AN APPRAISAL OF THE EXCESS FUNDS TIED UP IN THE WORKING CAPITAL ACCOUNTS OF PAKISTANI FIRMS

[1]AHSAN AKBAR, [2]XINFENG JIANG, [3]MINHAS AKBAR

[1]Guangzhou College of South China University of Technology,
[2]Huazhong Agriculture University, China,
[3]COMSATS University Islamabad, Pakistan

Abstract - This study investigates the excess cash tied up in the working capital accounts of listed non-financial Pakistani firms coming from 12 different industrial segments during the period of 2005-2014. We find that on average sample firms have 310 billion Pakistani rupees worth of excess funds stuck in short-lived assets during the year 2005. Moreover, this figure kept on rising and reaches to 1646 billion rupees which show that the working capital management (WCM) has got worse over time and financial managers of these firms need to significantly cut down the unnecessary investments in working capital. The sectoral analysis reveals that Fuel and Energy was the worst sector in terms of short-term financial management with the highest value of excess funds tied up during the study period. Net trade cycle (NTC) analysis indicates that Coke and Petroleum was the best performing sector with a NTC of 42 days while the Electrical and Apparatus was the least performing sector with a NTC of 209 days. On average, listed firms have a working capital of around 90 days which suggests substantial room for improvement in all the components of working capital.

Keywords - Excess Working Capital; Non-Financial Firms; Pakistan

I. INTRODUCTION

The significant decline in corporate financial activity caused by the financial crisis of 2008 stimulated the attention of researchers and practitioners around the globe to look for ways firms use to manage investment in short-lived assets and liabilities. The results of empirical studies (Nazir and Afza 2009; Aregbeyen, 2013) unveil that WCM should deserve much attention as it can considerably impact the profitability and smooth working of firm's operations. The pressure of decreased credit terms, rising interest rates, and a rapid decrease in turnover of firm's products and services resulted in a pile-up of inventories, hence a larger capital is tied up in stocks. Therefore many firms shifted their focus from growth to improving internal efficiency and adequate management of their working capital accounts. Excessive liquidity can erode the capital available to fund long-term value maximizing projects while a shortage of liquidity can hamper the routine functioning of operations. Therefore, financial managers are confronted with the challenge to strike a balance between liquidity and profitability to ensure the smooth and profitable working of the firm.

The ever increasing competitions among corporations in every industry have tightened their profit margins. Thus, in order to maximize the profitability of the enterprise, managers have to look for alternate ways to reduce cost and improve efficiency. In this context, WCM has become a point of critical attention for the finance managers. Results of empirical studies conducted in the developed and developing countries justify the fact that efficient WCM significantly enhances firm performance. However, recent studies on working capital accentuate that an extensive portion of the investment in working capital is unnecessary. Ek and Guerin (2011) pointed out that there is a sufficient room for improvement in the efficiency of short-term financial management in a good number of companies. In their report on WCM, Ernst and Young (2012) computed the excess NWC in leading 1000 U.S companies. Survey resulted that unnecessary amount of NWC is between $330 billion and $590 billion that is around 3% and 6% of their total sales volume.

From the U.S context, Aktas, Croci, and Petmezas (2015) reported that over the years from 1982 to 2011, the aggregate amount of cash holdings grew at a higher rate when compared with total assets and sales. Similar results were reported by Bates et al., (2009). They observed that among the components of NWC, inventories posted the lowest growth of 1.9% while accounts receivables and accounts payable increased by 4% respectively. The reduction in inventories is attributed to the inclination of firms towards just-in-time inventory management system (JIT).

Advisory firms like EY publishes yearly statistics on all tied up working capital in US and Europe and provide useful statistics about growth in cash, net working capital and individual components of net working capital. The report also includes some working capital statistics of several other developed and emerging economies like Australia, Canada, Japan, India etc. However, no such firm exists that provides statistics about the overall working capital performance of Pakistani firms except the Balance Sheet Analysis (BSA) conducted by the statistical department of the State Bank of Pakistan (SBP). Yet

the scope of BSA with reference to WCM analysis is quite limited as it only provides the total yearly value of the individual components of WCM and the value of liquidity ratios.

This study provides a more sophisticated and extensive insight into the WCM efficiency of the listed non-financial firms of Pakistan by identifying trends in the net working capital to sales ratio over time, year-wise and industry-wise excess cash tied up in Pakistani firms, and year-wise and industry-wise values of NTC as well as the individual components of NTC. These detailed statistics provide important information to the corporate managers and financial analysts about the efficiency of WCM in Pakistani firms and the areas that need improvement. Moreover, our results particularly underscore the importance of efficient WCM for firms experiencing external financing constraints.

II. PERFORMANCE OVERVIEW OF THE INDUSTRIES AND FINANCIAL MARKETS IN PAKISTAN

Rapid growth in the manufacturing sector is vital to achieving the economic development goals. A manufacturing-driven economic development can help support innovation, increase productivity, advancement in technology, raise income levels, correct the balance of payment, and provide employment opportunities. The transformation from an agrarian to a manufacturing driven economy can pave the way to economic progression for Pakistan. The manufacturing sector of Pakistan accounts for 13.5 percent of Gross Domestic Product (GDP) and 14.1 percent of the employed labor force comes from this sector (Pakistan Economic Survey 2013-14). The country, however, experienced uneven growth in the manufacturing sector mainly resulting from outdated technology, unskilled labor and lack of awareness about international best practices. In terms of global competitiveness index, Pakistan was ranked 133 among 148 countries in World Economic Forum Global Competitiveness Report 2013-14. However, the main cause of this slow growth was power shortages which restricted the average production to 33 percent of actual capacity.

Textile sector is the largest manufacturing industry in Pakistan with an investment of US $9.6 billion in 2011. It constitutes 55% of Pakistan's export volume in the 2014 and was ranked as the 8th largest exporter of textile goods in Asia. The sector accounts for 46% of the total production and 8% of the gross domestic product (GDP) of Pakistan. 40% of the total labor force is employed by this sector. The world has witnessed a continuous surge in the demand for textile products. From a global perspective, the market share of the textile sector was 2.23% but it declined to 1.81% in 2011 (ADB Report, 2012; Siddique and Iffat, 2012). They key reasons of this slowdown in growth is that textile industry of Pakistan is affected by the energy crisis, mounting oil prices, the dearth of R&D expertise, lack of new investments and technology, and tumbling demand of Pakistani cotton products in US and European countries. These factors led to a substantial decline in profitability resulting in the shutdown of several business units and forcing them to shift operations to the neighboring countries (ADB Report, 2012; Textile Sector Report 2012). From the point of view of the financing efficiency of this sector, rising cost of external debt, and improper working capital management practices contributed to the decline in profitability of this sector. Improvements in the area of working capital management can help this sector in achieving higher profits and increasing market share (Chhapra & Naqvi, 2010).

The manufacturing industry of Pakistan can mainly be categorized into small scale manufacturing and large scale manufacturing industries. Large scale accounts for more than 70% of the overall manufacturing industry in Pakistan (PBS, 2014). Being an agrarian economy, the biggest industries in the country are agro based. Textile is the largest manufacturing sector of Pakistan and it comprises of 20.91% of the total manufacturing industry. The food is the second largest sector with a weight of 12.37%. The outlook of manufacturing industry in Pakistan improved slightly in 2014 as compared to 2013. The sector specific statistics provided in the above table show that most of the sub-sectors have performed better in the year 2013-14 from the corresponding period last year. During the period 2013-14 Fertilizer sector posted a remarkable growth of 21.64% which is mainly attributed to the improvement in the supply of gas to this sector. Being the second largest in size Food & Tobacco sector grew by about 8% and made the major contribution towards the growth of large-scale manufacturing industry in 2014 whereas Rubber Products and Chemical grew by 9.48% and 6.71% respectively. The growth in Coke & Petroleum mainly emerged from the 62.61 percent increase in production of Diesel oil. However, the Textile sector only grew by 1.44% in 2014 as compared the growth of 0.91% during last year. Although the growth has slightly improved yet there is a substantial room for improvement in this sector (PBS, 2014). Financial markets of Pakistan are relatively less developed from the other developing economies. The country has a credit to the private sector of only 15.6 percent in 2014 which is lowest when compared with other south Asian countries. Bangladesh has a credit to private sector ratio of 42.4% whereas India has 46.8 percent. Moreover, Pakistan is not only underperforming in this area relative to the South Asian countries but also lags behind relative to other developing countries of the world. Similar trends prevail in the financing of

working capital at the micro-level. In Pakistan, the mean percentage of working capital financed by the use of commercial bank loans is 6.5 percent which is very meager when compared to other South Asian nations. As Sri Lanka has 32 percent working capital financing through commercial banks, similarly, Bangladesh and India have a value of 32 percent and 16 percent respectively.

III. DATA

This research encompasses all the non-financial Pakistani firms that are listed on the Pakistan Stock Exchange (PSE) between 2005 to the year 2014. The breadth of the time period allows us to uncover some important trends in the WCM policies of the non-financial firms. Mainly, Balance Sheet Analysis (BSA) of non-financial listed firms published by State Bank of Pakistan (SBP) was used to collect data about variables related to WCM, firm performance and other key fundamentals of the firm. However, SBP does not publish the individual values of accounts payable. The data of accounts payable was obtained from the OSIRIS database and the annual reports of the respective firm. Subsequently, interpolation technique was used and estimations were made to generate the few missing values of inventory, receivables, and payables. Only firms with consecutive five years of published data were made part of the final sample and the firms with missing or extreme values were excluded from the sample. Although SBP published the data of 396 companies in 2014 but because of the missing values, data for 346 companies were made part of the final sample. Still, the data sample is comprehensive and covers every non-financial sector of the economy. The data was classified into 12 sectors based upon the industry classification used by the SBP to publish yearly data on the non-financial sector of Pakistan.

Industry	Listed firms	Sampled firms
Textile	168	142
Food	47	43
Chemical & Pharmaceuticals	45	40
Other Manufacturing	32	27
Non-Metallic	28	27
Motor Vehicles, Trailers & Auto parts	20	20
Fuel & Energy	22	16
Information, Comm. & Transport	13	12
Coke & Refined Petroleum Products	10	8
Electrical Machinery & Apparatus	7	6
Other Services Activities	11	7
Paper, Paperboard & Products	9	6
Total	412	354

Table 1: Sample distribution The above numbers show that our sample is quite representative as it includes 86% of the firms listed on the PSE.

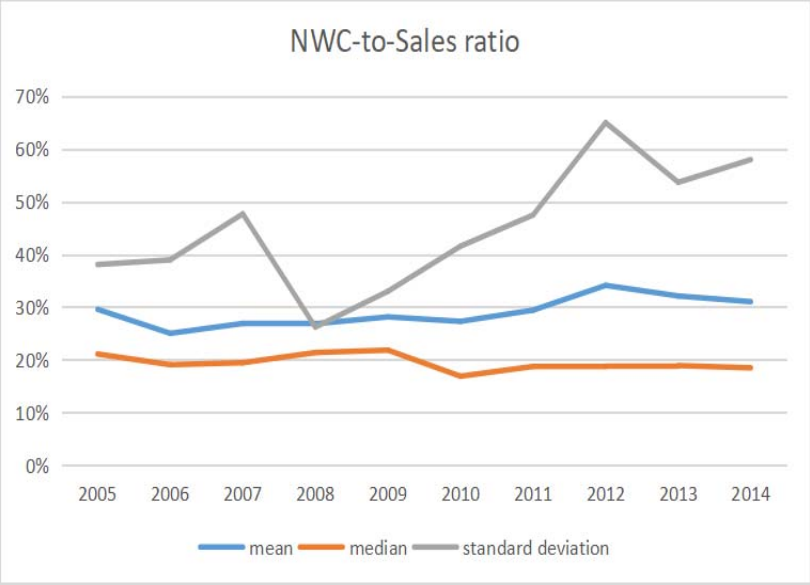


Fig. 1: Time series of summary statistics for NWC-to-sales ratio. This figure provides cross-sectional summary statistics for NWC-to-sales ratio for non-financial Pakistani firms by year from 2005 to 2014. NWC is calculated as inventories plus account receivable minus accounts payable.

Figure 1 exhibit that average value of NWC-to-sales ratio of non-financial Pakistani firms during the study period is around 30% which is very high and highlights the unnecessary funds tied up in working capital accounts. Though, the average median NWC-to-sales ratio remained approximately 20% during the sample period. The average median value reached to the highest point of 22% in 2009 and posted the lowest value of 17% in 2010. Similar trends were observed by Aktas et al., (2015), in a study of non-financial US firms, they reported NWC-to-sales ratio of approximately 20%. In contrast, the average mean value of NWC-to-sales ratio is almost 30% which is attributed to the huge variations in this ratio as demonstrated by the trends in standard deviation over the study period. The value of standard deviation ranges from 26% in 2008 to about 65% in 2012. These fluctuations in the standard deviation suggest that there exist larger differences in the NWC-to-sales ratio of sample firms especially during the last half of the sample period.

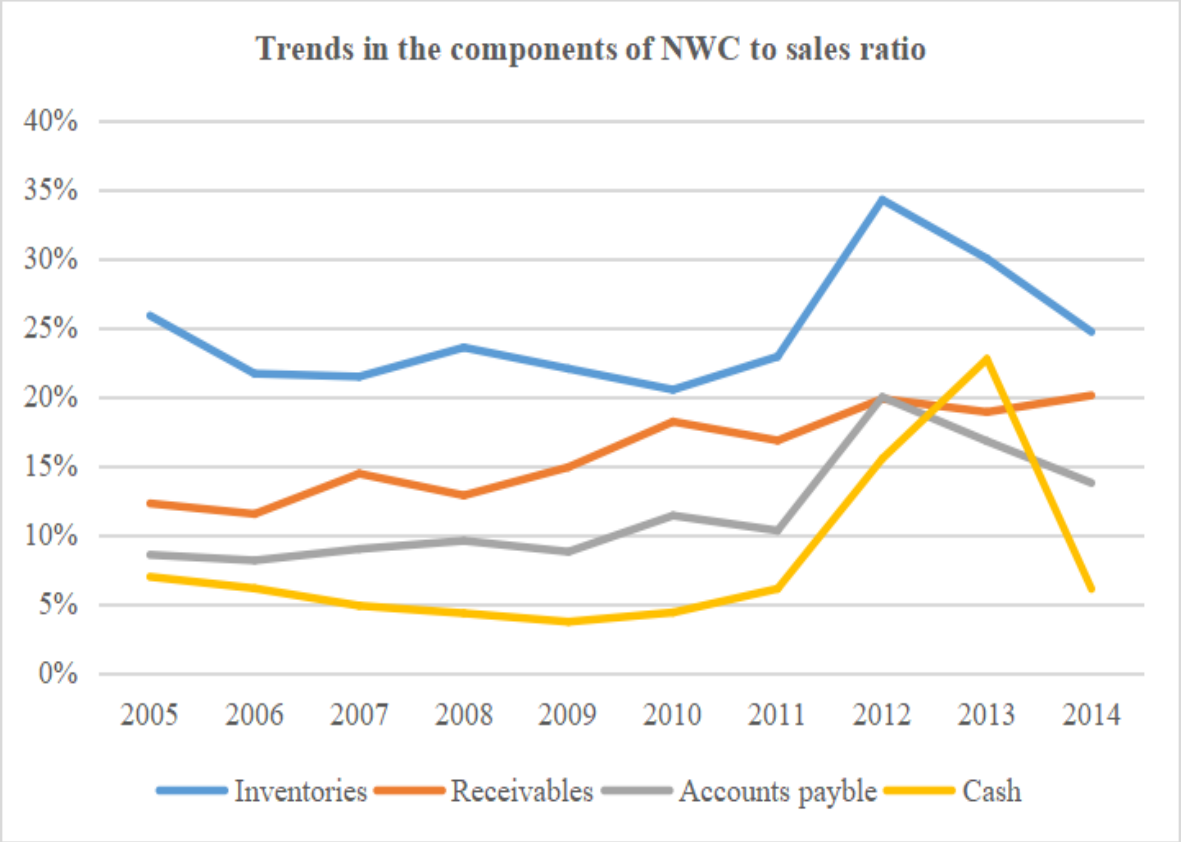


Fig. 2: The yearly average of inventories accounts receivables and accounts payable. This figure schemes the year wise cross-sectional average for inventories, receivables, and payables scaled by sales for non-financial Pakistani firms from 2005 to 2014.

To assess which one of the three components of the NWC contributed most to the decrease in the NWC-to-sales ratio, figure 2 reports the behavior of the average inventories, receivables, accounts payable, and cash deflated by sales through time. There is a slight decrease in the values of inventories, accounts payable, and cash holdings from 2008 through 2009. Which is perhaps due to the uncertainty caused by the financial and liquidity crunch of 2008? The three components of the NWC-to-sales ratio, as well as the cash holdings, remained somewhat stable through time, yet the time period after the year 2011 reflects a sharp upward movement in the all the components of the NWC as well as the cash holdings. This upward trend is more pronounced in 2012 which indicate a shift in a conservative working capital policy by the management of these firms. However, the year 2014 again witnesses the decline in the components of NWC and cash values which indicate improvement in the working capital practices.

IV. EMPIRICAL STRATEGY

At first we calculate the year-wise and industry-wise excess cash tied up in non-financial Pakistani firms. Subsequently, year-wise and industry-wise NTC analysis is performed to examine the efficiency of sample firms.

4.1. Excess cash tied up in Pakistani firms

The following tables provide a comprehensive view of the excess funds being tied up in the short-lived assets of the sample firms.

	The value is in RS. Billion		% Sales		% WC Scope	
year	Average	Upper Quartile	Average	Upper Quartile	Average	Upper Quartile
2005	310	338	15.8%	17.2%	63.9%	69.7%
2006	388	435	15.5%	17.4%	65.3%	73.1%
2007	458	509	16.4%	18.3%	65.3%	72.7%
2008	703	783	21.4%	23.8%	68.9%	76.8%
2009	987	1101	27.8%	31.0%	72.9%	81.3%
2010	1269	1416	30.6%	34.1%	75.2%	83.9%
2011	1471	1634	30.1%	33.5%	73.9%	82.1%
2012	1994	2217	36.4%	40.5%	77.2%	85.8%
2013	1421	1582	23.9%	26.6%	72.0%	80.2%
2014	1646	1833	25.8%	28.7%	73.5%	81.8%

Table 2: Year-wise excess cash tied up in non-financial Pakistani firms

Table 2 reports the yearly excess cash tied up in the sampled Pakistani listed firms in terms of the average and upper quartile. Arithmetic mean shows the most realistic value of cash opportunity however upper quartile could be considered as an ambitious value. Similar to Ernst and Young (2012), the excess tied up cash has been calculated by subtracting from the value of each component of working capital of individual firm the value of the arithmetic mean of the respective industry as the lowest and upper quartile as being the highest estimate. The excess cash tied up of all the firms is then aggregated for each year. Furthermore, in order to make these statistics understandable, the excess cash tied up in each year has been scaled by percentage of the sale and working capital scope. The working capital scope is calculated by summing up the amount of inventories, receivables, and accounts payable in a particular year. The sample non-financial firms have average excess cash tied up of 310 billion PKR in 2005 which is about 16% of sales and there is a persistent increase in the excess cash tied up over time both in terms of arithmetic mean and upper quartile.

The excess tied up cash in working capital was highest in 2012 with an average of 1994 billion PKR and upper quartile value of 2217 billion PKR and in 2014 sampled firms were having 1646 billion PKR of excess cash wedged in working capital which accounts for 25.8% of the sales value. Likewise, the sales percentages show that working capital performance has been on a consistent decline as the amount of funds tied up in the working capital became more than double in 2012 as compared to 2005. The year 2013 and 2014, however, witnessed some improvement in working capital practices, as excess tied up cash declined from 36.4% of sales in 2012 to about 26% in 2014. With respect to WC scope, on average the excess tied up cash is 70%. These numbers indicate a dire need of improvement in WCM and show that a lot of idle funds have been tied up in working capital which not only can seriously harm the profit margins of these firms but also less cash will be available for these firms to take value-enhancing investment projects. These statistics highlight that no proper mechanism exist to optimize the WCM of non-financial Pakistani firms.

	Value RS. Billion		% WC Scope		% Sales	
Industry	Average	Upper Quartile	Average	Upper Quartile	Average	Upper Quartile
Chemical & Pharmaceutical	55	55	59.6%	58.5%	14.0%	13.8%
Coke & Petroleum	212	216	45.6%	45.5%	13.4%	13.4%
Electric & Apparatus	16	9	57.1%	31.9%	40.1%	22.9%
Food	20	17	44.7%	38.8%	10.0%	8.6%

Fuel & Energy	296	191	61.5%	41.2%	35.5%	22.8%
Information and Transport	35	39	64.0%	71.3%	15.0%	16.7%
Motor Vehicle	21	18	45.8%	37.8%	9.6%	7.9%
Other Manufacturing	24	22	53.2%	48.9%	17.4%	16.2%
Other Services activities	3	3	55.3%	46.8%	25.3%	22.9%
Textile	100	95	51.6%	49.0%	21.2%	20.1%
Non-Metallic	11	8	43.7%	31.6%	6.4%	4.7%
Paper & Board	5	3	50.3%	32.6%	17.4%	11.1%

Table 3: Industry-wise excess cash tied up in non-financial Pakistani firms

The amount of excess cash tied up in each industrial segment can help in identifying the best and worst performing sectors in terms of WCM. Table 3 provides the excess cash tied up in each industry during 2005 to 2014. Values show that Coke and Petroleum and Fuel and Energy were the leading sectors with average excess cash tied up of 212 and 296 billion respectively. Percentage of sale analysis indicates that Electrical and Apparatus is the worst performing sector with excess cash tied up of 40% of sales. Fuel and Energy come second in terms of poor WCM performance and service sector comes third with an average of 35.5% and 25.3% respectively. The best-performing sectors based on the mean percentage of sales criteria are Non-Metallic, Motor vehicle, and Food sectors with average excess cash tied up of 6.4%, 9.6%, and 10% of sales respectively. Textile being the largest manufacturing industry of Pakistan has considerable room for improvement as indicated by an average over-investment in working capital of 100 billion PKR that is 21% of sales. Similarly, other Manufacturing has average excess cash tied up of 17.4% in terms of sale. Though, the other large manufacturing sectors, Chemical and Pharmaceutical and Food performs comparatively better in the area of WCM with average excess cash tied up of 14% and 10% of sales respectively. In terms of WC scope, however, the performance of all the industries is quite gloomy with average excess cash tied up of around 50% of WC scope in all the non-financial sample firms. These results lead to some conclusions. Firstly, it seems that the importance of WCM has been overlooked by the financial managers of these firms and a lot of funds are tied in the routine business operations. Secondly, a larger investment in inventories and receivables show that Pakistani firms are facing problems to generate sales and are giving favorable terms to the customers to increase sales volume. Moreover, the substantial holding of inventory shows weak relations with the suppliers and a poor supply chain performance. To cope up with the increasing competition, these firms will have to tailor policies to optimize the working capital performance by focusing on the areas of inventory management. Supply chain management and customer relationship management. By optimizing the working capital the managers of these sectors can release sufficient cash to take value maximizing projects which will improve their firm's profitability, shareholder value, and competitive position in their respective industries.

4.2. NTC analysis

The tables below portray the values of net trade cycle and its components for listed non-financial firms in Pakistan. Both year-wise and industry-wise values are calculated in order to get a better understanding of the dynamics of cash cycle in sample firms.

Year	DAR	DI	DAP	NTC
2005	45	84	31	98
2006	42	69	30	81
2007	53	68	33	88
2008	47	76	35	88
2009	54	70	32	93
2010	66	65	42	90
2011	61	74	38	97
2012	72	115	73	114
2013	69	99	61	107
2014	68	85	50	103

Table 4: Yearly values of net trade cycle and its components

Table 4 provides average yearly values of NTC and its components for the overall data. The high values of day's inventory depict that sample firms are holding large values of inventories which are negatively affecting the overall WCM performance of these firms. Likewise, days account receivable in most cases were higher than accounts payable indicating that firms are granting more favorable terms to the customers than they receive from suppliers. Moreover, there is a rise in the DAR over the period of study as the value was 45 days in 2005 and it reached to 68 days in 2014. Similarly, the average of NTC for the first half period of the study remained approximately 90 days whereas during the second half the average NTC was about 100 days revealing the lengthening of the cash conversion period of non-financial firms. From the net trade cycle's perspective, these statistics entail that sample firms can cut unnecessary funds tied up in all the areas of working capital to generate the necessary funds required to expand their business

operations.

Sr.No	Industry	DAR	DI	DAP	NTC
1	Chemical & Pharmaceutical	48	68	37	79
2	Coke & Petroleum	48	25	31	42
3	Electric & Apparatus	125	121	38	209
4	Food Sector	20	78	23	75
5	Fuel & Energy	166	22	57	131
6	Information and Transport	70	12	37	45
7	Motor Vehicle	36	161	93	104
8	Other Manufacturing	72	123	64	131
9	Other Services activities	144	135	145	134
10	Textile Sector	49	86	34	101
11	Non-Metallic	34	58	33	60
12	Paper & Board	103	88	20	170

Table 5: Industry-wise calculations of NTC and its components

Industry wise average values of NTC and its components during the 10 year study period are reported in Table 3.d to better investigate that which sectors have more room for improvement in WCM. Similar to the previous findings the table shows that substantial investment has been made in receivables and inventories that are causing a surge in NTC. Moreover, Coke and Petroleum is the most efficient sector with NTC of only 42 days. Electrical and Apparatus has the worst performance in terms of NTC during our study period with the NTC of 209 days, Paper and Board comes second in terms of poor performance with the NTC of 170 days, and Fuel and Energy and Other Manufacturing sectors are at fourth place regarding WCM related inefficiencies with NTC of 131 days. The reason for larger NTC in these sectors is mainly the larger number of day's inventory and receivables yet very less number of accounts payable. These numbers show that managers of these firms need to revise the WCM policies to curtail the NTC to a reasonable level. Moreover, unexpectedly other Service sector has an average NTC of 134 days which highlights the inefficiencies in short-term financial management practices of these firms.

V. CONCLUSION

- The short-term financial management of Pakistani firms has got worse overtime as there are excess funds tied up in the working capital which can seriously hinder the growth of such firms.
- In a financially constrained economic environment, firms can improve their financial efficiency by lowering their net trade cycle.

REFERENCES

[1] ADB Report: No. FLS 124471. (2012) Confronting Rising Inequality in Asia. Asian Development Bank, Philippines (2012).

[2] Aktas, N., Croci, E., & Petmezas, D. (2015). "Is working capital management value-enhancing? Evidence from firm performance and investments." Journal of Corporate Finance 30: 98-113.

[3] Aregbeyen, O. (2013). "The effects of working capital management on the profitability of Nigerian manufacturing firms." Journal of Business Economics and Management 14(3): 520-534.

[4] Chhapra, I. O. and N. A. Naqvi (2010). "Relationship between efficiency level of working capital management and profitability of firms in the textile sector of Pakistan." Indus Journal of Management and Social Sciences 4(1): 30-42.

[5] Ek, R. and S. Guerin (2011). "Is there a right level of working capital?" Journal of Corporate Treasury Management 4(2).

[6] Ernst, Young, 2012. All tied up: working capital management report. Available at: www.ey.com. http://data.worldbank.org/indicator/FS.AST.PRVT.GD.ZS feburary 13, 2016.

[7] Nazir, M. S. and T. Afza (2009). "Working capital requirements and the determining factors in Pakistan." IUP Journal of Applied Finance 15(4): 28.

[8] Siddique, R.D., Iffat, S.: Report-VI, s.l: Federal Board of Revenue (FBR) Pakistan, vol. 12, pp. 51–62 (2012).

[9] Textile sector report: Growth trends of Pakistan textile industry. Pakistan (2012)

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