken for the study are Alembic Ltd, Aurobindo Pharma, Cadila Healthcare, Cipla, Dr.Reddy's Lab, FDC Pharmaceuticals Ltd, Glenmark, Pharmaceuticals Ltd, IPCA Laboratories Ltd, JB Chemicals and Pharmaceuticals Ltd, KDL Biotech Ltd, Kopran, Lyka Laboratories, Morepan Laboratories Ltd, Natco Pharma Ltd, Piramal Healthcare Ltd, Ranbaxy, Sun Pharmaceuticals Industries Ltd, Torrent pharmaceuticals ltd, TTK Healthcare, Unichem Laboratories Ltd, and Wockhardt.

4. ANALYSIS OF WORKING CAPITAL MANAGEMENT POLICIES

The study has adopted two ratios- AIP and AFP to signify the policies followed by the sample firms. Accordingly, an aggressive policy is computed as follows:

Aggressive Investment Policy = Total Current Assets /Total Assets (TCA/TA)

The other measure is aggressive financing policy which is the ratio of TCL to TA.

Aggressive Financing policy = Total Current Liabilities/Total Assets (TCL/TA)

4.1 Descriptive analysis

Descriptive analysis is used in the analysis of policies. The total current assets to total assets ratio and total current liabilities to total assets ratio are averaged for each firm for all ten years and then industry mean is calculated. The standard deviation is the measure of the variation of these ratios for each year and an average value is calculated for each firm by the same method.

Table 1 reveals the descriptive statistics relating to the two ratios of the firms in the sample. The first ratio is the ratio of current assets to total assets. The second one relates to the financing policy represented by the ratio of total current liabilities to total assets.

Aggressive policies reflect a lower level of current assets to total assets. On the contrary, a higher ratio indicates conservativeness. On this basis if we look at the mean ratio of current assets to total assets, it is well above 50 percent in all the firms. The overall mean value is 67 percent. It can be inferred that the sample firms have adopted a conservative approach to working capital.

An analysis of the second ratio also indicates that the mean value is 25 percent. Individual firms indicate lower values except a few firms. The variation as shown by the standard deviation is not high. Firms seem to follow a conservative approach in financing the current assets as the ratio is on a lower level.

Table 1 Current Assets Investment and Financing Policies

Ratios	Ratio I			Ratio II		
	Mean (%)	S.D (%)	C.V (%)	Mean (%)	S.D (%)	C.V (%)
Alembic	71	05	07	26	03	11
Aurobindo	74	08	11	17	05	27
Cadila	50	05	11	22	06	25
Cipla Ltd	92	12	13	37	11	30
Dr Reddy's	71	12	17	19	04	23
FDC Ltd	46	07	16	22	04	17
Glenmark	74	12	16	16	06	37
Ipca	71	08	11	20	04	22
J B Chemicals	78	04	05	16	04	24
KDL Biotech	48	15	32	29	15	50
Kopran	55	05	10	19	07	35
Lyka Labs	97	25	26	44	09	20
Morepen	27	14	53	08	04	49
Natco	62	09	14	20	04	23
Piramal	65	09	14	27	06	20
Ranbaxy	72	19	26	39	11	27
Sun Pharma	58	14	23	15	05	32
Torrent	62	09	14	28	05	17

Ratios	Ratio I			Ratio II		
	Mean (%)	S.D (%)	C.V (%)	Mean (%)	S.D (%)	C.V (%)
TTK Healthcare	106	26	24	64	18	27
Unichem	61	07	12	28	04	13
Wockhardt	68	08	12	25	09	37
Average	67	11	17	25	06	26

Note: Ratio I represents Investment Policy, Ratio II represents Financing Policy

4.2 DIFFERENCES IN THE WORKING CAPITAL INVESTMENT AND FINANCING POLICIES:

Differences in the relative degree of aggressive and conservative policies of the firms have been tested through one-way ANOVA. The following null hypothesis is formulated in connection with this.

$H_{0\text{-}1\text{-}a}$:
There is no difference in the working capital investment policies of the firms during the study period

$H_{0\text{-}1\text{-}b}$:
There is no difference in the working capital financing policies of the firms during the study period

Table 2 reveals that the ANOVA results of aggressive investment policies of selected firms. The resulting value of F-test is 20.09, which is significant at 1% level, indicates that there is a significant difference exists between the firms relating to aggressive and conservative investment policies. It means that all firms are not following the same type of investment policy during the study period. To further examine the strength of results of ANOVA, Tukeys Honestly Significantly Different (HSD) test is applied to compare the firm's means on a paired sample basis. The results of the test are also shown in the Table 2. This shows that out of 210 comparisons, 69 are significant at 1% level and 19 comparisons are significant at 5% level. This left 121 pairs of industries with ratios whose differences were not statistically significant. It is apparent that significant firm specific differences do exist in the relative degree of aggressive working capital policies for asset management. However, both the ANOVA and Tukey's HSD tests show these differences are generally broader and more significant when examining asset management.

Table- 2 Significant Levels for Mean Differences of the TCL/TA Ratio of the Firms The Firms (F-Test and Tukey's HSD Test) (n=21)
F Statistic=20.09

FIRMS	Alembic	Aurobindo	Cadila	Cipla	Reddy's	FDC	Glenmark	Ipca	J BCD	KDL	Kopran	Lyka	Morepan	Natco	Piramal	Ranbaxy	Sun	Torrent	TTK	Unichem
Aurobindo	-0.572																			
Cadila	4.54**	5.11**																		
Cipla	-4.48**	-3.90	-9.01*																	
Reddy's	-0.09	0.49	-4.62**	4.39																
FDC	5.43*	6.00*	0.89	9.91*	5.52*															
Glenmark	-0.64	-0.07	-5.18**	3.84	-0.55	-6.07*														
Ipca	0.01	0.58	-4.53**	4.48**	0.09	-5.43*	0.64													
J B C D	-1.63	-1.06	-6.17*	2.85	-1.54	-7.06*	-0.99	-1.64												
KDL	4.99**	5.56*	0.45	9.46*	5.08**	-0.44	5.63*	4.98**	6.62*											
Kopran	3.38	3.95	-1.16	7.86*	3.47	-2.05	4.02	3.37	5.01**	-1.61										
Lyka	-5.61*	-5.04**	-10.15*	-1.14	-5.53*	-11.05*	-4.98**	-5.62*	-3.98	-10.60*	-8.99*									
Morepan	9.49*	10.06*	4.95**	13.97*	9.58*	4.06	10.13*	9.48*	11.12*	4.50**	6.11*	15.10*								
Natco	1.98	2.55	-2.56	6.45*	2.06	-3.45	2.61	1.97	3.61	-3.01	-1.40	7.59*	-7.51*							
Piramal	1.19	1.77	-3.34	5.67*	1.28	-4.24	1.83	1.19	2.82	-3.80	-2.19	6.81*	-8.30*	-0.78						
Ranbaxy	-0.33	0.24	-4.86**	4.15	-0.24	-5.76*	0.31	-0.33	1.30	-5.32*	-3.71	5.29*	-9.82*	-2.30	-1.52					
Sun	2.71	3.28	-1.83	7.18*	2.79	-2.72	3.35	2.70	4.34	-2.28	-0.67	8.32*	-6.78*	0.73	1.51	3.04				
Torrent	1.97	2.55	-2.56	6.45*	2.06	-3.46	2.61	1.97	3.60	-3.01	-1.41	7.59*	-7.51*	0.00	0.78	2.30	-0.73			

FIRMS	Alembic	Aurobindo	Cadila	Cipla	Reddy's	FDC	Glenmark	Ipca	J BCD	KDL	Kopran	Lyka	Morepan	Natco	Piramal	Ranbaxy	Sun	Torrent	TTK	Unichem
TTK	-7.62*	-7.05*	-12.16*	-3.15	-7.54*	-13.05*	-6.98*	-7.63*	-5.99*	-12.61*	-11.00*	-2.01	-17.11*	-9.60*	-8.82*	-7.29*	-10.33*	-9.60*		
Unichem	2.12	2.69	-2.42	6.59*	2.20	-3.32	2.75	2.11	3.75	-2.87	-1.26	7.73*	-7.37*	0.14	0.92	2.44	-0.59	0.14	9.74*	
Wockhardt	0.58	1.15	-3.96	5.05**	0.66	-4.86**	1.21	0.57	2.20	-4.41**	-2.81	6.19*	-8.91*	-1.40	-0.62	0.90	-2.13	-1.40	8.20*	-1.54

Table- 3 Significant Levels for Mean Differences of the TCL/TA Ratio of the Firms (F-Test and Tukey's HSD Test) (n=21)
F Statistic=25.386

FIRMS	Alembic	Aurobindo	Cadila	Cipla	Reddy's	FDC	Glenmark	Ipca	J B C D	KDL	Kopran	Lyka	Morepan	Natco	Piramal	Ranbaxy	Sun	Torrent	TTK	Unichem
Aurobindo	2.37																			
Cadila	0.98	-1.39																		
Cipla	-3.24	-5.61*	-4.22																	
Reddy's	2.01	-0.36	1.03	5.25*																
FDC	0.92	-1.45	-0.06	4.17	-1.09															
Glenmark	2.78	0.41	1.80	6.03*	0.78	1.86														
Ipca	1.69	-0.69	0.70	4.93**	-0.32	0.76	-1.10													
J B C D	2.80	0.43	1.82	6.04*	0.79	1.88	0.01	1.11												
KDL	-1.07	-3.44	-2.05	2.18	-3.07	-1.99	-3.85	-2.75	-3.86											
Kopran	1.77	-0.61	0.78	5.01**	-0.24	0.84	-1.02	0.08	-1.03	2.83										
Lyka	-5.29*	-7.66*	-6.27*	-2.04	-7.29*	-6.21*	-8.07*	-6.97*	-8.08*	-4.22	-7.05*									
Morepan	5.01**	2.64	4.03	8.25*	3.00	4.08	2.22	3.32	2.21	6.07*	3.24	10.29*								
Natco	1.68	-0.69	0.70	4.92**	-0.33	0.76	-1.11	-0.01	-1.12	2.75	-0.09	6.96*	-3.33							
Piramal	-0.51	-2.88	-1.49	2.73	-2.52	-1.43	-3.29	-2.19	-3.31	0.56	-2.27	4.78**	-5.51*	-2.19						
Ranbaxy	-4.00	-6.37*	-4.98**	-0.76	-6.01*	-4.93**	-6.79*	-5.69*	-6.80*	-2.94	-5.77*	1.28	-9.01*	-5.68*	-3.50					
Sun	2.98	0.61	2.00	6.22*	0.97	2.06	0.19	1.29	0.18	4.05	1.21	8.26*	-2.03	1.30	3.49	6.98*				
Torrent	-0.75	-3.12	-1.73	2.50	-2.75	-1.67	-3.53	-2.43	-3.55	0.32	-2.51	4.54**	-5.75*	-2.43	-0.24	3.26	-3.73			
TTK	-11.09*	-13.46*	-12.07*	-7.85*	-13.10*	-12.01*	-13.87*	-12.77*	-13.89*	-10.02*	-12.85*	-5.80*	-16.09*	-12.77*	-10.58*	-7.08*	-14.07*	-10.34*		
Unichem	-0.81	-3.18	-1.79	2.43	-2.82	-1.73	-3.59	-2.50	-3.61	0.26	-2.58	4.48**	-5.82*	-2.49	-0.30	3.19	-3.79	-0.06	10.28*	
Wockhardt	0.31	-2.06	-0.67	3.55	-1.70	-0.61	-2.48	-1.38	-2.49	1.38	-1.46	5.59*	-4.70**	-1.37	0.82	4.31	-2.67	1.06	11.40*	1.12

The ANOVA results of financing policies are presented in the Table 3. The observed F-ratio of 25.386 is significant at 1% level. This indicates that there exist differences among firms in financing their working capital. All the firms are not uniformly following conservative financing policy. The Tukeys HSD test is also performed to examine the strength of difference between the industry values. The results of the test, which are also, contained in Table 3 reveals that out of

210 comparisons, 10 comparisons are significant at 5% level and 52 comparisons are significant at 1% level. Therefore, both ANOVA and Tukeys HSD tests have confirmed that there is significant difference in the liability management policies between the firms during the study period.

Therefore both ANOVA and Tukeys HSD tests have confirmed the uniformity is not existed in the liability management policies between firms. The null hypothesis is rejected in this study. There is a difference in the working capital policies of all the firms during the study period. Firms seem to follow different types of working capital policies, even though they are in the same industry.

4.3 CHANGES IN THE WORKING CAPITAL INVESTMENT AND FINANCINGPOLICIES:

To the extent that industry policies change over time, the question arises whether they change in the same direction and at the same time, reflecting a possible macroeconomic influence. Regression analysis is used to examine the relationship in the changes between firms. Null hypothesis is formulated to investigate the level of changes in policies of different firms during the period of study.

$H_{0\text{-}2\text{-}a}$:
There is no change in the investment policies of the firms over the study period.

$H_{0\text{-}2\text{-}b}$:
There is no change in the financing policies of the firms over the study period.

Table- 4. Regressions, Between Industries, of Current Asset/ Total Asset Ratios for the Ten Year Period of the Firms(R-Squared and t Values) (n=21)

Firms	Alembic	Aurobindo	Cadila	Cipla	Reddy's	FDC	Glenmark	Ipca	J B C D	KDL	Kopran	Lyka	Morepan	Natco	Piramal	Ranbaxy	Sun	Torrent	TTK	Unichem
Aurobindo	0.20																			
	(0.96)																			
Cadila	-0.18	0.19																		
	(-1.04)	(1.44)																		
Cipla	0.01	0.19	-0.15																	
	(0.13)	(1.44)	(-0.88)																	
Reddy's	0.11	-0.62	0.73	-1.42																
	(0.47)	(-1.99)***	(1.98)***	(-1.92)***																
FDC	0.15	-0.11	0.14	0.80	0.02															
	(0.57)	(-0.26)	(0.26)	(0.80)	(0.06)															
Glenmark	-0.05	0.51	-0.40	1.36	-0.67	0.05														
	(-0.29)	(2.30)**	(-1.31)	(2.93)*	(-5.89)*	(0.22)														
Ipca	-0.31	-0.51	0.66	0.20	0.01	-0.21	0.14													
	(-1.51)	(-1.55)	(1.77)***	(0.23)	(0.03)	(-0.74)	(0.29)													
JB C D	0.20	0.79	-0.30	2.16	-0.56	0.05	1.14	0.22												
	(0.79)	(2.37)**	(-0.60)	(3.20)*	(-1.60)	(0.14)	(3.13)*	(0.55)												
KDL	-0.01	-0.05	-0.02	-0.16	-0.08	-0.01	0.06	-0.03	-0.09											
	(-0.18)	(-0.48)	(-0.16)	(-0.63)	(-0.83)	(-0.11)	(0.41)	(-0.33)	(-1.06)											
Kopran	-0.01	-0.57	0.44	-0.73	0.49	-0.04	-0.74	0.14	-0.35	-0.23										
	(-0.05)	(-4.28)*	(1.88)***	(-1.44)	(3.54)*	(-0.20)	(-5.00)	(0.65)	(-2.24)**	(-0.31)										
Lyka	-0.10	0.18	-0.15	0.30	-0.14	-0.29	0.20	0.18	0.14	-0.21	-0.20									
	(-0.92)	(1.05)	(-0.71)	(0.71)	(-0.85)	(-2.71)**	(0.91)	(1.13)	(0.97)	(-0.36)	(-0.76)									
Morepan	0.04	-0.34	0.33	-2.48	0.52	-0.04	-0.79	-0.09	-0.51	0.51	0.36	-0.63								
	(0.17)	(-0.88)	(0.72)	(-6.33)*	(1.57)	(-0.14)	(-1.84)***	(-0.22)	(-1.81)***	(0.40)	(0.62)	(-0.84)								
Natco	-0.22	-0.93	0.79	-1.64	0.57	0.00	-0.99	0.31	-0.65	0.28	1.25	-0.58	0.45							
	(-1.06)	(-5.22)*	(2.37)**	(-2.52)**	(2.02)	(0.00)	(-3.28)*	(0.91)	(-3.28)*	(0.25)	(3.96)*	(-0.86)	(1.63)							
Piramal	0.12	0.38	-0.42	1.69	-0.33	0.30	0.62	-0.20	0.37	-0.21	-0.55	-0.11	-0.55	-0.59						
	(0.68)	(1.41)	(-1.32)	(4.70)*	(-1.30)	(1.40)	(2.08)**	(-0.74)	(1.80)	(-0.23)	(-1.42)	(-0.20)	(-3.26)*	(-3.05)*						

Firms	Alembic	Aurobindo	Cadila	Cipla	Reddy's	FDC	Glenmark	Ipca	J B C D	KDL	Kopran	Lyka	Morepan	Natco	Piramal	Ranbaxy	Sun	Torrent	TTK	Unichem
Ranbaxy	-0.01	0.06	-0.17	0.16	-0.22	0.21	0.27	-0.09	0.01	0.52	-0.34	-0.36	0.03	-0.10	0.19					
	(-0.06)	(0.42)	(-1.03)	(0.45)	(-1.78)***	(2.22)**	(1.62)	(-0.60)	(0.10)	(1.17)	(-1.78)***	(-1.36)	(0.19)	(-0.70)	(1.12)					
Sun	-0.16	0.32	-0.38	0.17	-0.70	0.11	0.80	-0.01	0.12	1.36	-1.01	0.06	0.08	-0.21	0.02	1.66				
	(-0.80)	(1.00)	(-1.00)	(0.21)	(-3.63)*	(0.40)	(2.52)**	(-0.03)	(0.45)	(1.45)	(-2.88)*	(0.10)	(0.27)	(-0.68)	(0.04)	(3.22)*-				
Torrent	0.24	0.60	-0.86	1.35	-0.54	0.08	0.82	-0.05	0.50	-0.11	-0.91	0.53	-0.31	-0.72	0.72	0.97	0.34			
	(1.26)	(2.20)**	(-3.17)*	(2.06)***	(-2.09)**	(0.28)	(2.59)**	(-0.17)	(2.27)**	(-0.10)	(-2.31)**	(0.83)	(-1.14)	(-3.46)*	(2.24)**	(1.35)	(1.00)			
TTK	0.05	-0.19	0.13	-0.47	0.19	0.01	-0.30	-0.02	-0.15	0.10	0.32	-0.26	0.14	0.20	-0.20	-0.16	-0.13	-0.15		
	(0.82)	(-2.72)**	(1.27)	(-3.22)*	(3.34)*	(0.13)	(-5.68)*	(-0.18)	(-2.78)**	(0.33)	(4.09)*	(-1.63)	(2.26)**	(3.50)*	(-2.20)**	(-0.79)	(-1.43)	(-1.92)***		
Unichem	0.00	0.30	-0.11	2.58	-0.25	0.45	0.79	0.15	0.61	-1.09	-0.55	0.32	-0.79	-0.65	1.29	0.49	-0.16	0.62	-2.89	
	(0.00)	(0.69)	(-0.20)	(4.83)*	(-0.61)	(1.40)	(1.62)	(0.35)	(2.03)***	(-0.81)	(-0.88)	(0.38)	(-2.88)*	(-1.81)""	(4.58)*	(0.48)	(-0.35)	(1.52)	(-2.15)**	
Wockhardt	0.01	0.20	-0.30	0.27	-0.21	0.06	0.26	0.06	0.16	-0.58	-0.35	0.25	0.02	-0.13	0.05	0.49	0.26	0.34	-0.69	0.05
	(0.11)	(1.20)	(-1.64)	(0.65)	(-1.41)	(0.45)	(1.24)	(0.37)	(1.15)	(-1.10)	(-1.47)	(0.73)	(0.11)	(-0.80)	(0.23)	(1.29)	(1.58)	(2.36)**	(-1.07)	(0.34)

Table 5 Regressions, Between Industries, of Current Liabilities /Total Asset Ratios for the Ten Year Period of theFirms (R-Squared and t Values) (n=21)

Firms	Alembic	Aurobin	Cadila	Cipla	Reddys	FDC	Glenmark	Ipca	J B C D	KDL	Kopran	Lyka	Morepan	Natco	Piramal	Ranbaxy	Sun	Torrent	TTK	Unichem
Aurobindo	0.27																			
	(1.36)																			
Cadila	0.31	-0.14																		
	(0.98)	(-0.26)																		
Cipla	-0.09	-0.13	-0.21																	
	(-0.61)	(-0.55)	(-1.47)																	
Reddy's	0.01	-0.07	0.03	0.64																
	(0.04)	(-0.31)	(0.20)	(2.60)																
FDC	-0.43	-0.14	-0.26	1.10	1.13															
	(-2.25**)	(-0.37)	(-1.11)	(2.72**)	(2.57**															
Glenmark	-0.08	-0.35	0.11	0.20	0.38	0.10														
	(-0.51)	(-1.68)	(0.70)	(0.58)	(1.09)	(0.44)														
Ipca	0.17	0.10	-0.19	0.90	0.70	0.21	-0.10													
	(0.79)	(0.27)	(-0.81)	(2.12**)	(1.38)	(0.64)	(-0.19)													
J B C D	0.06	0.10	-0.72	1.13	0.92	0.69	-0.80	0.40												
	(0.14)	(0.15)	(1.91)***	(1.23)	(0.93)	(1.20)	(-0.85)	(0.62)												
KDL	-0.03	0.17	0.00	0.34	0.09	0.14	-0.12	0.07	-0.05											
	(-0.23)	(0.93)	(-0.02)	(1.39)	(0.31)	(0.86)	(-0.46)	(0.36)	(-0.51)											
Kopran	0.30	0.18	-0.35	-0.31	-0.97	-0.72	-0.83	0.56	0.13	-1.18										
	(0.95)	(0.33)	(-1.07)	(-0.40)	(-1.30)	(-1.71)	(-1.16)	(1.16)	(0.48)	(-1.29)										
Lyka	-0.07	0.05	-0.13	0.37	0.29	0.25	-0.06	0.13	0.10	0.22	-0.03									
	(-1.12)	(0.42)	(2.13)**	(3.69*)	(2.02)***	(4.53)*	(-0.37)	(1.35)	(2.27)**	(1.09)	(-0.35)									
Morepan	-0.13	-0.09	-0.25	0.66	0.46	0.39	-0.06	0.23	0.23	0.12	0.01	1.61								
	(-1.11)	(-0.46)	(2.54)**	(3.83*)	(1.75)***	(3.29)*	(-0.19)	(1.33)	(3.56)*	(0.32)	(0.08)	(6.24)*								

Natco	-0.31	-0.19	-0.17	1.15	0.94	0.77	0.31	0.33	0.11	0.96	-0.30	2.35	1.18							
	1.79)***	(-0.58)	(-0.80)	(4.50*)	(2.46)**	(6.07)*	(0.67)	(1.10)	(0.68)	(1.87)***	(-1.60)	(3.87)*	(2.91)*							
Piramal	0.19	0.14	-0.34	0.44	-0.15	-0.17	-0.11	0.46	0.03	0.16	0.28	0.12	0.16	-0.09						
	(1.00)	(0.44)	(-1.95)	(1.01)	(-0.32)	(-0.61)	(-0.24)	(1.72)	(0.17)	(0.27)	(1.49)	(0.12)	(0.28)	(-0.25)						
Ranbaxy	0.05	0.05	-0.19	0.35	0.05	0.03	-0.19	0.30	0.07	0.15	0.14	0.50	0.33	0.09	0.42					
	(0.55)	(0.36)	(2.67**)	(1.96)***	(0.20)	(0.21)	(-0.91)	(2.99)*	(0.91)	(0.56)	(1.60)	(1.16)	(1.38)	(0.55)	(5.47)*					
Sun	-0.03	0.18	0.03	0.37	0.51	0.32	0.20	-0.05	0.05	0.68	-0.30	0.95	0.29	0.39	-0.17	-0.30				
	(-0.21)	(0.92)	(0.20)	(1.31)	(0.51)	(2.06)**	(0.68)	(-0.24)	(0.50)	(2.17)**	(-3.32)	(1.69)	(0.82)	(2.17)**	(-0.76)	(-0.62)				
Torrent	0.47	0.34	0.06	-0.11	-0.08	-0.54	-0.13	0.32	0.00	-0.29	0.41	-0.68	-0.36	-0.50	0.45	0.69	-0.45			
	(3.71)*	(1.12)	(0.27)	(-0.23)	(-0.15)	(2.28)**	(-0.28)	(1.08)	(-0.01)	(-0.47)	(2.53)**	(-0.68)	(-0.63)	(-1.64)	(1.37)	(0.94)	(0.84)			
TTK	0.08	0.03	0.10	-0.38	-0.31	-0.25	0.02	-0.18	-0.09	-0.17	0.02	-0.91	-0.50	-0.29	0.00	-0.29	-0.19	0.10		
	(1.27)	(0.27)	(1.61)	(-4.26)*	(-2.33)**	(4.94)*	(0.12)	(-2.02)***	(-1.91)***	(-0.85)	(0.33)	(-7.26)*	(-6.27)*	(-5.02)*	(-0.03)	(-1.22)	(-1.12)	0.94		
Unichem	-0.25	-0.17	-0.36	1.28	0.96	0.75	0.05	0.62	0.35	0.31	0.05	3.06	1.81	0.91	-0.02	0.91	0.47	-0.17	-3.36	
	(-1.10)	(-0.44)	(-1.60)	(3.64)*	(1.93)***	(3.11)*	(0.09)	(1.99)***	(2.15)**	(0.43)	(0.21)	(5.32)*	(6.68)*	(3.38)*	(-0.04)	(1.06)	(0.75)	(-0.41	(-8.43)*	
Wockhardt	-0.10	-0.09	0.20	0.11	0.80	0.29	0.99	-0.05	0.00	-0.81	-0.15	0.44	0.16	0.14	-0.26	-0.83	0.44	0.00	-0.30	0.14
	(-0.47)	(-0.26)	(0.20)	(0.22)	(1.72)***	(0.95)	(2.06)*	(-0.15)	(-0.02)	(-1.36)	(-0.65)	(0.40)	(0.25)	(0.38)	(-0.67)	(-1.06)	(0.76)	(0.01)	(-0.27)	(0.45)

The ten year current assets to total assets ratio for each pharmaceutical firm is regressed against the ratios for each other firm. The results of the regressions of the 210 pairs of firms are presented in Table 4. Both positive and negative relationships are showed in the table. Out of the 210 regressions 61 have significant results of 1%, 5% and 10% level. Almbic, FDC, Ipca, KDL, Lyka and Wockhardt are the six firms which do not tend to change their working capital investment policies with the other firms. The policies of Torrent, Glenmark, Kopran, TTK and JB Chemicals and drugs are highly correlated with those of the other firms in this study. The high correlation between the working capital investment policies of these firms appears to suggest a possible intra-industry relationship between the policies and the influence of some external macroeconomic factor. Hypothesis of the study is rejected.

According to the Table 5, the results of regressions and the changes in working capital financing policies, 52 regressions are significant out of 210 regressions at the 1%, 5% and 10% level. Aurubimdo Pharma is not correlated with any other firms, Glenmark, Kopran and Piramal are correlated with only one firm. The policies of FDC Ltd and Natco are highly correlated with those of the other firms, and the rest falls in between. Both positive and negative relationships are shown in the table. Result of the study shows that there is a changes in the working capital financing policies over a period of time. The firms are following different types of policies in different periods. So the null hypothesis of the study is rejected.

The null hypothesis is rejected in this study. There is a change in the working capital policies of the firms during the study period. The firms are following different types of policies in different years.

4.4 RELATIVE STABILITY OF INVESTMENT AND FINANCING POLICIES

Testing of the relative stability of working capital policies, form the core issue of analysis in this section. In other words, we look at the investment policy and financing policy concurrently and check whether any pattern emerges from the results. Rank order correlation is used as a tool to test the relative stability. The following null hypothesis is framed in this context to find the stability of policies among the firms.

H_{0-3}:
The working capital policies are not relatively stable over the study period.

Once the significance for working capital investment and financing policies are explored in pharmaceutical firms, the next to examine is the relative stability of the policies over the period of study. For this purpose, a mean industry value for each firm for each year is ranked from the highest to lowest ratio. Then the base years (2001) ranking is sequentially compared to the ratio rankings of each succeeding year. The firms are also ranked for each year based on total current liabilities to total assets ratio and their ranking are also compared with the base year of 2001. The rank order correlation coefficient and respective significant levels are presented in Table 6.

Table 6 Rank order Correlation Coefficient of Investment and Financial Policies

Year	Firms	
	Correlation Coefficient-Investment Policy	Correlation Coefficient-Financial Policy
2	0.85	0.70
3	0.79	0.62
4	0.69	0.53
5	0.65	0.69
6	0.48	0.40**
7	0.68	0.46
8	0.58	0.41**
9	0.63	0.12***
10	0.71	0.44

**** Significant at 5%; *** Significant at 10 %; other values Significant at 1%.**

The results showed that the rank order correlation values of investment policies of all firms are significant at 1% level. The firms are also ranked for each year on the basis of current liabilities to total assets ratio and the rank order correlation is computed. The results show that the correlation values of firm's financing policies are significant at 1%, 5% and 10% level. It reveals that the stability of firm's working capital investment policy is stronger than that of the financing policy. The null hypothesis is rejected in this study and the firms are stable in their relative level.

4.5 IMPACT OF AGGRESSIVE AND CONSERVATIVE WORKING CAPITAL MANAGEMENT POLICIES ON PROFITABILITY

The impact of the Aggressive and Conservative working capital management policies on profitability of the firms have been examined

by regression models. For each year investment policy and financing policy ratios have been regressed against Return on Assets (ROA). The ten years regression model indicates the impact of the working capital policies on the profitability. The model t-test and F-values indicates the overall best fit of the model. The regression equation used is;

$$ROA_{it} = \alpha + \beta_1 (TCA/TA\ it) + \beta_2 (TCL/TA\ it) + \varepsilon$$

Where:

ROA it = Return on Assets of Firm i for time period t

TCA/TA it = Total Current Assets to Total Assets Ratio of Firm i for time period t

TCL/TA it = Total Current Liabilities to Total Assets Ratio of Firm i for time period t

α = intercept

ε = error term of the model

$\beta_{1\&}\beta_{2=}$ Regression coefficients

The positive coefficient of TCA/TA shows a negative relationship between aggressive investment policy and return on assets. As the TCA/TA increases, degree of aggressiveness decreases and return assets of the firm also decreases. The negative value of beta coefficient of TCL/TA also points out the negative relationship between the aggressive working capital financing policy and return on assets (Faris Narif AL Shubi's 2011).Following null hypotheses is formulated to find the relationship between the profitability and working capital policies.

H_{0-4}:
There is no significant relationship between working capital policies and profitability.

Relationship between return on assets and the working capital policies of the firms are analyzed with the help of regression analysis. Return on assets is the dependent variable and working capital policies are the independent variables taken in the regression analysis. Regression coefficient and F-values of both investment and financing policies are calculated for each year during the period of study.

Regression results of working capital policies and ROA of firms are showed in Table 7. The t-statistics of investment policy is positive and statistically significant at 5% and 1% level in 2006-07 and 2007-08 respectively. The regression coefficient of investment policy is not statistically significant except the years 2006-07 and 2007-08. The positive coefficient of the investment policy shows a negative relationship between the degree of aggressiveness of investment policy and return on assets. As the investment in current assets increases, degree of aggressiveness decreases, and return on assets of firms could be diluted. Therefore, the null hypothesis in this connection is rejected. Following the Faris Narif Al Shubi's (2011) model, these results also exhibited positive coefficient values in almost all cases as for as investment policy is concerned.

Table 7 Results of Regression Analysis of Working Capital Policies and ROA

Year	Investment policy			Financing policy			ANOVA Results	
	ß-coefficient	t-value	p-value	ß – coefficient	t-value	p-value	F-value	p-value
2000-01	-0.033	-0.213	0.834	0.109	0.388	0.702	0.089	0.915
2001-02	0.121	0.634	0.534	0.031	0.114	0.911	0.622	0.548
2002-03	0.060	0.410	0.686	0.170	0.733	0.473	0.941	0.409
2003-04	-0.025	-0.147	0.885	0.309	1.236	0.232	1.095	0.350
2004-05	0.047	0.307	0.762	0.061	0.291	0.774	0.177	0.840
2005-06	0.202	1.309	0.207	-0.072	-0.387	0.703	0.938	0.410
2006-07	.378**	2.397	0.028	-0.394***	-1.736	0.099	3.032***	0.073
2007-08	.383*	3.039	0.007	-0.412**	-2.336	0.031	4.766**	0.022
2008-09	0.092	0.744	0.467	-0.082	-0.388	0.702	0.289	0.759
2009-10	0.121	0.809	0.429	-0.055	-0.234	0.818	0.430	0.657

***Significant at 1% **Significant at 5% ***Significant at 10%**

The negative ß coefficient of financing policy also points out the same negative relationship between the working capital financing policy and ROA in 2006-07 and 2007-08. The co-efficient of AFP ratios are -0.394 and -0.412 in 2006-07 and 2007-08 respectively. The financing policy ratio indicates is more aggressiveness and it also yields negative ROA. F-values are significant in the same years 2006-07 and 2007-08. The regression coefficient of financing policy is not significant in all the years except 2006-07 and 2007-08. The ratios are also found to be mostly positive which ought to have been otherwise.

The pharmaceutical firms show that there is a negative relationship between the degree of aggressiveness and return on assets. As the investment in current assets increases, degree of aggressiveness decreases and return on assets of the firms also decreases. Negative relationship also found between the financing policies and return on assets of the firms. Hypothesis of the study is rejected.

4.6 AGGRESSIVE AND CONSERVATIVE WORKING CAPITAL MANAGEMENT POLICIES: IMPLICATIONS ON RISK

Risk has always been an inherent and vital part of the pharmaceutical industry, as new product launches and clinical trials fundamentally involve risk. But as risks have steadily increased in recent years in both complexity and number, today pharmaceutical companies face an unprecedented array of risks as a result of a myriad of pressures and changes, including increasing regulatory requirements, globalization and operational efficiency.

Compliance has consistently put increasing pressure on pharmaceuticals, as regulations increase each year, putting more strain on organizations in relation to the rising number of regulations that need to be monitored. "The number of laws, guidelines, and regulations increase year after year," "National governments, state legislators, regulatory bodies, as well as company specific internal standards, all continue to react to external events, the need for process improvement and stakeholder needs by issuing additional standards and guidance. Ultimately, there are many more regulations to comply with and proactively monitor."

In order to test the implications of working capital policies on risk, we have adopted the ordinary least square (OLS).The regression equation is:

$$SDROA_{it} = \alpha + \beta_1 (TCA/TA\ i) + \beta_2 (TCL/TA\ i) + \varepsilon$$

Where:

$SDROA_{it}$ = Standard Deviation of Return on Assets representing risk of Firm i

TCA/TA it = Total Current Assets to Total Assets Ratio of Firm i for time period t

TCL/TA it = Total Current Liabilities to Total Assets Ratio of Firm i for time period t

α = intercept

ε = error term of the model

$\beta_{1\&}\beta$ = Regression coefficients

The positive β coefficient of SDROA indicates negative relationship between the risk measurements and the working capital investment policy. On the other hand, similar a relationship has been found for the working capital financing policy. The increased variation in ROA and profitability is attributed to increasing the level of current assets and decreasing the level of current liabilities in the firm (Faris Nasif and AL-.Shubiri, 2011).Following null hypothesis is formulated to show the relationship between working capital policies and risk of the firms.

H_{0-5}:
There is no significant relationship between working capital policies and risk of the pharmaceutical firms.

The standard deviation has been estimated over the four years from 2000-01 to 2009-10 and then regressions have been run for working capital investment and working capital financing policy.

Table 8 Results of Regression Analysis of Working Capital Policies and Risk: Standard Deviation of Return on Assets (SDROA)

Year	Investment policy			Financing policy			ANOVA Results	
	ß-coefficient	t-value	p-value	ß – coefficient	t-value	p-value	F- value	p-value
2000-01	-0.028	-0.638	0.544	0.021	0.219	0.833	0.221	0.807
2001-02	-0.042	-1.225	0.260	0.054	0.919	0.389	0.815	0.481
2002-03	-0.022	-0.649	0.537	0.002	0.028	0.978	0.266	0.774
2003-04	-0.016	-0.402	0.700	0.003	0.039	0.970	0.092	0.914
2004-05	-0.010	-0.288	0.782	-0.039	-0.613	0.559	0.336	0.725
2005-06	-0.027	-0.776	0.463	-0.059	-0.814	0.442	0.686	0.534
2006-07	-0.057	-1.368	0.214	-0.029	-0.391	0.708	0.936	0.436
2007-08	-0.004	-0.084	0.936	0.041	1.154	0.286	0.697	0.530
2008-09	-.038***	-1.742	0.099	-0.217**	-2.504	0.041	3.772***	0.077
2009-10	-0.075*	-4.028	0.005	-0.145*	-3.196	0.010	9.370*	0.010

***Significant at 1% **Significant at 5% ***Significant at 10%**

The relationship between working capital policies and risk is measured through the regression analysis of standard deviation of return on assets and working capital policies.

Regression results of working capital policies and standard deviation of return on assets showed in the Table 8 There is a negative relationship shown between investment policy and standard deviation of return on assets. The t-value is not significant in all the years except 2008-09 and 2009-10. The regression values are negative and significant only in two years. This indicates that there is a positive relationship between investment policy and risk of the firms. High degree of aggressiveness of the investment policy increases the risks in the firm. There is no statistically significant relationship found between the level of current assets and current liabilities and risk of the firms except the years 2008-09 and 2009-10. Hypothesis of the study is rejected.

5. SUMMARY

According to the ratio analysis of working capital policies, the firms were found to follow conservative investment and financing policies during the study period. ANOVA and HSD test results indicate that all the firms show significant industry differences in working capital policies from both asset side and liability side point of view. The result is consistent with the result of Talat Afza and Mian Sajid Nazir (2009).

Regression analysis has examined the relationship in the changes of policies between the industries. It shows a highly significant positive and negative correlation between industry asset and liability policies in firms. Results showed that there is a change in the policies of the firms over a period of time. The firms are following different type of policies in different years of the study. This depends more on industry factors and macroeconomic factor such as the business cycle. This result is supported by the result of Weinraub (1998).

The results showed that the rank order correlation values of investment policies of the firms are significant at 1% level. The industries are also ranked in each year on the basis of current liabilities to total assets ratio and the rank order correlation is computed. The results showed that the correlation values of the firms financing policies are significant at 1%, 5% and 10% level. It reveals that the working capital investment policy is stronger than the financing policy over a period of time. Findings of Weinraub (1998) and Talat Afza and Mian Sajid Nazir (2009) support this finding.

The impact of aggressive and conservative working capital policies have been examined through cross sectional regression models between the working capital policies and profitability as well as the risk of the firms. The results of the firms show that there is a negative relationship between the degree of aggressiveness and return on assets. As the investment in current assets increases, degree of aggressiveness decreases and return on assets of the firms also decreases. Negative relationship also found between the financing policies and return on assets of the both firms. The same findings are shown by Faris Nazif and AL.Shubiri and Talat Afza. The β coefficient of SDROA indicates that the positive relationship between investment policy and risk, and negative relationship between financing policy and risk only in two years of the study period.

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