MANAGEMENT OF WORKING CAPITAL AND ITS IMPACT ON THE FINANCIAL PERFORMANCE: AN EMPIRICAL STUDY OF SOME SELECTED STEEL COMPANIES IN INDIA (2001-2012)

Thesis Submitted

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Doctor of Philosophy in Commerce

By

LALIT KUMAR JOSHI

Department of Commerce with Farm Management

VIDYASAGAR UNIVERSITY

West Bengal, India

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Declaration

I do hereby declare that the thesis entitled "**Management of Working Capital and its impact on the Financial Performance: An Empirical Study of some selected Steel Companies in India (2001-2012)**" submitted to the Vidyasagar University, Midnapur, West Bengal, for the award of Degree of Doctor of Philosophy in Commerce is an original piece of work done by me. I also declare that neither this thesis nor any part of it has been submitted to any other University or Institute for the award of any degree or diploma

Place: Midnapur (West Bengal) (Lalit Kumar Joshi)

Date: Research Scholar

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LALIT KUMAR JOSHI

भारतीय प्रौद्योगिकी संस्थान खड़गपुर
Indian Institute of Technology
Kharagpur

Dr. Purnendu Sekhar Das
Professor (Retired)
Vinod Gupta School of Management

This is to certify that the thesis entitled **"MANAGEMENT OF WORKING CAPITAL AND ITS IMPACT ON THE FINANCIAL PERFORMANCE: AN EMPIRICAL STUDY OF SOME SELECTED STEEL COMPANIES IN INDIA (2001-2012)"** being submitted by Lalit Kumar Joshi to the Vidyasagar University for the award of Doctoral Degree in Commerce is a record of bonafide original research work carried out by him under my supervision and guidance. I consider this thesis complete in all respect and recommend its submission. To the best of my knowledge it has reached the standard fulfilling the requirements of the regulations relating to the degree.

The work contained in this thesis has not been submitted to any other University or Institution for the award of any degree or diploma.

Dated:
Kharagpur

Prof. Purnendu Sekhar Das
Supervisor

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List of Abbreviations

ROA	: Return on Total Assets
ROE	: Return on Equity
ROCE	: Return on Capital Employed
EPS	: Earnings Per Share
CR	: Current Ratio
QR	: Quick Ratio
S.D.	: Standard Deviation
C.V.	: Coefficient of Variation
D.F.	: Degrees of Freedom
TCA/ TA	: Total Current Assets to Total Assets
TCL/ TA	: Total Current Liabilities to Total Assets
DTR	: Debtors Turnover Ratio
ITR	: Inventory Turnover Ratio
CTR	: Cash Turnover Ratio
BSL	: Bhushan Steel Limited
BSIL	: Bhuwalka Steel Industries Limited
ECL	: Electrosteel Castings Limited
ES	: Essar Steel
NSAIL	: National Steel & Agro Industries Limited
RIL	: Ramsarup Industries Limited
SAL	: Shah Alloys Limited
SAIL	: Steel Authority of India Limited
JSW	: JSW Steel
KSL	: Kalyani Steel Limited
MSL	: Maharashtra Seamless Limited
ML	: Mukand Limited
MUSCO	: Mahindra Ugine Steel Company Limited

TSL	: Tata Steel
WCL	: Welspun Corporation Limited
SIL	: Surana Industries Limited
SISCL	: Sunflag Iron and Steel Company Limited
MIL	: Man Industries (India) Limited
UGSL	: Uttam Galva Steel Limited
TIIL	: Tube Investments of India Limited
AGR	: Annual Growth Rate
GDP	: Gross Domestic Product at Market Price
Rupees	: Rs.
No.	: Number
SSRN	: Social Science Research Network
SPSS:	: Statistical Package for Social Science

CHAPTER – 1

INTRODUCTION

Chapter Outline:

CHAPTER – 1

INTRODUCTION

1.1 CONCEPT AND CONTEXT

Financial decision making by business firms has become an important component of overall operations. Financial decisions are being made with the knowledge of their consequences, more sophistication and at higher managerial levels within the organization than before. Consequently, research has been directed toward improving the understanding of how organizations should manage their resources, and how they actually allocate their funds. It is evident that the degree of success with which the working capital accounts are managed can have a significant impact on the overall prosperity of the firm. The recent financial crises and the collapses of the colossal organizations such as General Motors, Lehman Brothers, Bear Stearns, among others, alarmed the entire world and highlighted the need of intensive research in the field of corporate management especially working capital management.

Working capital is described as the capital available to meet the day-to-day operations. It refers to the management of current assets. Working capital components include shorts term assets such as inventories, sundry debtors, cash and bank balance, and marketable securities. Management of each of the components of working capital covers the central theme of the management of working capital. Current assets are also known as liquid assets because they can be easily converted into cash within a financial year. However, all the components of current assets do not possess the same degree of liquidity. In other words, different components have different degree of liquidity, with cash having the highest degree of liquidity. There is no fixed proportion of current assets to the fixed assets and depending on the industry, it could be a relatively high percentage of the total assets of the organization. Executives have been emphasizing on the efficient utilization of firm's resources since there is a belief that it has an effect on the firm's financial performance. Working Capital management seems to have significant influence on firm's profitability, risk and value creation. However, firms that invest heavily in inventory and

trade credit can suffer from low profitability. Thus, the greater the investment in current assets, the lower the risk, but also the lower the profitability obtained.

Thus, the main objective of working capital management is to maintain firm's current assets and liabilities and their components in such a way that the smooth flow of production is maintained and the firm is saved from liquidity crunch. On the other hand, excess working capital may results in unnecessary blockage of capital of the firm. Insufficient or inadequate working capital may pose various hindrances in the smooth flow of the business operation. It is even argued that the management of working capital follows different concepts and methodology as compared to the management of fixed capital. Later the concept of time value of money has been followed as it relates to longer term period, whereas the concept of working capital management relates to a limited time period, generally one year.

Management of working capital requires higher degree of precision as compared to fixed assets, since the investment in each of the components of working capital varies every day. Therefore, it requires continuous monitoring and control in order to ensure that the desired level of working capital is maintained. Managers also must account for ever changing requirement of finance so as to avoid the problems arising out of the mis-management of working capital.

'A firm is required to maintain a proper balance between liquidity and profitability while conducting its day to day operations. Liquidity is a precondition to ensure that firms are able to meet its short-term obligations and its continuous flow can be guaranteed from a profitable venture (Kesseven, 2006)'. While profitability deals with the firm's overall goal of shareholder's wealth maximization, liquidity aims to ensure that the firm is able to satisfy all its current financial obligations and possess adequate funding to carry out long-range activities of the organization.

'The importance of cash as an indicator of continuing financial health should not be surprising in view of its crucial role within the business. This requires that the business must be run both efficiently and profitably. In the process, an asset-liability mismatch may occur which may increase firm's profitability in the short run but at a risk of its insolvency. On the other hand, too much focus on liquidity will be at the expense of profitability. Thus,

the manager of a business entity is in a dilemma of achieving desired trade-off between liquidity and profitability in order to maximize the value of a firm (Kesseven, 2006)'. Management of working capital has become such an important aspect in the functioning of any typical industrial organization that a number of high- power committees were appointed to examine, inter alia, different aspects of Working capital management in the corporate sector in our country. Based on the available studies covering different facets of working capital management, it has been observed that a good number of leading corporate organizations in our country are not doing well so far as their management of inventory, receivables, cash, etc., is concerned. The situation is worse in medium and small- scale sectors.

1.2 APPROACHES TO WORKING CAPITAL

The term working capital has two different approaches:

- Balance Sheet Approach
- Operating Cycle Approach

Balance Sheet Approach:

Under Balance Sheet Approach, the working capital can be defined in two different ways, (i) Based on concept, (ii) Based on time.

(i) Definition Based on Concept

Gross Working Capital: Gross working capital refers to the investment in current assets. In other words, investment in various components of current assets i.e., inventories, sundry debtors, cash and bank, loans and advances etc. is known as gross working Capital. It indicates that under normal circumstances these can be easily converted into cash. This is a wider concept of working capital than net working capital.

Gross Working Capital = Total Current Assets, or

Gross Working Capital = Shareholders' fund + Long-term debts + Current Liabilities – Fixed Assets.

where, shareholders' fund = Equity share capital + Preference share capital + Reserve and Surplus – Miscellaneous expenditure

(a) Net working Capital: The term net working capital can be expressed as the excess of current assets over current liabilities. Thus, net working capital equals to current assets minus current liabilities. Current liabilities include sundry creditors, bills payable, bank overdraft, provisions etc. Hence, net working capital refers to that part of current assets which are financed from long-term funds (Khan and Jain, 2014). When the amount of current assets is greater than the current liabilities, we have positive net working capital whereas excess of current liabilities over current assets is known as negative net working capital. When both current assets and current liabilities equals, we have the concept of zero working capital.

Net working capital measures the firm's liquidity. The greater the margin (i.e., net working capital) by which the firm covers its total current liabilities, the better will it be. Although, firm's current assets may not be converted into cash precisely when they are needed, still greater net working capital assures that in all likelihood current assets will be converted into cash to pay the current liabilities. (Rustogi,2002).

For the purpose of working capital management, net working capital management can be said to be the measure of liquidity of the firm. In other words, the goal of working capital management is to manage the current assets and liabilities in such a way that an acceptable level of net working capital is achieved (Khan and Jain, 2014).

Thus,

Net Working Capital = Total current Assets – Total Current Liabilities, or

Net Working Capital = Shareholders' fund + Long-Term debt – Fixed assets.

It should be noted that each of the concepts of working capital mentioned above has its own relevance and importance. Net working capital can be of two types:

- Positive net working capital: When the amount of total current assets exceeds total current liabilities, then we call it a case of positive net working capital. This situation is desirable for the smooth functioning of any organization as it ensures the repayment of short term obligations. This also indicates the amount of long-term funds used for the purpose of financing current assets.

- Negative net working capital: This is the reverse case of positive net working capital, i.e., the total current liabilities exceed total current assets. This means that the firm is not in a position to meet its current obligations and rely on fixed capital to meet its short term requirements.

(i) Definition Based on Time:

On the basis of time, it can be classified as permanent working capital and temporary working capital.

(a) Permanent Working Capital: This portion of the working capital is mandatory to operate at the minimum level of activity. This is required to be maintained permanently irrespective of the level of activity because without it a firm cannot function smoothly. It is generally financed through the long term sources. It is also known as fixed working capital or hardcore working capital.

(b) Temporary working capital: Temporary working capital is required to be maintained over and above permanent working capital. It is generally required to meet various exigencies arising out in the course of business. This may arise out of fluctuations in sales volume.

It is thus clear that both permanent and temporary working capital is required for smooth functioning of the business unit. Finance manager must take due care in the determination of appropriate requirement of both types of working capital. Proper provision must be made for temporary working capital. Based on the above discussion the distinction between permanent working capital and temporary working capital may be presented as follows:

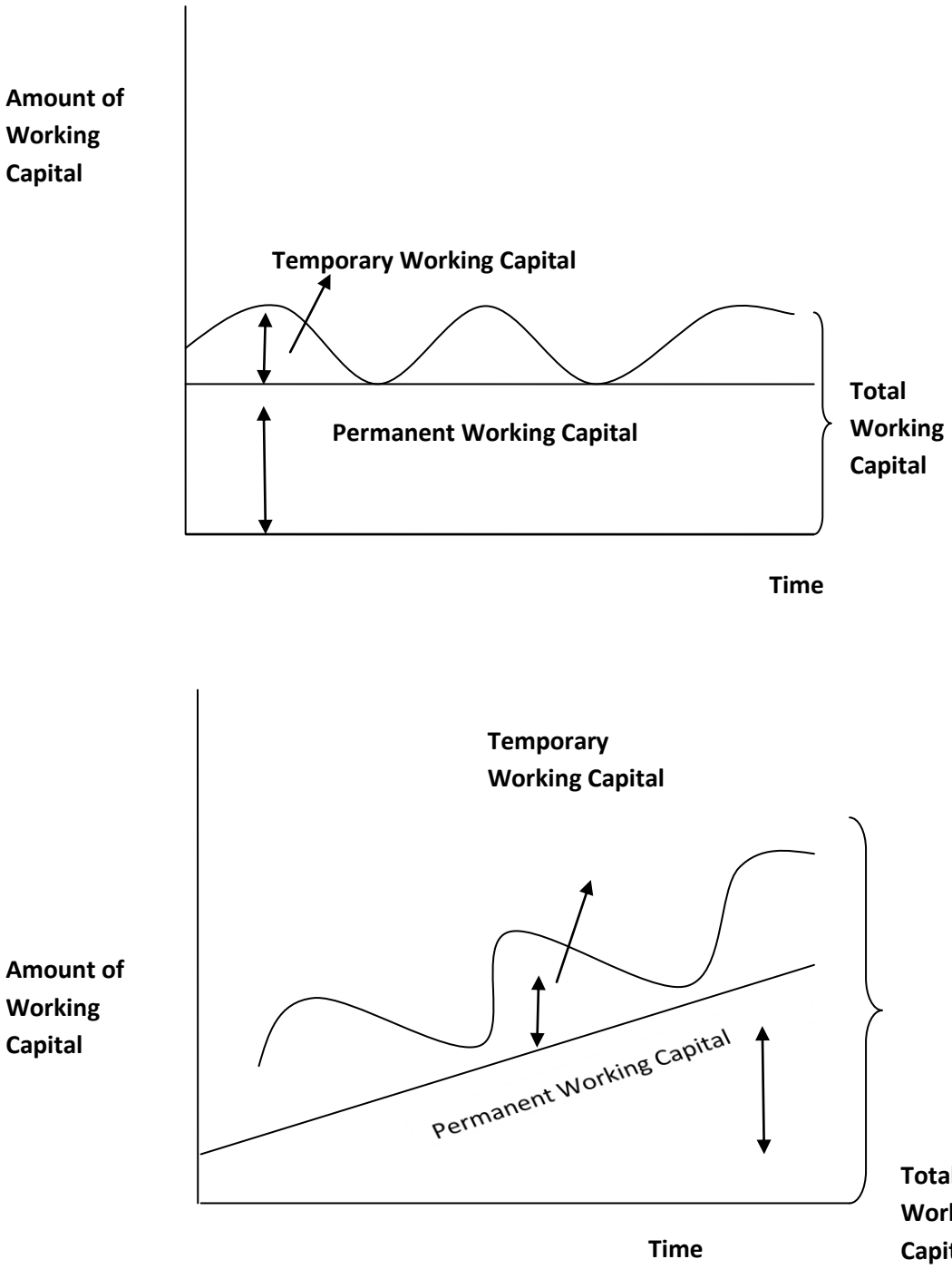


Figure-1: Permanent and Temporary Working Capital

The above figure clearly indicates that permanent working capital may remain constant or may be rising, whereas temporary working capital is fluctuating. The division of these two types of capital is required for the working capital policy in terms of financing of working

capital needs. Finance manage has to arrange for the funds from different sources. Funds required as temporary working capital must be arranged without wastage of time. In other words, proper planning as regard to the requirement of working capital must be done so as to maintain smooth and continuous flow of business activity.

Operating Cycle Approach

According to this approach, working capital is required to meet the day- to- day expenses of business activity. It depends on the operating cycle of the firm. Operating cycle is defined as the time required to convert raw materials into sales. In other words, it is the time period to process the raw materials into finished goods and finally realization of cash from debtors.

Thus, it includes the following phases:

(i) Procurement of raw materials

(ii) Conversion of raw materials into work-in-progress and then into finished products

(iii) Sale of finished goods either in form of cash or in form of credit

(iv) Realization of cash from debtors.

The length of operating cycle of a firm includes (i) **inventory conversion period**, which includes, raw material conversion period, work-in-progress conversion period, and finished goods conversion period (ii) **Debtors collection period**. The sum total of inventory conversion period and the debtors' collection period is known as the **gross operating cycle**. To arrive at the net operating cycle, we need to deduct the period for which the creditors are ready for payment deferrals i.e., **creditors' deferral period**. Therefore, Net operating cycle = Gross operating cycle – creditors deferral period,

Cash conversion cycle = Net operating cycle - Depreciation.

Thus, cash conversion cycle is the time interval between cash collection and cash payment.

1.3 STRUCTURE OF WORKING CAPITAL (i.e., Components of Working Capital)

Working capital management refers to the management of current assets or management of working capital. Working capital consists of firms' investment in the various components

of current assets such as inventories, sundry debtors, cash and bank balance, loan and advances, marketable securities etc. On the other hand, current liabilities include sundry creditors, bills payable, bank overdraft, etc. Hence, working capital management means management of individual components of current assets and current liabilities. These are briefly enumerated below.

Current Assets: Current assets are those assets which are acquired for resale or produced for the purpose of sale or converting them into cash later on. Thus, the current assets have a very short span of life. Each form of current assets can be transformed swiftly into other forms of assets. It comprises of the following components:

Inventory: In simple term, inventory means goods and services being sold by the firm and raw materials or other components being used in the manufacturing of such goods and services (Rustagi, 2002)

In other words, inventory are those tangible assets which are held for sale or is in the process of production for being able to be sold in future or to be currently consumed in the production of goods and services to be available for sale. Therefore, it includes the following: (Banerjee, 2012)

Materials and supplies (consumable),

Work-in-progress (convertible), and

Finished goods (saleable),

Raw material inventories: Raw materials inventory is the inventory which is required to be maintained in order to ensure uninterrupted production. It is that part of stock which has not been put to use in the production of finished goods or in the work-in-progress. The amount of raw materials a firm is required to maintain depends on number of internal and external factors which include time lag between the order placement and the receipt of the same and the uncertainty element attached to it. It means greater the time lag, greater will be the requirement of raw materials and smaller the time lag, lesser will be the requirement of raw material will suffice. Similarly, larger the uncertainty element, larger will be the amount of raw material and vice- versa. Raw materials are required to be managed properly as in the case of other components, since it constitutes a significant proportion of the total current assets. Some of the methods used in this regard are LIFO, FIFO,

maximum level inventory, minimum level inventory, economic order quantity, weighted average level, Specific identification method, ABC analysis, VED analysis, Just-in-time approach, FNSD Analysis etc. Raw materials may sometimes become obsolete with the efflux of time or may be degraded in quality due to its storage.

Work-in-Progress: This refers to the partially produced goods or the goods which have not completed the entire phase of production cycle. The value and the quantum of work-in-progress depend on the length of the production cycle. In other words, smaller the length of the production cycle less will be the work-in-progress and vice-versa. The very reason for managing this important component is that failure in one process should not affect the other.

Finished Goods: Finished goods are those goods which are ready to be sold to the customers i.e, they are ready to be consumed and distributed. Firms must maintain sufficient quantity of finished goods failing which they will not be able to meet customers' demand as and when it arises and will consequently lose customers. Hence, the quantum of finished goods should be sufficiently large in order to meet consumers' expectations in time. It should be properly and effectively managed in order to protect it from pilferage, obsolescence etc.

Thus, it can be said that inventory management is one of the important aspects of a business concern. It aims at maximising the shareholders' value by framing and designing policies which seek to minimise purchase as well as maintenance cost of the inventories. It also seeks to provide efficient customer service and uninterrupted production.

Receivables (i.e., Sundry Debtors): Receivables or the sundry debtors arise because of the firms' inability to purchase goods in cash. In other words, it means book debts which arises out of the credit transactions. It arises in the ordinary course of business and it is also certain and inevitable as the concern must encourage credit sale in order to push-up sales. It accounts for the significant portion of the total current assets. It is an asset as it represents claim of the firm against any third party and it is expected to realise in future point of time. It is quite evident that the firm operating in the competitive environment has to adopt certain policies in order to increase volume and profitability. Therefore, it is necessary for firms to frame and adopt policies relating to receivable management since

cost and benefits are attached to it. The costs related to receivables are cost of financing, administrative cost, delinquency cost and the cost of default in payments by the customers. The benefit of receivables helps to increase sales volume and thereby increase profitability. Hence, the finance manager must attempt to make a proper trade- off between the two aspects of receivables management i.e., costs and the benefits attached with it. It includes proper evaluation and monitoring of debtors on a continuous basis.

Cash: Cash is the most liquid assets among all the components of current assets. It ensures smooth flow of operation and helps the business to keep going. Management of cash is one of the important functions of finance manager of the firm. It refers to the proper management of cash balance and bank balance. Improper management of cash may lead to financial distress as the firm will not be in a position to meet its short term obligations or discharge its short- term liabilities. It must be noted that too much of cash will fail to earn any return and similarly insufficient funds hampers the flow of production as entire production will come to standstill in absence of adequate funds. Financial manager must plan properly the timings of cash inflows and cash outflows as it will help the firm to determine the timings of cash inflows from sales and outflows from costs. Proper and judicious management of cash and marketable securities will help the firm to meet its maturing current obligations as well as provide opportunity to earn interest from the appropriate investment. Generally, cash are being hold for four primary reasons such as:

- Transaction motive: It aims at meeting demand of the cash flows arising out of the day-to- day transactions.
- Precautionary motive: It aims at maintaining proper cash for providing cushion or buffer against unexpected future events.
- Speculative motive: In this case, cash is held for taking the advantage of profit making situation which is generally not available in the normal course of business.

Therefore, it can be said that finance manager must develop strategies in order to trap the opportunity of earning profit and also to increase profitability of the concern.

Marketable Securities: Marketable securities are the short term money market instrument that can be easily converted into cash. These are generally considered to be the two sides of the same coin. It is held for making available additional funds as and when available. Excess cash are generally invested in the marketable securities as these are in idle form and do not earn interest. Strong secondary market is essential for quick transaction and will quote accurate price for the investors. However, return earned from these securities is low because of its liquidity. There are number of factors which determine the selection of marketable risk such as maturity period of securities, liquidity and marketability of securities, default risk, i.e., the risk of losing the amount invested in the securities and yield that is available on different securities. Financial market has different types of marketable securities such as bank deposits, inter- corporate deposits, bill discounting, treasury bill etc.

Current Liabilities: Current Liabilities are those claims of outsiders which are expected to mature for payment within a short period of time, (say, within a year). Thus, these are the obligations which are expected to be satisfied by the use of current assets or by the creation of other current liabilities. It comprises of the following components:

Sundry Creditors: Sundry Creditors arises out of the credit purchase by the firm. It is one of the important components of working capital as it also determines liquidity position of firm for meeting its short- term liabilities. It helps to reduce the burden of working capital as the payment of the same can be deferred. The basic objective is to reduce the payment process or to increase the period of credit as much as possible. But it should be kept in mind that too much delay will have negative impact on the minds of the suppliers. They might be ready to supply in future or may compel firm to accept on some unfavourable terms. Effective management of sundry creditors will enhance a cash flow position of the business concern by designing and implementing optimal timing of payments to the suppliers. However excessive financing should not be encouraged since it has an important bearing on the short term liquidity and credit risk of the company.

Provisions: Provisions are generally the uncertain liability which occurs in the normal course of business. It indicates the present obligation on the part of the firm arising from past events. It will result in outflow of cash. For example, provision for taxation, provision for dividend, provision for interest, provision for depreciation, etc.

1.4 DETERMINATION OF WORKING CAPITAL

Successful business planning depends to large extent on the degree to which working capital is managed. Working capital requirement plays a vital area of decision which has an important bearing on firm performance. Neither too much nor too little working capital is desirable for smooth operation of a business unit. Following are the three methods generally considered for determining the requirement of working capital.

(i) **Percentage on Sales Method:** It is one of the simplest methods of estimating the quantum of working capital and its various components. In this method, level of working capital required for future period is determined on the basis of past data. This method is applicable where there exists linear relationship between revenue for the period and working capital of that period. Furthermore, this method is not suitable for startups.

(ii) **Operating Cycle Approach:** It is based on the time needed to convert raw materials into finished goods, finished goods into sales and accounts receivable into cash. In other words, operating cycle is the time duration between the procurement of raw materials and sales realization in the form of cash. Thus, it consists of the time required for the chronological sequence of the following steps:

a) Procurement of raw material and service.
b) Conversion of raw materials into work-in-progress.
c) Conversion of work-in-progress into finished goods.
d) Sale of finished goods (cash or credit).
e) Conversion of receivables into cash.

Broadly, operating cycle period can be divided into inventory conversion period and finished goods conversion period.

Inventory Conversion Period (ICP) includes the time required to convert raw materials into finished goods. In other words, it consists of Raw Material Conversion Period (RMCP), Work- in- Progress Conversion Period (WPCP) and the Finished Goods Conversion Period (FGCP).

Symbolically,

ICP = RMCP + WPCP + FGCP

Receivable Conversion Period (RCP) is the time required to convert credit sales into cash realization.

Therefore, Total Operating Cycle Period (TOCP) = ICP + RCP.

Net Operating Cycle (NOC) = TOCP- *Deferral Period*

Deferral period means the period for which the payment can be delayed. It happens when the creditors extend credit or when wages are paid after a specified period.

Regression Analysis: It is a useful method for analyzing and estimating working capital requirement. It is also known as trend analysis as it is based on past trend and assume that it will follow in future. This can be done either by scatter plots or through mathematical formula. It is a widely accepted method of statistical analysis which is suitable for both simple and complex situations

1.5 SIGNIFICANCE OF WORKING CAPITAL IN OVERALL FINANCING IN AN ORGANISATION

The importance of working capital in any business can hardly be over-emphasised because of the fact that liquidity is necessary to run the business on a day-to-day basis. The amount of working capital indicates ability of the business to meet its immediate obligations and capacity of the business to carry on effective operations. Without adequate supply of working capital, a business finds itself unable to continue trading in as much the same way as a human being dies without an adequate supply of blood.

Importance of working capital management is reflected in the fact that financial managers spend a great deal of time in managing current assets and current liabilities. Arranging for short-term financing, negotiating favourable credit terms, controlling the movement of cash, administering accounts receivable and monitoring the investment in inventories in a proper way increase the effectiveness and profitability of an organization.

With a view to maximizing the shareholders' wealth, the firm should earn sufficient return from its operations by selling its products in the market. This necessitates the investment of current assets for improving sales activities because sales are not converted into cash instantaneously.

A prudent finance manager should try to maintain a right amount of working capital on a continuous basis to ensure proper functioning of the business. Excess working capital leads to idle funds which in turn earns no profit for the enterprise. Excessive working capital arises out of unnecessary accumulation of inventories which, in turn, increases the chances of mishandling, waste, theft, and losses of inventory. Again, poor credit policy and slackness in collection, etc., unnecessarily increase the accounts receivable resulting in higher rate or amount of bad debts which automatically affects profit of the organization.

Again, paucity of working capital not only affect firm's profitability but also results in interruption in production process and consequently inefficiency in the entire system. Due to inadequacy of working capital, an organization is unable to undertake profitable project which hampers its progress and growth. Operating inefficiencies, inability of the firm to avail of attractive credit opportunities, loss in reputation for failing to honour the short term obligations, etc., are other resultants of inadequate working capital.

Thus, proper and efficient management of working capital may adequately tackle all the problems as mentioned earlier, and, as such, the management should be prompt to initiate action and correct the imbalances.

It is important to note that a number of significant recommendations regarding effective management of working capital have already been made by some high-power committees in India like the Chore Committee, Thus, effective management of working capital, requires effective management of the components of working capital, i.e., effective management of inventories, receivables, cash, etc.

1.6 OBJECTIVES OF WORKING CAPITAL MANAGEMENT

Management of working capital may be defined as the management of firm's resources in such a way so that the wealth of the share holders' is maximized (Rustogi, 2002). The objective of the management of working capital is to provide access to sufficient liquidity so that the continuous flow of production is maintained. The main focus of working capital management is to continuously monitor and provide proper check and balances so that funds should not remain idle. Therefore, the basic objective of the management of working capital is to provide enough liquidity to ensure uninterrupted flow of production. Thus, it is

the primary objective of the finance manager to determine the optimum level of working capital or to say the amount of current assets it required to maintain.

Both excess and shortages have its own implications in the performance of the firm. Excess of working capital may lead to high cost of storing, inefficient credit policy, etc. Hence more efforts in regard to time and manpower is required for controlling the working capital. On the contrary, shortages of working capital may lead to serious consequences like interrupted flow of production, increase in cost of borrowing and wastage of other manufacturing expenses. It can also lead to various serious consequences when it fails to meet product demand in the market and hence the confidence of the investors.

Therefore, firm must take judicious measures and decide in advance the optimum level of working capital in order to maintain the uninterrupted flow of production.

1.7 STRATEGIES FOR FINANCING POLICY AND INVESTING POLICY OF WORKING CAPITAL

Optimum Level of Current Assets / Strategies of Financing Working Capital

Working capital management refers to the policies adopted in managing current assets of the business entity. Investment decision is pre-conditioned for maintaining adequate liquidity and profitability position of an enterprise. There exists an inevitable or direct relationship between sales and current assets. The amount of current assets that a firm must maintain depends on sales forecast which is very uncertain and there are number of factors which may lead to rise in the spontaneous requirement of working capital. In order to overcome the problem of uncertainty, finance manager must maintain sufficient funds as minimum level and as safety level. However, it depends on the different approach adopted by firms in financing its current assets.

Strategies of financing Policy

There are three types of financing policy. They are:

- Conservative Approach
- Aggressive Approach
- Hedging Approach

Conservative Approach: It is adopted by the firms when it does not undertake risk. Hence, all the working capital needs are financed through long term sources of capital and

the use of short-term sources may be limited to the unexpected limited situation only. Therefore, when majority of the working capital requirements are financed by the use of long-term sources, the working capital policy of the firm is known as conservative policy. More the working capital needs are financed through the use of long term sources, the more conservative will be the working capital policy of the firm. Risk and uncertainty components are also low in this case. In this approach, firm finance its working capital needs from the long term sources. Hence, this approach has less risk of facing the situation of liquidity crunch. Excess funds, if any, can be used to invest in the short term securities in order to build up liquidity position of the firm.

Aggressive Approach: It is adopted by the firms when it is willing to finance a part of its permanent current assets with short- term financing. Here, liquidity of the firm will be low unlike under the conservative financing policy. However, risk and uncertainty components are is too high due to poor liquidity position of firms. Some highly aggressive firm even tends to finance a part of their fixed assets with the help of short-term financing.

Hedging Approach: It is based on the concept of bifurcation of the total working capital need into permanent working capital need and temporary working capital need. In this approach, the life of the current assets is matched with the maturity period of the sources of funds. This is why fixed assets are financed through the long term sources, whereas current assets are financed through short term sources. Under this approach, fixed permanent working capital needs are financed by long term sources, where as fluctuating working capital needs are financed by short term sources. However, it should be mentioned that exact matching is not possible due to the uncertainty involved in the actual life of the assets.

Strategies of Investing Policy (Optimum level of Current Assets)

Investment in current assets is indispensible for the growth and development of an organization. Without proper investment in current assets, it is difficult to sustain in the long run, as it provides proper support to firms for carrying out different activities. Amount of funds a firm must invest in the current assets depends on the sales forecast which is quite uncertain. There exists an inevitable or positive relationship between sales and the current assets. With the rise in sales and output, the requirement for current assets will also

increase so as to support the increased level of activity. Basically, three approaches are considered so far as the investment in current activities are concerned. These are as follows:

Conservative Approach: In this approach, a firm invests heavily in current assets. In other words, investment in fixed assets is sufficiently large in this case. Firms here will be able to minimize the risk arising out of insufficient investment in current assets, but it will impair profitability of the concern. Hence, it can be said that, the firms generally takes resort to conservative approach as it is less risky compared to that in other approaches.

Aggressive Approach: In this approach, a firm's holdings in the various components of current assets are reduced to a greater extent. Here, cash turnover will be high as compared to the conservative approach because of low level of investment in current assets which in turn will increase the return on capital employed and subsequently exposed to higher level of risk.

Moderate Approach: This policy neither entails at maintaining neither too high level of current assets nor too low level of current assets. In other words, this policy aims at maintaining proper balance between conservative policy and aggressive policy.

1.8 LIQUIDITY AND PROFITABILITY RELATIONSHIP: A RISK- RETURN TRADE OFF

Firm is required to maintain sufficient amount of liquidity in order to reduce liquidity risk of the firm and to ensure that the firm will be able to meet its short-term obligations. Sufficient liquidity is very much required for smooth running of the business unit. But, it should be remembered that too much positive net working capital may reduce the problem of liquidity but it will also have negative impact as regard to cash flows. In other words, a firm must maintain enough liquidity to protect it from the liquidity crises, but it certainly has a cost element attached to it.

A firm must maintain a trade- off between the firm's liquidity and its profitability. As large amount of investment may help the firm in meeting its short term obligations, it may also reduce the profitability since idle cash has cost which is required to be incurred even if it is not used. As the firm increases its investment in the different components of current assets, it will increase the liquidity position of the firm but it will not have a corresponding

increase in the return of the firm, i.e., profitability. This will lead to reduction in the return on investment of the firm as profit remains unchanged but current assets investment increases. Again, the greater dependence on the long term capital to finance working capital needs of the firm may reduce the problem of liquidity but will certainly reduce the return on investment of the firm.

From the above discussion, it is clear that there exists a trade- off between liquidity and profitability. In other words, there exists a trade- off between risk and return with reference to the management of working capital. It indicates that greater the amount of liquid assets a firm has, less risky the firm is likely to be. It means that larger the amount of liquid assets a firm possess, less likely it will become insolvent. It shows an inverse relationship between liquidity and risk of the firm. But if the firm wants to increase its profitability, then it has to bear the increased risk of liquidity in meeting short term liabilities.

Thus, a trade- off between risk and return is required to be maintained. Neither too much of risk nor too much of return is good. A financial manager must try to maintain a desired level of liquidity and profitability composition so that a sound working capital structure can be achieved.

1.9 FACTORS DETERMINING WORKING CAPITAL REQUIREMENTS

Working capital requirement by the business firm is determined and influenced by a number of important factors. Again, it is difficult to identify the exact amount of working capital requirements by the business firms. Requirement of working capital is situation based, i.e., it varies from time to time and situation to situation. Therefore, the determination of working capital must be done on a regular basis. Following are the factors which determine the working capital needs or requirement of the business firm:

(a) Nature of Business: The working capital requirement by the business units is closely related with the nature of business of the firm. In other words, it can be said that the nature of business has an important bearing on the quantum of working capital requirement. In the case of trading concerns, operating cycle is generally small and transactions are undertaken mostly on cash basis. Therefore trading concern has relatively lower requirements of working capital. Similar is the case with financial concern. In case the of manufacturing concerns, funds are

blocked in every stages of production and operating cycle is also quite long. Hence manufacturing firms require large amount of working capital as compared to the trading and financial concerns.

(b) Size of business: Amount of working capital required is directly proportional to the size of the business unit. The greater the size of the firm, greater is the requirement of working capital and smaller the size of the firm, lower is the requirement of working capital. But, it should be understood that even smaller firm may require larger amount of working capital funds because of increase in overheads cost, nature of inventory, receivables and managerial efficiency etc.

(c) Business cycle fluctuation: Every business is likely to face all the phases of business cycle i.e., boom, recession, recovery etc. and the requirement of working capital differs in all its different phases. In the period of recession, entire economic environment is in dullness and the same is true for business activities. There will be fall in demand for working capital during this phase. However, during the boom period, business activities are at peak, inflationary situation persists and help the business firm to expand its activities and thus call for huge requirements of working capital.

(d) Production Cycle: Working capital requirements in case of manufacturing firms depends on the length of the production cycle. Firms with shorter production cycle will require maintaining small amount of working capital as compared to the firms having the longer production cycle. While longer the production cycle of a firm, larger is the requirement of working capital of the firm.

(e) Seasonal Operation: Working capital requirements are also affected by the seasonal operations, i.e., if the firm which deals in item which has seasonal fluctuations in demand is affected by the change of season. For example, for a cold-drink manufacturing business, the requirement of working capital will be highest during the summer season. The firm will be required to maintain higher level of inventory and debtors. While during the lean season, the requirement will certainly be less. However, if the operation is uniform throughout the financial year, then working capital requirement will be almost constant.

(f) Credit Policy: Working capital requirement by the business firm directly depends on the credit policy. Credit policy refers to the terms and conditions on which the goods and services are both purchased and sold. It has two different facets, one is the credit received from the supplier of goods and services and the other is extending credit to the customers. If a firm purchase goods on credit and sell those in cash will require less amount of working capital. On the contrary, if a firm purchases goods on cash and sell those on credit will require large amount of working capital.

(g) Supply condition: Supply condition prevailing in the industry is also a strong determinant of working capital requirements for the business firms. It is basically defined as the time lag between placing an order and the goods received. If the time lag between the order of the goods and their receipt is less, then working capital requirement will be less whereas in case of a situation when the time lag between the order placed and the goods received is more, the working capital requirements will be relatively more.

(h) Growth and Expansion of Business: It is expected that firm registering higher growth and planning for its expansion will require sufficiently higher amount of working capital than the firm registering lower growth. It is obvious that the working capital requirement will be more for the firm having recorded higher growth and expansion.

(i) Market Competitiveness: Degree of competition prevailing in the market has an important bearing on the working capital needs of a firm. In a monopolistic competitive firm, where both the monopoly and competitive elements are present, the requirement of working capital will be less *as far as the firm is in the position to ask for* advance payment from the customers and delay in meeting order too. However, a firm facing stiff competition will be required to adopt a liberal credit policy (which will lead to high debtors) and it will also have to maintain a large amount of inventory to meet the ever increasing demands in order to retain existing customer and consequently the market share.

(j) Operating Efficiency: Operating efficiency refers to the situation when the firm is in a position to get more output from less input. Here it means, obtaining more form the given or the reduced quantum of working capital. Thus, operating efficiency will improve the operating cycle and thereby lead to higher profitability of a firm.

(k) Dividend policy: Dividend policy, whether liberal or conservative, will also affect working capital requirement of the business firm. A firm adopting conservative dividend policy will require lesser amount of working capital than the firm adopting liberal policy. Dividend paid in the form of cash will also call for more requirement of working capital.

(l) Rise in price level: Every business entity is required to make proper and adequate provision for working capital for the rise in price level in an economy. Rise in price level will increase the price of inputs and consequently there will be demand for maintaining higher level of working capital, failing which the firm will not be able to maintain current level of activity.

(m) Availability of Raw materials: Supply of raw materials has an important bearing on the working capital requirement of a business concern. Working capital requirement will be sufficiently higher when the supply of raw material is time bound i.e., seasonal, whereas in case of regular availability of raw materials, the requirement of working capital will be lower.

(n) Taxation Policy: Taxation policy within an economy is a strong determinant of working capital requirement of a firm. It means that more progressive the taxation policy, more will be the working capital requirement. In other words, it can be said that more the amount payable to the Government in the form of tax less will be the fund left for meeting the day to day activities of a firm and will call for higher requirement of working capital.

(o) Technological advancements: If a business is featured by greater technological advancement in the field of production or operation, it will certainly reduce the manufacturing cycle and the demand for working capital will reduce to a greater extent. It means that technological upgradation in the various fields of activity

will result in efficiency of the manufacturing process and will thereby call for lesser requirement of working capital.

1.10 MERITS AND DEMERITS OF ADEQUATE WORKING CAPITAL

Merits of Adequate Working Capital

The importance of desired or sufficient amount of working capital in a business unit cannot be overemphasized. It is very much essential for smooth running of a business entity. Survival of the business will be jeopardized in the absence of adequate amount of working capital since the uninterrupted flow of production cannot be ensured in the absence of adequate working capital. The importance of maintaining sufficient amount of working capital is mentioned below

(a) Regular supply of raw materials is ensured if the desired amount of working capital is maintained.

(b) Meeting of regular administrative payments and overhead expenses such as salaries, wages, etc.

(c) Smooth flow of production can be ensured with proper and adequate supply of working capital.

(d) Firms will be able to maintain solvency in presence of sufficient amount of working capital.

(e) Firms will be able to create goodwill by making payments for all the dues as and when they become due.

(f) Effective management of working capital will help to reach the profit target and hence it will ensure profitability of the firm.

(g) Firms will be in a position to face crises relating to business and economy if it maintains proper provision for working capital.

Demerits of Excess or Inadequate Working Capital

Excess working capital

Firm should maintain adequate working capital in order to maintain smooth flow of funds into the business. Too much or too little funds have a negative impact on the performance of the firm. Firms also suffer from excess working capital as excess working capital improves liquidity of the concern but impairs profitability. This particularly takes place

when firms invest too much on the slow moving assets such as inventories. Excess working capital invites several problems which are mentioned below:

- Excessive working capital will increase the quantum of inventories than required, which will lead to unnecessary blockage of capital. This will also lead to the obsolescence of the materials.
- Excessive working capital reduces the earning capacity of firm as higher working capital will have idle fund which fails to earn interest and hence results in reduced profit.
- Excessive working capital will reduce working capital turnover.
- Excessive working capital can be the cause of discontentment among the shareholders as it will indicate low return on investment.
- Firms may be tempted to produce more without having any regards to the demand for products.

Inadequate working capital

Inadequate working capital is also a dangerous proposition because it badly affects profitability and solvency of the firm. It indicates shortage of funds to meet the unknown future short term obligations. Inadequate working capital may arise because of under investment in the current assets components such as inventories, receivables, marketable securities, and shortage of cash. Inadequate working capital may lead to various shortcomings which are presented below.

(i) Inadequate working capital will hinder the growth prospect of the company as it will not be in a position to undertake various profitable projects.

(ii) Companies with less working capital will not be in a position to order higher stock of goods. Hence, the opportunities of getting higher trade discount as well as cash discount may not be availed of.

(iii) In the absence of adequate liquid capital, fixed assets cannot be optimally utilised and hence it will remain underutilised.

(iv) Firm will not be able to meet its short term obligation in the absence of adequate liquid funds and hence reputation of the company will be at stake.

(v) Dividend distribution will not be possible because of the non-availability of the working capital.

(vi) Firm may have to pay huge interest payment as it needs to borrow additional funds at an exorbitant rate to meet the short term obligations.

1.11 INDIAN STEEL INDUSTRY: A BRIEF OVERVIEW

The Indian steel industry is one of the basic industries in India which contribute significantly to the economic development of the economy.

The first integrated steel plant was established in the year 1907 under the leadership of Jamshedji TATA, TATA Group as TATA Iron and Steel Industry, presently known as TATA Steel.

Until 1990, the steel sector in India was dominated by public sector, with the introduction of New Economic Policy in 1991, the steel sector has been opened up for the private players as well. Establishment of industry by the private entrepreneur, has been encouraged to a large extent following which huge amount of foreign investment in the form Flls and FDIs has been injected in the economy. Liberalisation, Privatisation and Globalistation are the common words of the New economic Policy of 1991 which proved to be the change maker for the entire economy including steel sector. Several reforms measures have been initiated from time to time to boost up the steel sector of the economy. It can be well apprehended that success of an economy also lies with the success of steel sector which is the core of all business activities.

At present, India stands third in terms of crude steel production in the country and is also the largest producer of sponge iron in the world. This sector continues to contribute 2% of the country's Gross Domestic Product (GDP) and provide employment to more than 600000 people. It aims at increasing steel production in the country from the current volume of 81 MT to 300 MT by 2025.

With the introduction and subsequent implementation of the new industrial policy, private sector is permitted to enter into this sector. Import of technology and FDI are now permitted to enter this sector through an automatic route. Government of India has taken different initiatives for the growth and development of steel industry in the private sector in India.

Existing plants were duly modernized and good numbers of steel plants were established in order to meet the growing demands of the people and the other industries. Liberalization has facilitated the steel industry to a large extent as it turned out to be the exporter from importer in terms of pig iron and at present it is the largest producer of sponge iron.

The Indian steel industry is driven by technological improvement or uplift and has state-of- art facilities. Steel mills across the nations provide sufficient impetus for the growth and development of the industry. There has been rapid development of domestic industry which leads to the review of the National Steel Policy 2025.

The performance of steel industry during the last five- years in terms of export, import and production of total finished steel (alloy + non alloy) has been shown in the following tables:

Table 1.1

Exports of Total Finished Steel

(in million tonnes)

Category	**2010-2011**	**2011-2012**	**2012-13**	**2013-14**	**2014-15**
Exports	3.64	4.59	5.37	5.98	5.59
Growth rate	…….	26.09 %	17.00 %	11.36 %	(6.52 %)

Source: Joint Plant Committee

Table 1.2

Import of Total Finished Steel

(in million tonnes)

Category	**2010-2011**	**2011-2012**	**2012-13**	**2013-14**	**2014-15**
Imports	6.66	6.86	7.93	5.45	9.32
Growth rate	……	3.00 %	15.60 %	(31.27 %)	71.01 %

Source: Joint Plant Committee

Table: 1.3

Production for Sale of Total Finished Steel

(in million tonnes)

Category	2010-2011	2011-2012	2012-13	2013-14	2014-15
Total Finished Steel (alloy+ non alloy)	68.62	75.70	81.68	87.67	91.46
Growth rate	…….	10.32 %	7.90 %	7.34 %	4.32 %

Source: Joint Plant Committee

The per capita consumption in India stood at 59.4 kg in 2014 as against a global average of 216.6 kg (World steel Association economic times India times. Com). The consumption in steel is expected to rise in India in near future and it is expected, will touch the global average within a decade.

Steel Industry in India being second in the world in terms of production of crude or raw steel suffers from low per capita consumption, huge cost relating to import of coking coal, low investment in research and development or infrastructural facilities. These are some of the areas of concern for the steel sector in India. Accordingly, the Government of India has taken several initiatives for the proper promotion and uplift of this sector. These are discussed below.

(i) The Government of India has issued quality control order to ensure quality of goods

(ii) The Government of India strictly monitors market conditions and adopt appropriate measures.

(iii) The Government of India under Ministry of Steel has set up Steel Research Technology Mission (SRTMI) in order to uplift and spread research and development activities in the Iron and steel industry.

(iv) The Government of India has planned Special Purpose Vehicle (SPV) for the states such as Karnataka, Orissa, Jharkhand and Chhattisgarh. These are the four states which are endowed with huge amount of iron- ore.

(v) To deal with the various issues relating to the investment of Rs. 1000 crores or more, the Government has constituted a special group named Project Monitoring Group (PMG). The basic purpose of the formation of this group is to speed up the process of investment.

(vi) Export duty has been increased to 30% in order to fulfill the domestic demand of the steel industry.

1.12 STATEMENT OF THE PROBLEM

Management of working capital and its components has become a crucial issue for all organisations irrespective of its nature and type. Proper functioning can be ensured if the adequate amount of working capital is maintained to meet day-to-day activities of business. Poor management of working capital indicates that the funds are not properly used or is kept idle which will definitely question the profitability of the business unit. It is the duty of the finance manager to be more watchful and to see that a sound and efficient working capital position is maintained; else it may adversely affect business to a greater extent.

Indian Steel industry which has been singled out for investigation in our study, is the basic industry which has both forward linkages and backward linkages. It is one of the important sectors which provide employment opportunities to a large number of individuals of our country and is also directly or indirectly related to various other industries. Therefore, the performance of steel industry is a strong indicator of the industrial performance in the country. Steel industry, for example, makes a significant contribution to the GDP of our country that account for 2 % of the GDP. The rate of growth of GNP of the country affects the performance of the steel industry since the high rate of growth of GNP leads to increase in consumption of goods of which steel is an important component. Similarly, a fall in the growth rate of GNP leads to the decline in the demand for the steel particularly in the household and industry sectors. Working capital in Indian steel industry also accounts for significant portion of the total current assets. Hence, management of the same must be done in such a way as to ensure optimum level of working capital which will provide proper liquidity and higher profitability to the business unit. In this backdrop, the present study is an attempt on the part of the researcher to examine the management of working

capital with a view to measuring the impact of financial recession on working capital in steel industry for the growth and development of the Indian economy.

1.13 OBJECTIVES OF THE STUDY

The main objective of the study is to examine the management of working capital by the steel companies in India in the period of pre- and post financial and economic downturn and its impact on financial performance of these companies.

To achieve this main objective, the following incidental objectives are sought to be achieved:

i) To make a trend analysis of total current assets and current liabilities and their various components of the companies under study during the whole period and to examine whether there is any break in the growth rates of the assets and liabilities and their components during the pre- and post melt down periods under study.

ii) To explore the one- to- one correspondence or relation between the trends in net working capital, on one hand, and the trends in profitability, market value of the company, earnings per share and share holders' wealth on the other.

iii) To explore the impact of investing and financing policies of the company on their profitability and shareholders' wealth.

iv) To make a comparative analysis of companies' performances in respect of various performance indicators.

v) To identify the factors explaining the variations in the performance levels of the companies.

1.14 HYPOTHESES

Keeping in mind the above objectives we have developed the following hypotheses:

a) There has been no statistically significant trend in the current assets and current liabilities during the whole period under study. There has been no statistically significant change in trend growth rate of current assets and current liabilities between the two sub- periods (2000-01 to 2006-07 and 2007-08 to 2011-12) under study.

b) Management of working capital (including investing and financing policies) has no impact on the profitability and wealth of the organization.

c) There has been no significant variation in the performance levels of the companies, as indicated by different profitability and liquidity measures which represent working capital management policies and practices of the companies.

1.15 CHAPTER PLAN OF THE STUDY

Chapter 1: Introduction

Chapter 2: Review of literature

Chapter 3: Sampling Design, Data Collection and Methodologies.

Chapter 4: A brief history of the companies under study.

Chapter 5: Analysis of Trend of the working capital components of the companies under study during the study periods.

Chapter 6: Liquidity and Profitability performance: A Company- wise Analysis

Chapter 7: Measurement of impact of the working capital management practices and policies on the Performance of the companies: A Panel data Analysis

Chapter 8: Measurement of impact of liquidity on the companies' profitability and shareholders' Wealth: A Panel data Analysis

Chapter 9: Summary and Conclusions

CHAPTER – 2

REVIEW OF LITERATURE

Chapter Outline:

2.1 Literature in the Indian and Foreign Context

2.2 Identification of Research Gap

CHAPTER – 2

REVIEW OF LITERATURE

This chapter makes a review of the available literatures in the context of Indian as well as foreign studies relating to working capital and its allied area. On the basis of the literature review, research gap is also identified in this chapter.

2.1 LITERATURE IN THE INDIAN AND FOREIGN CONTEXT

Long et al. (1993) developed a model of trade credit which has established that asymmetric information leads good firms to extend trade credit so that buyers can verify product quality before payment. Their sample contained all industrial (SIC 2000 through 3999) firms. Data were available from COMPUSTAT for the three-year period ending 1987 and they used regression analysis. They defined trade credit policy as the average time receivables are outstanding and measured this variable by computing each firm's days of sales outstanding (DSO), as accounts receivable per dollar of daily sales. To reduce variability, they averaged DSO and all other measures over a three-year period. They found evidence consistent with the model. The findings suggest that producers may increase the implicit cost of extending trade credit by financing their receivables through payables and short-term borrowing.

Vijayakumar. A and Venkatachalam.A. (1996), in their article attempted to make an indepth study in respect of performance and working capital management of a public sector sugar factory in Tamilnadu, namely Tamilnadu Sugar Corporation (TASCO) during the period 1985-86 to 1993-94. The study covers mainly the following aspects of working capital analysis. (i) Component-wise analysis (ii) Financing of working capital (iii) Trends of working capital and (iv) Working capital impacts on profitability. The study is based on the data collected from the annual reports of the selected units. The study has employed various statistical techniques namely co-efficient of correlation and multiple regression for analyzing the data. Correlation analysis has been applied for the purpose of determining association between working capital ratios and profitability ratio. The results of the study indicate a moderate trend

in the financial position and the utilisation of working capital.

Shin H.H and Soenen L. (1998) researched the relationship between working capital (W.C) management and value creation for shareholders. They used net-trade cycle (NTC) as a measure of working capital management. NTC is basically equal to the cash conversion cycle (CCC) where all three components of W.C are expressed as a percentage of sales. NTC may be a proxy for additional They examined this relationship by using correlation and regression analysis, by industry, and working capital intensity for a sample of 58,985 firms during the period 1975-1994. The sample observations were collected from COMPUSTAT. They found a strong negative relationship between the length of the firm's net-trade cycle and its profitability. In addition, shorter net-trade cycles are associated with higher risk-adjusted stock returns. Based on the findings, they suggest that one possible way to create shareholder value is to reduce firm's NTC.

Sur, D, Biswas, J and Ganguly, P (2001) attempted to study the association between the liquidity and profitability of Indian Private Sector enterprises for Aluminum producing industry in India. They identified that there is a very high degree of positive correlation between liquidity and profitability of selected companies. They also observed that liquidity variables jointly influence profitability of the selected companies.

Manoj A, (2001) analyzed the firm's inventory, receivables and payables in order to achieve a balance between risk and return and thereby contribute positively to the creation of a firm value. The present empirical survey has been designed to identify some quantitative working capital benchmarks in order to help Corporate India to manage its working capital more efficiently.

Ioannis, L and Dimitrios, T (2002) examined the relationship between profitability and working capital for 131 companies listed in the Athens Stock Exchange. The study showed that there were significant relation between profitability, measured through gross operating profit and the cash conversion cycle. It was found that the manager should be efficient enough in handling the cash conversion cycle and keeping optimum level of account receivables, account payables and inventory.

Pedro, J, Garcia, T and Pedro M S (2003) examined the effects of working capital management on the profitability using a sample of small and medium-sized Spanish firms. The study pointed out that the SME firms have efficiently managed their accounts receivable and inventories. However, the study suggested that the manager can only add more value to the company by reducing the cash conversion cycle and by improving the firm's profitability.

Deloof, M. (2003) in order to test the relationship between working capital management and corporate profitability using a sample of 1,009 large Belgian non-financial firms for a period of 1992-1996. By using correlation and regression tests, he found significant negative relationship between gross operating income and the number of days accounts receivable, inventories, and accounts payable of Belgian firms. Based on the study results, he suggests that managers can increase corporate profitability by reducing the number of day's accounts receivable and inventories.

Ghosh, S.K. and Maji, S.G. (2003) undertook a study to examine the efficiency of working capital management of Indian cement companies during 1992 - 93 to 2001 - 2002. They constructed three indices - performance index, utilization index, and overall efficiency index to measure the efficiency of working capital management, instead of using some common working capital management ratios. By using regression analysis and industry norms as a target efficiency level of individual firms, they tested the speed of achieving that target level of efficiency by individual firms during the period of study and found that some of the sample firms successfully improved efficiency during these years.

Eljelly, A. (2004) attempted to examine empirically the relationship between profitability and liquidity, as measured by current ratio and cash gap (cash conversion cycle) on a sample of 929 joint stock companies in Saudi Arabia. Using correlation and regression analysis, he found significant negative relationship between the firm's profitability and its liquidity level, as measured by current ratio. This relationship is more pronounced for firms with high current ratios and long cash conversion cycles. At the industry level, however, he found that the cash conversion cycle or the cash gap is of more importance as a measure of liquidity than current ratio that affects

profitability. The firm size variable was also found to have significant effect on profitability at the industry level.

Filbeck, G, & Krueger, T.M. (2005), attempted to provide insights into the performance of surveyed firms across key components of working capital management by using the CFO magazine's annual Working Capital Management Survey. The study reveals that significant differences exist between industries in working capital measures across time. It was also found that the measures for working capital change significantly within industries across time.

Lazaridis , I and Tryfonidis, D (2006) conducted a cross sectional study by using a sample of 131 firms listed on the Athens Stock Exchange for the period of 2001 - 2004 and found statistically significant relationship between profitability, measured through gross operating profit, and the cash conversion cycle and its components (accounts receivables, accounts payables, and inventory). Based on the result obtained from the analysis of annual data by using correlation and regression tests, they suggest that managers can create profits for their companies by correctly handling the cash conversion cycle and by keeping each component of the conversion cycle (accounts receivables, accounts payables, and inventory) at an optimal level.

Kesseven, P (2006) examined the profitability as well as the relation between working capital management and corporate profitability. The regression results reveal that high investment in inventories and receivables was associated with lower profitability. Furthermore, it has been stated that liquidity, profitability and operational efficiency of the five industries showed significant changes and how best practices in the paper industry have contributed to the performance. The study also reveals an increasing trend in the short-term component of working capital financing.

Hitesh and Shukla, J (2007) examined the receivable management of the selected companies using working capital ratios and conducting ANOVA test. The authors found that there was significant relationship between and within the groups of the sample companies. The study also observed that the pharmacy industries were efficient in managing their receivables.

Afza, T and Nazir, M S (2007) The study investigated the relative relationship between the aggressive/conservative working capital policies and profitability as well as risk of firms for 208 public limited companies listed at Karachi Stock Exchange for the period of 1998-2005. The empirical results, which is in line with the study of Afza and Nazir (2007), found the negative relationship between working capital policies and profitability. Moreover, the present study validates the findings of Carpenter and Johnson (1983) that there is no relationship between the level of current assets and liabilities and risk of the firms.

Raheman, A. and Nasr, M. (2007) studied the effect of different variables of working capital management including average collection period, inventory turnover in days, average payment period, cash conversion cycle, and current ratio on the net operating profitability of Pakistani firms. They selected a sample of 94 Pakistani firms listed on Karachi Stock Exchange for a period of six years from 1999 - 2004 and found a strong negative relationship between variables of working capital management and profitability of the firm. They found that as the cash conversion cycle increases, it leads to decreasing profitability of the firm and managers can create a positive value for the shareholders by reducing the cash conversion cycle to a possible minimum level.

Bhunia, A. (2007) conducted a study on the liquidity management in the Iron and steel enterprises in India for the period of 12 years, i.e., 1991-92 to 2002-2003. Steel Authority of India and Indian Iron and steel companies Ltd. were the two sample companies under study. The paper makes an attempt to find the adequacy or otherwise of the working capital, observes the liquidity position and the areas of weakness. The study reveals that actual value of working capital is lower than the estimated. It also indicated on the poor liquidity position and inefficient inventory and receivable management in case of both the enterprises.

Garcia-Teruel, P. and Martinez-Solano, P (2007) collected a panel data of various financial variables of 8,872 small to medium-sized enterprises (SMEs) from Spain covering the period 1996 - 2002. They tested the effects of working capital

management on SME profitability using the panel data methodology. The results, which are robust to the presence of endogeneity, demonstrated that managers could create value by reducing their inventories and the number of days for which their accounts are outstanding. Moreover, shortening the cash conversion cycle also improves the firm's profitability.

Vishnani, S and Shah, B (2007), made an empirical study of Indian Consumer Electronics Industry for assessing the impact of working capital policies and practices on profitability during the period 1994–95 to 2004–05. The impact of working capital policies on profitability has been examined by computing coefficient of correlation and regression analysis between profitability ratio and some key working capital policy indicator ratios. The findings of the study are that a company's inventory management policy, debtors 'management policy and creditors' management policy play an important role in its profitability performance.

Afza, T and Nazir, M S (2007) investigated the relationship between the aggressive/conservative working capital policies for seventeen industrial groups and a large sample of 263 public limited companies listed at Karachi Stock Exchange for a period of 1998-2003. The Study employed ANOVA and LSD test and found significant differences among their working capital investment and financing policies across different industries. Moreover, rank order correlation confirmed that these significant differences were remarkably stable over the period of six years of study. Finally, ordinary least regression analysis found a negative relationship between the profitability measures of firms and degree of aggressiveness of working capital investment and financing policies. The study further investigates the impact of the degree of aggressiveness of working capital policies on market measures of profitability i.e. market rate of return and Tobin's q as well as the risk of firms.

Bhunia, A. (2007), attempted to examine and evaluate the management of short-term liquidity of some selected public sector enterprises in India as a factor responsible for poor performance in the Iron and steel Industry in India. The study include the two major steel companies among the nine Central Public Sector Iron and Steel Enterprises

in India, namely SAIL and IISCO during the period for 12 years from 1991-92 and 2002-03. They however observed a poor liquidity position in case of both the companies under study. The companies maintained inadequate level of working capital during the study period. Both the companies under study have registered poor receivables management practices whereas, SAIL maintained inefficient inventory management practices during the study period.

Falope, OI and Ajilore, OT (2007) used a sample of 50 Nigerian quoted non-financial firms for the period 1996 -2005. They found a significant negative relationship between net operating profitability and the average collection period, inventory turnover in days, average payment period and cash conversion cycle for a sample of fifty Nigerian firms listed on the Nigerian Stock Exchange. Furthermore, they found no significant variations in the effects of working capital management between large and small firms.

Singh, J. P. and Pandey, S. (2008) conducted a study to analyse the impact of working capital management on profitability of Hindalco Industries Limited during the period 1990 to 2007 . The study also attempted to find the correlation between liquidity, profitability and Profit before Tax (PBT) of Hindalco. The study is based on secondary data collected from annual reports of Hindalco for the study period. For the purpose of data analysis ratio analysis, percentage method and coefficient of correlation have been used. Multiple regressions were used to check the impact of working capital management on the profitability of Hindalco.

Samiloglu, F. and Demirgunes, K. (2008) have made analyzed in the study the effect of working capital management on firm profitability for a sample of manufacturing firms listed on for the period of 1998-2007. To indentify relationship between firm profitability and the components of cash conversion cycle the technique of multiple regressions has been applied. The findings of the study show that accounts receivables period, inventory period and leverage affect firm profitability negatively; while growth (in sales) affects firm profitability positively.

Mathuva, D. (2009) examined the influence of working capital management components on corporate profitability by using a sample of 30 firms listed on the Nairobi Stock Exchange (NSE) for the periods 1993 to 2008. He used Pearson and Spearman's correlations, the pooled ordinary least square (OLS), and the fixed effects regression models to conduct data analysis. The key findings of his study were that: i) there exists a highly significant negative relationship between the time it takes for firms to collect cash from their customers (accounts collection period) and profitability, ii) there exists a highly significant positive relationship between the period taken to convert inventories into sales (the inventory conversion period) and profitability, and iii) there exists a highly significant positive relationship between the time it takes the firm to pay its creditors (average payment period) and profitability.

Bhunia, A. & Brahma, B. (2009) attempted to undertake a study of seven Indian private sector steel Industry for assessing the impact of working capital policies and practices on profitability during the period 1997-98 to 2005-06 by computing multiple correlation and regression analysis between the profitability ratio and some key working capital policy indicator ratios. They however observed a high degree of correlation between the dependent (ROCE) and independent variables (CR, LR, ALR, DER, AOI, AOD and AOC) for all the companies under study indicating the presence of some explained variables that have led to lower profitability over and over lower liquidity.

Siddiquee, M and Khan, S M (2009) analyzed the working Capital performances of 83 listed companies from seven different sectors of Dhaka Stock Exchange Ltd. over the period 2003-2007. The result of the study showed that significant differences exist among the position of the companies in working Capital measures across time.

Christopher, S. B and Kamalavalli, A L (2009) examined the relationship between working capital management and corporate profitability of 14 sample corporate hospitals in India by using panel data analysis for the period 1996-97 to 2005-06. The analysis of correlation revealed that eight variables were significantly associated with ROI. From regression analysis, it was evident that an increase in current ratio, cash turnover ratio,

Current Assets to operating income and leverage decreases the profitability.

Bhunia, A (2010) made a study to assess the financial performance of the pharmaceutical companies in India and to understand how management of finance plays a crucial role in the growth. The study covered two public sector drug and pharmaceutical enterprises listed on BSE, i.e., Karnataka Antibiotics and Pharmaceuticals Ltd. and Rajasthan Drugs and Pharmaceuticals Ltd., for the period 1997-98 to 2008-09. In order to analyze the financial performance in terms of liquidity, solvency, profitability and financial efficiency various accounting ratios have been used and statistical measures have been applied. The result indicated strong liquidity positions of the companies. The Companies relied more on external financing which provides less protection to the creditors. Financial stability of both the companies shows a downward trend.

Gill, A, Biger, N and Mathur, N (2010) conducted a study to find out the relationship between working capital management and profitability for a sample of 88 American firms listed on the New York Stock Exchange for a period of 3 years from 2005 to 2007. The study results revealed a strong and significant relationship between the cash conversion cycle and profitability, (measured through gross operating profit). It indicated that managers could create profits for their companies by handling correctly the cash conversion cycle and by keeping accounts receivables at an optimal level.

Caballero, B. Gracia, T and Perdro, M S (2010) attempted to identify the determinants of Cash Conversion Cycle (CCC) for small- and medium-sized firms. The study revealed that the firms under consideration have a target CCC length to which they attempt to converge, and that they try to adjust to their target quickly. The results also show that CCS is longer for older firms and companies with greater cash flows. In contrast, firms with more growth opportunities, and firms with higher leverage, investment in fixed assets and return on assets adopted a more aggressive working capital policy.

Sangmi, M. and Nazir, T. (2010), attempted to evaluate the financial performance of the two top banks based in northern India belonging to the two different sector of the economy, representing the biggest nationalized bank (i.e Punjab National Bank, PNB)

and the biggest private sector bank (i.e J a m m u and Kashmir Bank, JKB) during the period of 5 years (2001-2005). The authors have employed the technique of CAMEL which is based on different parameters. They have also considered descriptive statistical tools such as Mean and standard deviation to arrive at conclusions in a scientific way. The results however have highlighted towards the sound and satisfactory financial position of the banks under study so far as their capital adequacy, asset quality, Management capability and liquidity are concerned.

Butt B. Z., Hunjra A. I. and Rehman K. (2010), attempted to measure the relationship between organizational performance and financial management practices like capital structure decision, dividend policy, investment appraisal techniques, working capital management and financial performance assessment in 40 companies belonging to listed different sectors and listed at Karachi Stock Exchange. The finance executives and financial analysts of the companies responded to questionnaire that identified through company profiles and references. The questionnaires were self administered to collect the data from respondents. The results show a positive and significant relationship between financial management practices and organizational performance in Pakistani corporate sector.

Erasmus, P.D. (2010) investigated the relationship between working capital management and firm profitability for a sample containing both listed and delisted South African industrial firms. The results obtained from the study of full sample revealed statistically significant negative relationships between ROA used as a proxy of a firm's profitability and its net trade cycle (NTC), debt ratio and liquidity ratio. Listed firms are when investigated separately showed similar results. However for the delisted firms, the liquidity and debt ratios appear to play a more important role than the NTC.

Charitou, M.S., Elfani, M. and Lois, P. (2010) empirically investigated the effect of working capital management on firm's financial performance in an emerging market during the period 1998-2007. The data set consists of firms listed in the Cyprus Stock Exchange. The study employed the techniques of multivariate regression to test interrelationship between the working capital management and firm's profitability and

results support the hypothesis that working capital management leads to improved profitability. Specifically, results indicate that the cash conversion cycle and all its major components; namely, days in inventory, days sales outstanding and creditors payment period - are associated with the firm's profitability.

Nageswari, P, Bennet, E and Selvam, M (2010) have undertaken a study to analyze the Receivable Management practices of the Indian automakers in the revived scenario for a sample of eleven selected companies during the period 1999-2009. The study used Ratio Analysis and ANOVA as tools to find out the efficiency of Receivable Management during the study period. The study found out that the Automobile Industry in India efficiently managed their Receivables and based on the future sales forecast, the sales turnover and profit will be good in the future.

Jeyachitra, A, Bennet, E, Nageswari, P and Parasuraman, S (2010) considered a sample of ten companies from the Cement Industry to find out how efficiently the receivables were managed by the Industry during the study period. They concluded that the cement industry was efficiently managing their receivables and based on the future sales forecast, the sales turnover and profit would be good in the near future. The above literature provided an overview of the working capital management from different industries. This study also analyzed the Receivable Management of Indian Automobile Industry using the methodology and tools used by the earlier studies. This study has used six ratios and two way ANOVA test to analyze the Working Capital Management.

Zariyawati, M. A., Annuar, M. N. & Rahim, A.S. Abdul (2010) endeavored to investigate the relationship between working capital management and firm profitability using panel data of 1628 firms consisting of six different economic sectors which are listed in Bursa Malaysia for the period of 1996-2006. Cash conversion cycle is used as measure of working capital management. Pooled OLS regression analysis method was employed to test the relationship between cash conversion cycle and firm profitability. The results were indicative of a strong and significant negative association between the two variables of study.

Raheman, A., Afza, T., Qayyum, A. and Bodla, M.A (2010), analyzed the

impact of working capital management on firm's performance for 204 manufacturing firms listed on Karachi Stock Exchange in Pakistan for the period 1998 to 2007. Balanced panel data of the selected sample were taken for analyzing the stated relationship. The results indicate significant relationship between the cash conversion cycle, net trade cycle and inventory turnover in days and the performance of the firms. Moreover, the financial leverage, sales growth and firm size also have significant effect on the firm's profitability. The study concluded that firms under study are following conservative working capital management policy and they must concentrate and improve their collection and payment policy.

Sharma, A, and Sharma, S. (2011), undertook a study to examine the effect of working capital on profitability of Indian firms for the period 2000 to 2008. The sample contains 263 non-financial BSE 500 firms listed at the Bombay Stock (BSE) and evaluated the data using OLS multiple regression. The findings of their study significantly depart from the various international studies conducted in different markets. The study found a positive relation between working capital management and profitability, whereas there exists a negative association between inventory of number of days and number of days accounts payable with a firm's profitability, whereas number of days accounts receivables and cash conversion period exhibit a positive relationship with corporate profitability. The study contributes to the existing literature by examining the effect of working capital management on profitability in the context of an emerging capital market of India.

Ching, H Y, & Gerab, F (2011), examined whether there existed any relationship between the working capital management practices and profitability in16 working capital intensive and 16 fixed capital intensive Brazilian listed companies for the period 2005-2009. The study also aimed at identifying the variables that affected profitability. The variables used as a proxy for the profitability are return on sales (ROS), on asset (ROA) and on equity (ROE) whereas the independent variables used are cash conversion efficiency, debt ratio, days of working capital, days receivable and days inventory. Multiple linear regression of the dependent variables on the independent variables mentioned above has identified that, as far as ROS and ROA are concerned, to manage

working capital properly is equally relevant for the two groups of companies. However the impact of debt ratio and days of working capital are relevant in the company profitability in the fixed capital group as opposed to the working capital intensive group of companies. From ANOVA it is evident that days inventory has negative relationship with ROS and ROA but has no statistical evidence in ROE improvement in working capital intensive group. It has also identified days of working capital as the variable that influences ROS in the second group (positive relationship) while debt ratio is the only variable that affects ROA (negative relationship). These results show that regardless the type of company, whether working capital or fixed capital intensive, proper management of working capital properly plays a significant role in the growth of the companies measured in the terms of profitability. Moreover, managing inventory as well as cash conversion efficiency to an optimum level will yield more profit in the working capital intensive type of company, while two other different variables create more profit in the fixed capital intensive type of company.

Bellouma, M (2011), attempted to examine the effects of working capital management on the profitability of 386 Tunisian export SMEs from 2001 to 2008. The result of the study indicates that there exists a negative relationship between corporate profitability and the different working capital components as revealed by the results of fixed and random effects model. The study also reveals that Tunisian export SMEs should shorten their cash conversion cycle by reducing the number of days of accounts receivable and inventories to increase their profitability.

Bhunia, A and Brahma, B (2011), undertook a study to identify the effectiveness of working capital in terms of short- term liquidity of four private sector steel companies operating in India for a period of 9 years, starting from 1997-98 and ending on 2005-06. The study involves various accounting and statistical tools and techniques which includes ratio analysis, various statistical techniques the A.M., S.D., C.V, test of significance (t-test), multiple correlation and multiple regression analysis, multiple co-efficient of determination (R^2) and linear regression equations. Liquidity position in the case of TSL is found to be more satisfactory whereas it is unsatisfactory in the case of JSWSL. Cash

management performance indicates a liquidity crunch situation and is quite weak in case of JSWSL. There exists a relationship between liquidity and profitability indicators.

Bhunia, A. & Khan I.U. (2011), analyses the association between the liquidity management and profitability of 230 Indian private sector steel companies over the period from 2002 to 2010 obtained from CMIE data base. Liquidity management indicators and profitability indicator are modeled as a linear regression system in multiple correlation and regression analysis. Evidence of petite association between those variables is found. Results of the descriptive statistics discloses that liquidity and solvency position is very satisfactory and relatively efficient liquidity management is found. Multiple regression tests confirm a lower degree of association between the liquidity management and profitability.

Ramaratnam, M.S. & Jayaraman, R (2011) in their research paper have made an attempt to analyze and predict the financial health by way of applying Altman's Z – Score (Altman combined a number of accounting ratios to form an index of profitability, which is regarded as an effective indication of corporate performance in predicting financial soundness of a firm.) in the selected companies of Indian steel industry viz., JSW Steel, SAIL, Steel exchange of India, Tata steel and Visa steel. The study is mainly based on secondary data and the source of data was 'PROWESS – Data Base'. The study incorporates simple statistical techniques such as mean, standard deviation etc. ANOVA test was applied to analyze the consistency, stability and overall trends in the different ratio used in Altman Z- Score. The study revealed that all the selected companies were financially sound during the study period.

Chandrabai, T and Janardhan Rao, K.V. (2011), attempted to examine and evaluate the working capital management in ACC Limited over a period of 6 years i.e., from 2004-05 to 2009-10. This study is based on secondary data which is collected from annual reports of the company. The study employed the technique of correlation to test the relationship among the selected variables. The study reveals that the Working capital management of ACC Limited is satisfactory. The company has no problem in the management of inventory, debtors, cash balances and current liabilities. The liquidity position of the company is also very much. The relationship between the working capital efficiency and

profitability is found to be statistically insignificant. However, the gross profit margin to earning per share, return on equity to market/ book ratio, dividend yield to payout ratio, return on total assets to dividend per share and earnings per share to dividend per share, net profit margin to sales to assets, and sales to total assets to sales to fixed assets, earnings per share to dividend per share and dividend yield to payout ratio recorded a statistical significant relationship.

Garcia , J.P.L., Martins, F.V.S., and Brandao, E.F.M. (2011), attempted to examine the impact of working capital management and its components upon the profitability of 2,974 non-financial European companies listed in 11 European Stock Exchanges for a period of 12 years: 1998 - 2009. Cash Conversion Cycle is used as a comprehensive measure for working capital management and Gross Operating Profitability used as a measure for profitability. The study employed the techniques of GLS and OLS regression to test the interrelationship between the dependent variable and the independent variables. The study however found a significant negative relationship between Receivables Collection Period, Inventory Conversion Period, Payables Deferral Period, Cash Conversion Cycle and profitability. An inverse relationship between Current Ratio and profitability was also found and an additional analysis revealed that different levels of liquidity lead to differentiated impacts of the Cash Conversion Cycle upon operating profitability.

Afeef. M (2011) made a study to determine the potential effect of working capital management on the profit performance of 40 Small and Medium sized Pakistani firms listed in Karachi Stock Exchange for a period of six years from 2003 to 2008 which led to a total of 240 firm-year observations. Findings from the analyses suggested that indicators of working capital management had a perceptible impact on profitability of firms under study.

Vijayakumar, A. (2011) investigated the relationship between Cash Conversion Cycle (Liquidity) and firms' profitability for a sample of 20 Indian Automobile firms for the period 1996-2009. The results of the study revealed that the managers can increase

profitability of their firms by shortening the cash conversion cycle, accounts receivables period and inventory conversion period. However lengthening the accounts payables period can also increase the profitability of their firms. The study suggest an optimal cash conversion cycle as more accurate and comprehensive measures of liquidity analysis.

Ali, S. (2011), in his article attempted to explore the association between working capital management and the profitability of 160 textile firms in Pakistan during the period 2000 to 2005. Three variables, namely cash conversion efficiency, days operating cycle, and days of working capital used as a proxy for measuring the efficiency of working capital management. Whereas return on assets, economic value added, return on equity, and profit margin on sales used as proxies for profitability. A balanced panel dataset covering 160 textile firms for the said period was considered for the purpose of analysis. He estimated an ordinary least squares model and a fixed effect model. Return on assets is found to be significantly and negatively related to average days receivable, positively related to average days in inventory, and significantly and negatively related to average days payable. Also, return on assets has a significant positive correlation with the cash conversion cycle, which would suggest that a longer cash conversion cycle is more profitable in the textiles business. The findings of the regression analysis show that average days in inventory, average days receivable, and average days payable have a significant economic impact on return on assets. The findings of the fixed effect model reveal that average days in inventory and average days receivable both have a significant impact on return on assets.

Y. Lingesiya and Nalini, S. (2011), attempted to analyse the impact of working capital management on firm's performance of the Sri Lankan manufacturing companies during the period 2006-2010. The sample consists of 30 manufacturing companies listed in Colombo stock exchange market. Return on Total Assets (ROA) is used as proxy to measure profitability of firms under study. Liquidity ratios, working capital cycle and components of currents are the explanatory variables. The study employed descriptive statistics to find the nature and type of relationship among the variables. The result of the study indicates that high investment in inventory and receivables leads to lower profitability. It further shows a strong relationship between working capital management

and profitability for the selected companies under study.

Ching, Y., Novazzi, A. and Gerab, F. (2012) attempted to investigate if there is any difference between corporate profitability and working capital management in working capital intensive and fixed capital intensive companies and the variables that most affect profitability. Return on sales (ROS), Return on asset (ROA) and Return on equity (ROE) used as a proxy for firm profitability and are the dependent variables. The independent variables used are cash conversion efficiency, debt ratio, days of working capital, days receivable and days inventory. The samples consisting of 16 Brazilian listed companies in each group for the period 2005-2009. Multiple linear regression and ANOVA were used a tool for statistical analysis. The results obtained from the study shows that regardless the type of company, whether working capital or fixed capital intensive, managing working capital properly is equally important. Moreover, managing inventory as well as cash conversion efficiency to an optimum level will yield more profit in the working capital intensive type of company, while two other different variables create more profit in the fixed capital intensive type of company.

Bagchi. B. and Khamrui. B (2012) undertaken a study investigate the relationship between working capital management and firm profitability and to identified the variables that most affect profitability during the period of 10 years i.e., from 2000–01 to 2009–10. The sample covers 10 FMCG (Fast Moving Consumer Goods) companies in India from CMIE database. Return on assets (ROA) has been used as a proxy for measuring Profitability. Cash conversion cycle (CCC), interest coverage ratio, age of inventory, age of creditors, age of debtors and debt-equity ratio have been used as explanatory or independent variables. Pearson's correlation and pooled ordinary least squares regression analysis were employed in the study. The study results confirm that there is a strong negative relationship between variables of the working capital management and profitability of the firm**.** As the CCC increases, profitability of the firm decreases, and managers can create a positive value for the shareholders by reducing the CCC to a possible minimum level. Debt used by the firm and profitability shows a stumpy negative relationship.

Rakhit, D. and Chatterjee, C. (2012) attempted to examine the working capital management practices of the four Pharmaceutical companies namely, Navartis India, Abbot India, Aventis India, Glaxosmith Kline Pharmaceuticals Ltd. during the period 2001- 2010. The authors have employed the concept of Zero Working Capital to measure the efficiency in managing working capital. Beside this they have also considered Performance Index (PI), Utilization Index (UI) and Efficiency Index (EI) as a measure of overall efficiency of working capital management of a firm. PI reflects the average performance of the components of current assets. UI indicates proper utilization of its current assets in ensuring proper utilization of current assets as a whole in order to generate sales, and EI measures the ultimate efficiency of the working capital management of a firm by taking into account both the aspects of performance of current assets as well as firms ability of utilizing those current assets.

The study however revealed satisfactory performance of the sample companies with regard to the average performances of their current assets components.

So far as the overall efficiency is considered Novertis India and Abott India have registered satisfactory performance over the study period unlike the other sample companies. It is also observed that Glaxosmith kline has been working with the concept of Zero Working Capital (ZWC) while other companies are likely to follow that trend.

Usman, M. (2012) attempted to analyse the working capital Management and its affect on profitability and liquidity of the 18 companies belonging to the other food sector listed on Karachi Stock Exchange during the period 2006-2010 For this purpose the effect of different variables of working capital management like Average collection period, average payment period, inventory turnover in days, cash conversion cycle, debt ratio, financial asset to total asset ratio, current ratio and net operating profitability have been examined. Technique of pooled least square regression and common effect model have been employed for the said purpose. The study however revealed that a significant positive affect of working capital management on profitability and liquidity of the firms. Size of the firm and financial asset to total asset ratio have significant positive effect

on firm's profitability while average collection period has significant negative effect on firm's profitability. Size of firm and cash conversion cycle has significant positive effect on firm's liquidity.

Ray. S (2012), attempted to explore the relationship between working capital management components and the profitability of a sample of 311 Indian manufacturing firms for a period of 14 years from 1996-97 to 2009-10. The variables used as a proxy or measures of working capital management were the average collection period, inventory turnover in days, average payment period, cash conversion cycle and current ratio, debt ratio, size of the firm and financial assets to total assets ratio on the net operating profitability of Indian firms. The result however revealed a strong negative relationship between the measures of working capital management including the number of days accounts receivable and cash conversion cycle, financial debt ratio with corporate profitability. Furthermore, insignificant negative relationship between firm size and its net operating profit ratio.

Napompech, K. (2012) examined the effects of working capital management on profitability based on the panel sample consisting of 255 companies listed on the Stock Exchange of Thailand during the period 2007 -2009. Regression analysis was carried out to test the above relationship. The results revealed a negative relationship between the gross operating profits and inventory conversion period and the receivables collection period. Therefore, managers can increase the profitability of their firms by shortening the cash conversion cycle, inventory conversion period, and receivables collection period. However, they cannot increase profitability by lengthening the payables deferral period. The findings also demonstrated that industry characteristics have an impact on gross operating profits.

Lotfinia, E., Mousavi, Z and Jari, A. (2012), investigated the relationship between working capital management and firm characteristics for 80 companies in Tehran Stock Exchange has been us .Firm size ,financial leverage and Q Tobin ratio were used for evaluating firm characteristics and net liquidity balance as criterion for evaluating of working capital management .Stepwise regression model was used for analyzing and

testing hypotheses, The results of the study showed positive relationship between working capital management and firm size, while there is a negative relationship between working capital management and financial leverage. The study showed no relationship between working capital management and Q Tobin.

Varul, G., Sokmen, A.G. and Cetenak, E.H. (2012) attempted to investigate the relationship between working capital management components and performance of the firms by using dynamic panel data analysis for the 75 manufacturing firms exposed to 600 total observations listed on Istanbul Stock Exchange Market for the period 2002- 2009. To measures firm's performance, Tobin Q and gross operating profit (GOP) has been used as a proxy of firm's value and profitability respectively. The results show that collection period of account receivables and cash conversion cycle are negatively related with firm's profitability, hence profitability can be increased by shortening collection period and cash conversion cycle. Leverage as a control variable has a significant negative relationship with firm's value and profitability of firms. This means, increase in the level of leverage will lead to decline in the profitability of the firm and the value of the firm. The relationship between other working capital management components and firm's profitability is insignificant. Relationship between leverage and firm's profitability is negative while the relationship between firm size and firm's profitability is positive. The results for firm's value (TOBINQ) are insignificant except cash conversion cycle and leverage.

Mousavi, Z and Jari I.A, (2012) evaluated the relationship between working capital management and corporate performance. Return on Total Assets, Return on Owner's Equity and Market Value to Book Value ratio has been used as a proxy for evaluating corporate performance and net liquidity balance as criterion for evaluating of working capital management for 56 companies listed in Tehran Stock Exchange during the period 2003- 2007. Apart from using descriptive statistics such as central indexes as well as dispersion, regression model and correlation method are also used has been used for analyzing and testing hypotheses. The results, however, show a positive relationship between working capital management (Net Liquidity Balance) and corporate

performance.

Taani, K (2012) attempted to determine the impact of working capital management policy and financial leverage on financial performance of 45 Jordanian companies listed on Amman Stock Exchange for a period of five years from 2005 –2009.To measure interrelationship net income, return on equity (ROE) and return on asset (ROA) have been used as a proxy of financial performance. To test the interrelationship Pearson's rank correlation test, ANOVA F-test, and multiple regression were used. The study, however, indicated that firm's working capital management policy, financial leverage, and firm size have significant relation to net income. However, working capital management policy has no significant impact on return on equity (ROE) and return on assets (ROA).

Samson, A.A., Mary, J. Yemisi, B.F. and Erekpitan, I.O. (2012), empirically investigated the impact of working capital management on profitability of a sample of 30 small and medium Sized Nigerian Firms for the single period of 2009. Multiple regression analysis was employed to test the stated relationship. The Study, however, revealed that value can be created by reducing their firm's number of day's accounts receivables and inventories and shortening the cash conversion cycle.

Joshi, L. and Ghosh, S. (2012), attempted to examine the working capital performance of Cipla Ltd. during the period 2004-05 to 2008-09.The empirical findings reveal significant positive trend growth in most of the selected performance indicators. Further, the selected ratios show satisfactory performances during the study period. Finally, there exists significant negative relationship between liquidity and profitability, which indicates that Cipla Ltd. has maintained post optimal level of liquidity (i.e., excess liquidity) during the period under study.

Chist, K.F. (2012), attempted to examine the effect of different working capital management variables on the Net operating profit of the 16 Indian firms listed on BSE including firms from different sectors of the economy for the period 2006-2011. The study employed Descriptive and Regression techniques for the purpose of analysis and showed that there is a strong negative relationship between the working capital

management variables and profitability of the firm except the sales (Size of the company). We also find that there is a positive relationship between size of the firm and its profitability. There is also a significant negative relationship between debt used by the firm and its profitability.

Vural. G., et.al, (2012), attempted to investigated the relationship between working capital management components and performance of the 75 manufacturing firms listed on Istanbul Stock Exchange Market for the period 2002-2009 by using dynamic panel data analysis. The study revealed that profitability of the firm measured by gross operating profit can be increased by reducing the length of collection period of accounts receivable and cash conversion cycle. Leverage (control variable) was found to have significant negative relationship with firm value and profitability of firms.

Ahmed, N. Azim, P & Rehman, J (2012), investigated the effect of working capital management on profitability of 148 diverse manufacturing firms listed on Karachi Stock Exchange, Pakistan, for the period January 2006 to December 2011. The fixed effect and random effect models results revealed that firms' aggressive strategy of financing negatively affected the profitability. Moreover, tight credit policy, efficiency of stock-in-trade management, early payment policy and conservative strategy of investment in current assets are found to have significant positive effect on profitability of firms. Findings of the study suggested that profitability of firms could be improved by devising optimal working capital management policies and also emphasized the investigation of factors that must be considered by management while formulating appropriate working capital management policies.

Abuzayed, B. (2012) investigated the effect of working capital management on firms' performance for a sample of firms listed on a small emerging market, namely Amman Stock Exchange from 2000 to 2008. Cash conversion cycles as well as its components are used as measures of working capital management skills. The study employed both the accounting and the market measures of performances. To bring up more robust results, this study used more than one estimation technique, including panel data analysis, fixed

and random effects, and generalized methods of moments. The study found positive relation between profitability and the cash conversion cycle. This indicates that more profitable firms are less motivated to manage their working capital. In addition, financial markets failed to penalize managers for inefficient working capital management in emerging markets

Niresh, J A. (2012), conducted a study to investigate the relationship between working capital management and financial performance of 30 manufacturing firms listed on the Colombo Stock Exchange, Sri Lanka for the period of 2008 to 2011 was used for this study. Performance was measured in terms of return on assets and return on equity while cash conversion cycle, current assets to total assets and current liabilities to total assets were used as measures of working capital management. Correlation and regression analysis were used for the analysis. The findings reveal that, there is no significant relationship between cash conversion cycle and performance measures. The study also concludes that manufacturing firms in Sri Lanka follow conservative working capital management policy

Panda, A. (2012), made an attempt to examine the status of gross and net working capital and their association with sales of Andhra Pradesh Paper Mills Ltd, with reference to the Indian paper industry during period 1999 to 2008. The data for the research mainly collected from the Centre for Monitoring Indian Economy (CMIE).The study mainly focused on the size, character, and annual growth rates and trends in growth rates of gross and net working capital of the company. Karl Pearson's correlation coefficients have been applied to test interrelationship between sales and working capital. However coefficient of determination and Student's t-test were used to test the strength and significance of such a relationship. The major findings of the study revealed that while there was an increase in sales positively, strongly, and significantly associated with an increase in gross working capital for both the company and the industry, its association with net working capital was negative, poorly related, weak, and insignificant for the company under study.

Chaklader, B. & Srivastava, N. (2013) conducted the study to find out the effect of

working capital management policies on the profitability of 169 manufacturing firms listed in Bombay Stock Exchange (BSE) 500 during the period of global slowdown i.e., from 2008 till 2011. The study also intended to know the importance of components of working capital and also to find out about the working capital management policy of these firms. The data were collected from CMIE prowess data base. Return on capital was taken as a proxy of profitability and average inventory turnover days, average collection period, average payable period, cash conversion cycle and the ratio of current assets to total assets were taken as various exogenous variables. Multicolinearity check was done and Hausman test was conducted, Results of Hausman test indicated that random effect model is true. Panel data regression was run through random effect method.

Omolade, A. and Mukolu. M.O (2013), investigated the impact of working capital on organizational performance of the ten selected companies across different industries in Nigeria. The study employed the techniques of multiple regression analysis for estimating the results whereas Return on Capital Employed (ROCE) used as a proxy for organization performance. The study, however, revealed that six of the selected companies showed a negative relationship between working capital and organization performance, while four showed a positive relationship. It was also found that working capital of all the sample firms do not have significant impact on their performances during the period under study.

Mohanty, S.C. (2013) attempted to evaluate the effectiveness in liquidity management of few selected state sector and private sector organization of Orissa during the period 2002-03 to 2011-12. The sample consisting of IDCOL Kalinga Iron works Ltd., IDCOL Ferrochrome and Alloy Limited, The Orissa Mining Corporation Limited, and Indian Metals and Ferro Alloy Limited. These companies are engaged in minning, processing, production and manufacturing activities of products of metals and non- metals, their minerals, ores and alloys in the competitive environment. The findings of the study speak high of Orissa Minning Corporation Limited in terms of Liquidity because of is well managed debt collection strategies and adequate current and liquid ratios. However accumulation of huge cash indicated abnormality and hence could affect the profitability

of the company. The study also focuses on the need and scope for further improvement in the liquidity position of the other company under study.

Khatik, S.K. and Nag, A. (2013) made an attempt to explore the inter-phase of two important financial ratios, the net profit margin and asset turnover and their impact on the profitability of Mangalore Refinery and Petrochemical Limited. The concept of Du- Pont Analysis has also been employed to examine the company's return equity by dividing it into three main components Profit Margin, asset turnover and leverage factor. ROE though showed satisfactory results but net profit, ROA, annual growth rate and equity multiplier was not satisfactory. Fixed assets and current assets were also not properly utilized.

Sharma, T. and Rathore, U. (2013) investigated the importance of working capital management and its impact on profitability of Indian Oil Corporation Ltd. (IOCL) for the period 2005-2010. For measuring the degree of association between working capital management and profitability pearson's correlation coefficient has been applied. Multiple Regression has also been applied. The results revealed that of the selected ratios relating to working capital management four ratios such as current assets, Current Assets to Total Assets Ratio, Current Assets to Sales Ratio and Cash Turnover Ratio showed positive association with the selected Profitability ratio i.e., Return on Investment (ROI), while the remaining four ratios like Debtors Turnover Ratio, Inventory Turnover Ratio, Working Capital Turnover Ratio and Quick Ratio showed a negative association with the ROI.

Thapa P.D.P (2013), examined the interrelationship between working capital management and profitability of the Food and Beverage Corporations from the U.S.A. and Canada during the study period from year 2000 to 2009. The study advocated the existence of a possible non- linear relationship between working capital management and profitability. The study apart from using conventional turnover ratios employed indices like, performance index, utilization index and efficiency index to measure the efficiency of working capital management. Cash conversion cycle and factors affecting viz. leverage, growth, size, age, cash flow and fixed assets to total assets ratio has been studied. The results suggest the existence of concave relationship between the working

capital management and profitability. The findings also revealed that the corporations were efficient during the study period.

Ahamadabadi, R., Mehrabi, E. and Yazdi, A.F. (2013), made a study to find empirical evidence about the effect of working capital management on the firm's performance listed on the Tehran Stock Exchange during the period 2006-10.To test the stated interrelationship measures like economic value added and market value added have been employed. The regression of the study showed no strong negative association between working capital management and refined economic value added. However, the variables relating to working capital management and market value added are found to be significantly associated.

Ebenezer, A. B. and Asiedu, M.K. (2013) in their research work examined the effect of working capital management on the profitability of manufacturing companies listed on the Ghana Stock Exchange within the Accra metropolis for the period 2007-2011. The study found that, the major component of working capital management such as inventory days, account payable and cash conversion cycle have influence on the profitability of manufacturing companies. The study recommended that manufacturing companies should adopt efficient and effective ways of efficiently managing these components of working capital management.

Forghani, M., Shirazipour, M. and Hosseini, A (2013) investigated the interrelationship between working capital management and company's performance. Return on Equity (ROE), Rate of return on Assets (ROA) and ratio of market value to book value of the company (P/B) have been used as a proxy for firms' performance for the 56 sample active companies in Tehran stock exchange during the period 2003-2007. The study employed the techniques of correlation in order to find the stated interrelationship. Descriptive statistic including central and scatter indices have been used to analyze data. Results of the study show a positive and significant relation between working capital management and return on equity, between working capital management and rate of return on Assets, between working capital management and ratio of market value to book value of the company.

Nejad, D. A., Bandarian, A. and Ghatebi, M (2013) attempted to investigate the relationship between working capital management and profitability of 116 listed companies in Tehran Stock Exchange for the period of 2006- 2011 by applying methods of multiple regression method and is done by econometric modeling. To investigate whether there exists any correlation between the variables or not, the statistic of the Durbin -Watson is used. Ordinary Least Squares (OLS) method is used to test the research hypotheses. The research results indicate that, there exists a significant inverse relationship between cash conversion cycle and its components, including the collection period, inventory turnover period and accounts payable turnover period, on the one hand and profitability of the firms, on the other Hence, corporate managers can increase the profitability of their company desirably by reducing the collection period and inventory turnover period.

Makori, D. M. Jagongo, A (2013) in their article attempted to analyse the effect of working capital management on firm's profitability in Kenya for five manufacturing and construction firms which are listed on the Nairobi Securities Exchange (NSE) for the period 2003 to 2012. For this purpose, balanced panel data of the sample firm is used. To establish the relationship between working capital management and firm's profitability Pearson's correlation and Ordinary Least Squares regression models are used. The study finds a negative relationship between profitability and number of day's accounts receivable and cash conversion cycle, but a positive relationship between profitability and number of days of inventory and number of day's payable. Moreover, the financial leverage, sales growth, current ratio and firm size also have significant effect on the firm's profitability. Based on the key findings from this study it has been concluded that the management of a firm can create value for their shareholders by reducing the number of day's accounts receivable. The management can also create value for their shareholders by increasing their inventories to a reasonable level. Firms can also take long to pay their creditors in as far as they do not strain their relationships with these creditors. Firms are capable of gaining sustainable competitive advantage by means of effective and efficient utilization of the resources of the organization through a careful reduction of the cash conversion cycle to its minimum. In so doing, the profitability of the firms is expected to

increase.

Jayarathne, T.A.N.R. (2014) in his research paper investigated the effect of working capital management on profitability during the period 2008-2012 for the listed manufacturing companies in the Colombo Stock Exchange. The findings suggest that there exists negative association between profitability and account receivable period, inventory turnover period, and cash conversion cycle. However there exists a positive relationship between profitability and account payable period. It was also evident that increase in leverage leads to decline in the profitability. Hence in order to boost up their performance these companies should manage working capital efficiently and effectively.

Kaur. N and Kaur, J (2014) studied various determinants of working capital requirements of passenger vehicles segment of automobile segment in India which are listed on Bombay Stock Exchange during the period 2003-04 to 2012-13. The sample consists of four firms of the segment namely, Maruti Suzuki India Limited, Force Motors Limited, Hindustan Motors Limited and Mahindra and Mahindra limited. The study was based on secondary data collected from Prowess Database. Descriptive Statistics, correlation Statistics and multiple regression statistics. An econometric model was established. The study revealed that of the different variable selected for the purpose of analysis, current ratio and tangibility of assets has shown strong association with the dependent variable ie. Working capital ratio. Current ratio is positively associated whereas tangibility of assets is negatively associated.

Bhatia, S. and Barwal, N. (2015) attempted to investigate the working capital management practices in the Real Estate sector of India. The study also aimed at explaining the relationship between working capital management practices and profitability of the firms selected under study. The study incorporated the six companies belonging to the real sector. Pearson's correlation coefficient was calculated and analysed in order to test whether there exists any relationship between working capital management variables and the profitability. The results identified the needs for improvement in the inventory and receivable turnover as indicated by working capital management variables. The regression results indicated a significant and positive relationship between the

liquidity and the profitability of the sample companies during the period under study.

Sharma, D., Sharma, J. and Arif. Md (2015) analyses of the impact of working capital management on the profitability of the Steel Authority of India Limited during the period 2006-07 to 2013-14. The study involved the use of descriptive statistics and correlation and regression analysis. The results of the study indicate a strong interrelationship between the liquidity and profitability. Furthermore, Profitability ratio as indicated by return on total assets, return on capital employed and return on investment found to be negatively related with working capital turnover while positively related with current ratio, liquid ratio, debtors turnover ratio and inventory turnover ratio. A declining trend is observed for all the variables relating to liquidity and profitability during the period under study excepting 2013-14.

Suganya, J. S N (2016) studied the relationship between working capital management and profitability of the 20 listed companies in Sri Lanka for the period 2011-2015. Cash Conversion Cycle and ROA has been used as a proxy of working capital management and profitability respectively, whereas current ratio and quick ratio were use to indicate liquidity level of working capital. Current assets to total assets, current liabilities to total assets, firm size and gearing ratio is used as control variable for measuring working capital management. For analyzing the data, the study employed the used of descriptive statistics, regression analysis and Pearson's correlation. The findings of the study however suggest negative relationship between working capital management and profitability.

2.2 IDENTIFICATION OF RESEARCH GAP

From the brief review of the above studies, it has been observed that most of the studies analyzed the working capital performance of the selected sample companies. Moreover, these studies examined the relationship between working capital and profitability only. Hence the relationship between working capital and shareholders' wealth is missing in these cases. Apart from it, we did not find any model developed by the researchers in these studies incorporating the relationship between liquidity, and profitability and shareholders' wealth. Neither of the previous studies has considered any approach incorporating various

performance indicators involving liquidity, profitability and variables indicating the shareholders' value.

In this backdrop, the present study is an attempt to fill these gaps**.**

CHAPTER – 3

SAMPLING DESIGN, DATA COLLECTION AND METHODOLOGIES

Chapter Outline:

3.1 Sample Selection

3.2 Study Period

3.3 Data Sources

3.4 Methodology

CHAPTER – 3

SAMPLING DESIGN, DATA COLLECTION AND METHODOLOGIES

3.1 SAMPLE SELECTION

The population of our study is steel industry in India. Steel industry is the basic industry which has both forward linkage and backward linkage. Therefore, the performance of steel industry is a strong indicator of the industrial performance in the country. Steel industry, for example, makes a significant contribution to the GDP of the country, account for 2 % of the GDP. The rate of growth of GNP of the country affects the performance of the steel industry since the high rate of growth of GNP leads to increase in consumption of goods of which steel is an important item (such as, furniture, cars, buildings, bridges, aviations, road and water transportation such as trains, ships, etc.). Similarly, a fall in the growth rate of GNP leads to decline in the demand for the steel particularly in the household and industry sectors.

Now at the second stage of sample selection, initially we considered 31 steel companies which have been listed among the top 500 companies ranked on the basis of net sales of the financial year April 1, 2005 – March31, 2006. (Ref: The Analyst, December, 2006). Of these 31 companies, 11 companies either do not have uniform period of reporting or have inconsistency of data and accordingly these 11 companies have been excluded from the study. Thus, 20 companies out of 31 companies constitute the sample for an in-depth study on their performance in respect of liquidity (assets and liabilities) and various measures of profitability.

3.2 STUDY PERIOD

The present study has been carried out for the period of 12 years from financial year 2000-2001 to 2011-2012 for the 20 sample companies. This gives a data set of 240 firm- year observations in our study.

The study period has been further segmented into two sub-periods in order to ascertain and examine the impact of financial recession on the performance of the sample companies under study.

The first sub- period covers the period from 2000-2001 to 2006-2007 and the second sub-period covers the period from 2007-2008 to 2011-2012.

The year 2006-2007 is considered as the period of economic and financial downturn which led to decline in housing prices in the year 2006-07 which resulted in unaffordable mortgage payments and many people defaulted and that precipitated foreclosure (Walia, 2012).

Thus the present study is an honest attempt on the part of the researcher to examine the impact of management of working capital on financial performance during the period under study.

3.3 DATA SOURCES

To carry out the present study, the requisite data have been collected from the following sources:

1) Audited Annual Reports of the Companies
2) Website of the selected companies
3) Capital line Plus-A corporate database
4) Research papers, magazines, journals, books, websites have also been consulted

3.4 METHODOLOGY

3.4.1 Selection of Performance Indicators

The performance indicators selected in the study and their measures are stated below:

- **Return on Total Assets (ROA) = Net Profit after tax÷ Average total assets*100**
  (It measures profitability of a firm in terms of assets employed in the firm. In other words, it measures the amount of profit earned by the firm per rupee of assets employed)
- **Return on Equity (ROE) = ((Adj.Net Profit – Preference Dividend) / (Equity share Paid Up + Total Reserve – Revaluation Reserve + Eq. Share Warrants + Eq. Application Money)) * 100**
  (It measures profitability from the point of view of equity investors. It indicates how well the funds of the owner have been used by the firm)

- **Return on Capital Employed (ROCE)= (Adjusted Net Profit + Tax + Interest) / (Total Shareholders' Funds + Total Debts + Other Liabilities- Miscellaneous not Written Off) * 100**

(It indicates profitability of the firm from the view point of the total funds employed in the firm. Total funds refer to the long term sources of funds. Alternatively, it can also be defined as fixed assets plus net working capital. It is also known as Return on Investment (ROI) which measures overall profitability of the firm. The higher the ratio, the better is the profitability positions of the firms.

- **Earnings Per Share (EPS) = (Profit after tax- Preference dividend) ÷ Number of Equity shares**

  (It is a good measure of a firm's profitability. It measures the profitability of firms in terms of number of equity shares)

  Note: Here, EPS used is the adjusted EPS. This EPS is adjusted for corporate actions for split/ bonus/ rights etc. to keep EPS comparable across years.

- **Current Ratio (CR) = Total Current Assets ÷ Total Current Liabilities**

  (It is the most popular method of studying the liquidity of a firm. It is a crude method of liquidity It measures short term solvency and liquidity of the firm. In short, it implies how much cash and cash equivalents are available with the firm for every rupee it holds. Conventionally, a current ratio of 2:1 is considered satisfactory. However, this standard current ratio varies from industry to industry).

- **Quick Ratio (QR) = (Current Assets–Inventory-Prepaid Expenses) ÷ (Current Liabilities–Bank Overdraft)**

  (It is also called Acid Test Ratio or Liquid Ratio. It helps in determining the liquidity in a strict sense. Generally, the standard quick ratio is 1:1. It is, no doubt, a better measure of liquidity than the current ratio.)

- **Total Current Assets to Total Assets (TCA/TA): Total current Assets ÷ Total Current Assets**

  (A lower ratio indicates **a relatively aggressive investment policy** and vice- versa)

- **Total Current Liabilities to Total Assets (TCL/TA): Total current Liabilities ÷ Total Assets**

(A higher ratio indicates **a relatively higher aggressive financing policy and vice-versa**)

- **Debtors Turnover Ratio (DTR) = Net Sales ÷ Average Debtors**
  (It throws light on the collection and credit policy of the firm. Efficiency in managing credit sales means that the liquidity and solvency of the firm is maintained. The higher the ratio, the higher is the efficiency in collecting cash from debtors)
- **Inventory Turnover Ratio (ITR) = Net Sales ÷ Average Inventory**
  (It measures the efficiency of inventory management. Higher ratio indicates higher frequency with which the stocks are converted into cash).
- **Cash Turnover Ratio (CTR) = Net Sales ÷ Average Cash & Bank Balances**
  (It measures the efficiency of cash management of a company. Higher the ratio, greater is the efficiency and vice- versa)

3.4.2 Selection of Variables

To analyse the working capital position, the following variables are used in the study:

i) Inventories
ii) Sundry Debtors
iii) Cash and Bank
iv) Loan and Advances
v) Total Current Assets
vi) Sundry Creditors
vii) Provisions
viii) Total Current Liabilities
viii) Net Working Capital

3.4.3 Trend Growth Rate Analysis

In order to examine the trend growth rate of the selected performance indicators, trend equation has been fitted to the annual time series data. Log Linear Trend equation has been used for this purpose which is shown below. It is preferred to other trend equations as it helps us to directly determine the annual growth rate of the variables of our interest.

$\text{Log } Y_t = a + bt + u_t$

Where, Y_t = variables of our interest;

a= intercept;

b = coefficient of the time variable which measures the annual trend growth rate;

t = time, and u_t = error term;

The statistical significance of the trend coefficient (i.e., b) has been tested by the popular t-test. The t- statistic is given below:

$$t = \frac{b - \hat{b}}{S_{\hat{b}}}$$

where: $\hat{b}$ = is the OLS estimate of b, the coefficient of time variable and $S_{\hat{b}}$ = standard deviation of the estimated regression coefficient.

Furthermore, kinked exponential trend equation has been employed fitted to the data sets in order to test whether there exists significant difference in the performance level of the companies during the two different sub-periods under study. Kinked exponential model has been preferred to others for comparison of sub-periods growth rates as it imposes linear restrictions so as to eliminate discontinuity between the sub-periods.

Kinked exponential trend equation is given by

$\text{Log } Y_t = a + b_1 D_{1t} + b_2 D_{2t} + u_t$

Where D_1= 1 for t from 2000-2001 to 2011-2012

D_1= 0 for t from 2007-2008 to 2011-2012

D_2= 0 for t from 2000-2001 to 2006-2007

D_2= 1 for t from 2007-2008 to 2011-2012

Trend break is calculated from the estimated values of b_2 in the equation

$\text{Log } Y_t = a + b_1 t + b_2 D_2 t + u_t$

t= actual time- break time

3.4.4 Panel Data Analysis

To examine the effect of working capital management on profitability and share holders' wealth, panel data technique is employed in the study. The data are strongly balanced, which means that for each individual we have the same number of time series observations, here 12, 2001 to 2012. This is called a "balanced panel". Panel data has several observations per individual. The individual's error term may have some common components that are present for each time period. In this study we have used random effects estimation. After having arranged the panel data, Random effect GLS model has

been employed in the study. Panel unit root test has been applied for all the variables in order to avoid the problem of spurious regression results. Dickey- Fuller test is applied for the purpose. Further, if there exists the problems of autocorrelation and heteroscedasticity, which are very likely to present in the panel data series have been taken care of by Random effect GLS regression with robust and cluster (co-id), as the employment of robust and cluster in the model will produce consistent results with autocorrelation and heteroscedasticity. Robust and cluster (co id) methods claims to remove the auto correlation and heteroscedasticity problem, but there are many critics of this method who do not subscribe to this view. Keeping their viewpoints in mind, we have made necessary corrections for the presence of autocorrelation and heteroscedastacity after having been confirmed that they exist. The presence of autocorrelation in our model is tested by applying Wooldridge test for autocorrelation in the panel data. This test is used to test the null hypothesis that there is no first order autocorrelation against the alternative hypothesis that the null hypothesis is not true. As regards the presence of heteroscedasticity the Likelihood Ratio (LR) test which has chi-square distribution has been applied in the study. LR is given by

$LR= -2 [L (\tilde{\beta}, \tilde{\sigma}^2) – L (\hat{\beta}, \hat{\sigma}^2)]$

Then, asymptotically, the LR has the Chi distribution with m degree of freedom. m is the number of restrictions. $L (\tilde{\beta}, \tilde{\sigma}^2)$ is the maximum of the log-likelihood function when the restrictions are imposed, and $L (\hat{\beta}, \hat{\sigma}^2)]$ is the maximum of log-likelihood functions when the restrictions are not imposed.

3.4.5 The Econometric Model (To measure the impact of investing and financing policy of the companies profitability and shareholder's wealth):

To assess the impact of investing and financing policies adopted by the firm on the profitability and shareholder's wealth, the following models have been formulated:

$$\mathbf{ROA_{it} = \alpha + \beta_1 (TCA/TA)_{it} + \beta_2(TCL/TA)_{it} + \beta_3 Size_{it} + \beta_4 GDP_{it} + e_{it} \ldots\ldots\ldots\ldots (1)}$$

$$\mathbf{ROE_{it} = \alpha + \beta_1 (TCA/TA)_{it} + \beta_2(TCL/TA)_{it} + \beta_3 Size_{it} + \beta_4 GDP_{it} + e_{it} \ldots\ldots\ldots\ldots\ldots (2)}$$

To measure the impact of liquidity on the profitability and shareholder's wealth, we have developed the following models:

$$\mathbf{ROA_{it} = \alpha + \beta_1 (ITR)_{it} + \beta_2(DTR)_{it} + \beta_3(CR)_{it} + \beta_4(QR)_{it} + \beta 5 Size_{it} + \beta_6 GDP_{it} + e_{it} \ldots\ldots (3)}$$

$$\mathbf{ROE_{it} = \alpha + \beta_1 (ITR)_{it} + \beta_2 (DTR)_{it} + \beta_3 (CR)_{it} + \beta_4 (QR)_{it} + \beta_5 Size_{it} + \beta_6 GDP_{it} + e_{it}} \text{ …….(4)}$$

where,

ROA_{it}= Return on Assets of company *i* at time *t*

ROE_{it}= Return on Equity of company *i* at time *t*

$(TCL/TA)_{it}$ = Total current liabilities to total assets ratio (financing policy) of company *i* at time *t*

$(TCA/TA)_{it}$= Total current assets to total assets ratio (investing policy) of company *i* at time *t*

$Size_{it}$ = Size of the company (measured in terms of logarithm of Net sales) of company *i* at time *t*

GDP_{it} = Annual Growth rate of Gross Domestic Product at Market Price

β's = coefficients of the explanatory variables that measures the effect of explanatory variables on the dependent variable.

e_{it} = composite error term β

The multicollinearity among the explanatory variables is a problem that stands in the way of isolating the effect of individual variables on the dependent variables. To check the presence of multicollinearity among the variables, we have obtained the correlation matrix. The multicollinearity problem is considered to be serious if the correlation coefficient is found to be 0.80 and above (Gujarati, 2003). If it is less than 0.80, then multicollinearity problem is considered as not harmful in the sense that estimates of the regression coefficients are not biased and inaccurate. If any correlation coefficient is greater than or equal to 0.80, then we check which of these two variables having strong correlation between them is more correlated with the dependent variable than the other. After checking this we exclude the variable having relatively lower correlation with the dependent variable and run the regression afresh and re-estimate the coefficients by applying estimation technique which has been described above.

3.4.6 Ratio Analysis

To measure working capital and profitability performance, the technique of ratio analysis is applied in the study. We have computed mean, standard deviation, coefficient of

variation with respect to the selected performance indicators as stated in section 7.4.1. These two statistics, namely, mean and standard deviations are the two important measures of the performance of the companies. For examples, higher the mean and lower the standard deviation (sd), best is the performance of companies. Lower the mean and higher the SD, very poor is the performance of the companies. In between these two extreme conditions, there lie a number of situations. Depending on those situations, the performance levels of the companies are assessed.

The mean and SDs have been calculated for their entire study period for each of the companies and tested the mean differences among the companies by using F-test. This is known as Analysis of Variance (ANOVA). This technique is used to test the hypothesis, called null hypothesis (H_0)

H_0: $\mu_{1i} = \mu_{2i} = \mu_{3i} = \ldots\ldots = \mu_{20i}$,

H_1: H_0 is not true, (K= the number of units or companies)

ANOVA is applied by calculating two estimates of the variances, σ^2, of the population distribution. The variance between the samples and within the sample. The One way ANOVA is always right-tailed with the rejection rejoin in the right tail of the distribution curve. The value of the test statistic F for a test of hypothesis using ANOVA is given by

$$F = \frac{\text{Variance between samples}}{\text{Variance within samples}} = \frac{MSB}{MSW} = \frac{SSB/(K-1)}{SSW/(n-k)}$$

where SSB is the 'between- sample sum of squares', and SSW is the 'within- sample sum of squares'. k-1 and n-k are the degrees of freedom.

If the calculated value of F < the tabled value of F at a specified degree of freedom at a particular level of significance, then H_0 is accepted.

If the calculated value of F > the tabled value of F at a specified degree of freedom at a particular level of significance, then H_0 is rejected.

The mean difference test has also been carried out to test whether the performance of the company during the first sub-period is statistically significantly different from that in the

second sub-period at a particular level of significance, say α. The t test used for this is given below:

$$t = \frac{(\bar{x}-\bar{y})\,(\mu_x-\mu_y)}{\sigma_{\bar{x}-\bar{y}}}$$, where $\sigma_{\bar{x}-\bar{y}}$ is the standard deviation of $\bar{x}-\bar{y}$

$$= \frac{(\bar{x}-\bar{y})-(\mu_x-\mu_y)}{\sqrt{\frac{\sigma_x^2}{n_x}+\frac{\sigma_y^2}{n_y}}}$$

where σ_x and σ_y are the population standard deviation of x and y respectively. As σ_x and σ_y are not known, they are substituted by sample standard deviation and,

thus

$$t = \frac{(\bar{x}-\bar{y})-(\mu_x-\mu_y)}{\sqrt{n_x s_x^2+n_y s_y^2}} \times \sqrt{\frac{n_x n_y (n_x+n_y+2)}{n_x+n_y}}$$

Where, null hypothesis, H_0: $\mu_x = \mu_y$

H_A: $\mu_x \neq \mu_y$

$\bar{x}$ = Mean of the variable of interest in the 1st sub-period
$\bar{y}$ = Mean of the same variable in the 2nd sub-period
μ_x = Population variation of the variable corresponding to 1st sub-period
μ_y = Population variation of the variable corresponding to 2nd sub-period
σ_x^2 = Population variation for 1st sub-period
σ_y^2 = Population variation for 2nd sub-period

If the calculated value of t is greater than the table value of t, then we reject the null hypothesis. On the other hand, if the calculated value of t is less than the table value of t, then we accept the null hypothesis and reject the alternative hypothesis.

To test the difference in standard deviation between the two sub-periods, F test has been employed in the study. The F statistic is computed as follows

$$F = \frac{(n_x\sigma_x^2 / n_{x-1})}{(n_y\sigma_y^2 / n_{y-1})}$$

Where, null hypothesis, H_0: $\sigma_x = \sigma_y$

H_A: $\sigma_x > \sigma_y$

CHAPTER – 4

A BRIEF HISTORY OF THE SELECTED COMPANIES

Chapter Outline:

4.1 A Brief History of the selected Companies

CHAPTER – 4

A BRIEF HISTORY OF THE SELECTED COMPANIES

For the present study, twenty sample companies belonging to the Indian steel industry have been selected. The profile of these selected sample companies are briefly presented in this chapter.

4.1 A BRIEF HISTORY OF THE SELECTED COMPANIES

1. Bhushan Steel Limited (BSL)

Bhushan Steel Ltd, previously known as Bhushan Steel & Strips Ltd, is named after a visionary founder Brij Bhushan Singal. The company started its journey in Sahibabad (Uttar Pradesh) in 1987. Bhushan Steel company initially passed through periods of adversities and gradually overcome them. It strived to improve against all odds under the guidance of its leadership. It is the 3rd largest Secondary Steel Producer company. The company is a globally renowned one of the leading prominent players in Steel Industry and is having two decades of experience in Steel making, with an existing steel production capacity of 2 million tonnes per annum.

The company produces wide variety of products such as Cold Rolled Closed Annealed, Galvanized Coil and Sheet, High Tensile Steel Strapping, Corrugated Sheets, Galume Sheets and Coils, Hardened & Tempered Steel Strips etc.

Bhushan Steel Limited is the only producer in India of the widest width CR Sheet, besides being a preferred supplier of automotive grade steel sheets for inner and outer panels to all leading 4-wheeler and 2-wheeler manufacturers in the country.

Globally, Bhushan Steel Limited is known for its professional and ethical values. It encourages positive work relationship where the Board of Directors, Executive Team and employees are motivated to take personal responsibility for furthering these values through adherence to their conventional principles.

2. Bhuwalka Steel Industries Limited (BSIL)

Bhuwalka Steel Industries Limited (BSIL) was incorporated in the year 1981 under the leadership of S.K. Bhuwalka, Chief Promoter of the group. It is one of the largest

manufacturers of steel rolled products in south India with plants located at Bangalore, Kanchipuram, and Mumbai. The company is listed on Mumbai and Bangalore Stock exchanges. BSIL has an annual turnover of over Rs 550 crores and is among the fastest growing steel companies in India. The core competence in steel remains the guiding spirit at Bhuwalka. It also acts as major conversion agents for TISCO, SAIL and Visakhapatnam Steel plant. The group is today one of the fastest growing groups in secondary steel sector in the country.

The group's product range includes TMT Bars, Angels, Channels, Beams, Flats, Square, Rounds, etc.

The Group of Companies of Bhuwalka Steel Industries Ltd. comprised of the following:

1. BHUWALKA STEEL Industries Ltd.
2. Nava Karnataka Steels Pvt. Ltd.
3. Bhuwalka Trade Links Pvt Ltd.
4. Bhuwalka Steel Industries (UAE) FZE (A wholly owned subsidiary).
5. Benaka Sponge Iron Pvt Ltd (A wholly owned subsidiary).

The achievements of BSIL are as follows:

- BSIL is operating at the leading edge of technology.
- BSIL is a licensee of Hennig dorfer Stahl Engineering Gmbh, Germany for manufacture of Thermex® Thermo Mechanically Treated (TMT) Reinforcement Bars.
- It is the first company in South India to obtain this advanced technology.
- The clients of BSIL include Indian Railways, State Electricity Boards, L & T, Infrastructure Projects and Infrastructure Institutions.

3. Electrosteel Castings Limited (ECL)

Electrosteel Castings Ltd. was incorporated in the year 1955 with its first cast iron factory located at Khardah in West Bengal. In the year 1982, they acquired another cast iron factory at Elavur in Tamilnadu. The Company received the Dhatu Nayak Award for best performance in the Stainless steel industry segment. Growing from strength to strength over half a century, Electrosteel Castings Limited is inspired by a strong legacy and

motivated by the vision to remain world-class through a focus on quality products and quality services. Today, the company is India's leading pipeline solution provider. It has a strong brand presence around the globe and has one existing aim - to remain the first choice in the market segment by becoming an international standard. Thus, for Electrosteel, 'Carrying life to people, safe drinking water for all' – is not just a statement of an operational target but also a commitment of greater responsibility.

4. Essar Steel (ES)

This group is promoted by a Bombay based Essar group and controlled by famous Ruias. Initially, Essar Steel commenced operation of specialised construction in the year 1976 as Essar Constructions. Later on it changed to Essar Off Shore & Explorations in May, 1987 and Essar Gujarat in August 1987. It becomes Essar Steel in the year 1995. It is a global integrated steel producer with an annual capacity of 14 million tonnes with a strong presence in intensive steel consuming markets of Asia and North America. Presently, it has operations in four countries, namely:

- A 10 MTPA integrated facility in India.
- A 4 MTPA steel plant in Canada.
- A 7 MTPA Taconite plant under execution in USA.
- A 0.4 MTPA downstream complex in Indonesia.

With a focus on value added products, it manufactures over 300 types of steel conforming to quality standards of international certification agencies like API, ABS, etc. Essar Steel uses information technology extensively for its operations, thereby ensuring consistent quality of its products. With one of India's largest steel processing and distribution networks with a capacity of 4 MTPA located at several industrial units, Essar Steel manufactures customised products fulfilling to a variety of industry segments.

Essar Steel employs rigorous testing and inspection processes to make sure that customers get a product that conforms to the highest standards of accuracy, consistency and quality. It is conferred with ISO: 9001:2000, ISO 9002, ISO 14001, etc. The Company has become country's first integrated steel plant to receive both ISO 9002 and TUV certifications.

5. National Steel & Agro Industries Limited (NSAIL)

National Steel & Agro Industries Ltd. (NSAIL), the leading manufacturer and exporter of central India is a part of renowned Ruchi Group. It is co-promoted by Madhya Pradesh Audhyogik Vikas Nigam. The company is engaged in steel, agriculture, power & metal. NSAIL is a certified ISO 9001:2008 & 14001:2004 company and is mainly known for its flat steel products (cold rolled coil, galvanized corrugated sheets, Colour Coil etc) .The company was set up on 9th January 1985 and has grown over the years. It has PAN India presence through its 25 branches and warehouses. Due to continuum expansion, technological up-gradation and premium quality products made it possible to cater the global market. The products of the company are well established in the markets of USA, EU, UAE and Africa. With continuous achievements in export, the company has gained the status of Star Trading House. Exports are done through international trading companies based in Singapore, Malaysia, and Europe.

NSAIL's "state –of- the- art" factory located at sejwaya, Ghatabillod (dist. Dhar, M P) covers 70 acres of land for various production units. The plant is backed up by its own captive power plant, equipped with world class technology of CMI Belgium & machinery from BRONX, Australia which produces wide variety of international quality standard products.

6. Ramsarup Industries Limited (RIL)

Ramsarup Industries Ltd. is one of the fastest growing companies in the Indian infrapower steel sector. It was incorporated in the year 1979 in West Bengal as a Public Limited Company with the name Karunanidhi Investment and Trading Company Limited. Later, Ramsarup Engineering Limited being promoted by Ashish Jhunjhunwala was amalgamated with the company with effect from 1st April, 2001. In 11th June, 2002 it became Ramsarup Engineering Industries Limited. In March 30, 2005, it changed from Ramsarup Engineering Industries Limited to Ramsarup Industries Limited. The company is one of the largest manufacturers of steel wires and a leading player in TMT bars manufacturing in Eastern India. The manufacturing units of the company are located at Kalyani, Durgapur, Shyamnagar and Kharagpur with its head office being located at

Kolkata. The plant at Kharagpur is an integrated steel plant which acts as a feeder for the existing wire and TMT units.

Presently, the company has six units:

a) Ramsarup Industrial Corporation.

b) Ramsarup Nirmaan Wires.

c) Ramsarup Lohh Udyog.

d) Ramsarup Infrastructure.

e) Ramsarup Utpadak.

f) Ramsarup Vidyut.

7. Shah Alloys Limited (SAL)

A Gujarat based company established in the year 1990, **Shah Alloys** has come a long way to become one of the most versatile steel producers in India. The company manufacture a complete range of stainless steel, alloy & special steel, etc. The variation in its products has helped the company to fulfil a wide range of segments such as infrastructure, construction, automobiles, capital goods, architecture, kitchenware etc. The company clients include L&T, Madras Cements, BHEL, Penner Industries etc. **The company** strives to become a niche player in the steel industry through state-of-art technology, cost competitiveness and thrust on research & development. The entire production process is specifically designed to ensure high standard of quality consistently using stringent quality control measures duly corroborated with process control.

Shah Alloys is one of the key suppliers to many reputed companies in India and overseas. The company exports various products to more than 50 countries around the world. The company's commitment towards quality, cost competitiveness and timely execution of orders has resulted in a high level of customer satisfaction.

8. Steel Authority of India Limited (SAIL)

Steel Authority of India Limited (SAIL) was incorporated on January 24, 1973 with an authorized capital of Rs. 2000 crore. It was made responsible for managing five integrated steel plants at Bhilai, Bokaro, Durgapur, Rourkela and Burnpur. In the year 1978, SAIL was restructured as an operating company. The Government of India owns about 86% of the company's equity and retains voting control of the company. However, SAIL, by virtue

of their ‘Maharatna’ status, enjoys significant operational and financial autonomy.

SAIL is the leading steel-making company in India. It is a fully integrated iron and steel maker, producing both basic and special steels for domestic construction, engineering, power, railway, automotive and defence industries and for sale in export markets. SAIL is also among the seven Maharatnas of the country's Central Public Sector Enterprises (CPSUs).

SAIL manufactures and sells a broad range of steel products, including hot and cold rolled sheets and coils, galvanized sheets, electrical sheets, structural, railway products, plates, bars and rods, stainless steel etc. The company manufactures iron and steel at five integrated plants and three special steel plants, located principally in the eastern and central regions of India and situated close to domestic sources of raw materials, including the company's iron ore, limestone and dolomite mines. The company has the distinction of being India’s second largest producer of iron ore and of having the country’s second largest mines network. This gives SAIL a competitive advantage in terms of captive availability of iron ore, limestone, and dolomite which are necessary inputs for steel making.

SAIL's wide range of long and flat steel products is much in demand in the domestic as well as in the international market. This prime responsibility is carried out by SAIL's own Central Marketing Organisation (CMO) that transacts business through its vast network of 37 Branch Sales Offices spread across the four regions, 25 Departmental Warehouses, 43 Consignment Agents and 27 Customer Contact Offices. CMO’s domestic marketing effort is supplemented by its ever widening network of rural dealers who meet the demands of the smallest customers in the remotest corners of the country. With the total number of dealers over 2000, SAIL's wide marketing spread ensures availability of quality steel in almost all the districts of the country.

With technical and managerial expertise and know-how in steel making gained over several decades, SAIL's Consultancy Division (SAILCON) at New Delhi offers services and consultancy to clients world-wide.

SAIL has a well-equipped Research and Development Centre for Iron and Steel (RDCIS) at Ranchi which helps to produce quality steel and develop new technologies for the steel

industry.

9. JSW Steel (JSW)

JSW steel Ltd. the flagship company of the JSW Group, is an integrated steel manufacturer. It is India's leading private sector steel producer and among the world's most renowned steel companies. The company offers the entire gamut of steel products- Hot Rolled, Cold Rolled, Galvanized, Galvalume, Pre-painted galvalume, TMT Rebar etc. Presently, JSW Steel has plants in six locations in India-Vijayanagar in Karnataka, Salem in Tamil Nadu, and Tarapur, Vasind, Kalmeshwar and Dolvi in Maharashtra. The company is the leading provider of specialised steels in India. JSW Steel is the first Indian Company to use the Corex technology to produce hot metal.

JSW Steel is an around $9 billion global conglomerate spread over six locations in India and a footprint that extends to the US, South America and Africa.

JSW Steel's business vision is centered on sustainability. The company is a pioneer in the use of innovative technology that keeps it ahead of the curve. Not only do they offer the widest product portfolio in India, it also further leverage their capability to customize offerings in order to match their customer expectations. By 2025, JSW Steel is aiming to produce 40 million tonnes of steel annually with Greenfield integrated steel plants in the states of West Bengal and Jharkhand, while adding further capacities at the Vijayanagar and Salem steel plants.

10. Kalyani Steel Limited (KSL)

Kalyani Steels Ltd (KSL), incorporated in the year 1973 is a part of the over $2.5 billion Kalyani Group. Kalyani Steels is a leading manufacturer of forging and engineering quality carbon & alloy steels using the Blast Furnace route.

Over the years, Kalyani Steels has been continuously upgrading its technology and infrastructure. The facilities at KSL are at par with any sophisticated steel manufacturers in the world. It is an ISO 9001-2000, ISO 14001 & TS 16949:2002 certified company. The company operates its mines in Bellary region of Karnataka and captive coke plant of the company is established in Bellur Industrial Estate in Dharward, Karnataka.

Although it is a forging industry in India, the primary market for the company's products, markets of various components for commercial vehicles, two wheelers, diesel engines, bearings, tractors, turbines and rail also form a substantial part of the company's client base.

Over the years, KSL has earned the status of preferred steel supplier for engineering, automotive, seamless tube and primary aluminum industry.

11. Maharashtra Seamless Limited (MSL)

Maharashtra Seamless Limited (MSL), an Indian based company incorporated on 10th May 1988. It is the flagship company of DP Jindal group. The Company is engaged in the manufacture of seamless pipes (various capacities) which are used in oil exploration, boilers, pipelines, petrochemicals etc. The plant is located at Raigad, Maharashtra and is equipped with state-of-the-art machinery. The Company has entered into many segments which include Steel Pipes & Tubes and Power. It has a technical collaboration with Mannesmann Demag Huttentechnik, Germany. About 20 percent of total production is exported to USA, while the rest of the countries accounts for 7 percent. The company has the ERW plant which is India's first plant capable of manufacturing ERW pipes up to 21 inches diameter. The company has diversified into power generation having well equipped wind power project at Satara, Maharashtra. It serves various sectors, including hydro carbon process and automotive.

12. Mukand Limited (ML)

Mukand Ltd. (previously known as Mukand Iron & Steel Works Limited) was established in the year 1937 in Mumbai. Its product includes wide range of stainless steel, alloy steel, stainless steel billets, and hot rolled bars. The company caters to the needs of automobile sector by supplying them alloy steel. It is engaged in multi-division work such as general engineering work and manufactures iron & steel products, steel castings, steel structurals, construction and various types of industrial machinery. Mukand Holdings Pvt. Ltd was incorporated as an investment company and became a subsidiary company of Mukand Ltd. in the year 1979. Later, it became a public limited company in the year 1979. The company transferred the business of Engineering Construction Division to Mukand Engineers Ltd in the year 1993. In 2005, the steel plant in Dighe, Thane was awarded the

Total Productive Maintenance (TPM) excellence award by the Japan Institute of Plant Maintenance.

13. Mahindra Ugine Steel Company Limited (MUSCO)

Mahindra Ugine Steel Company Limited (MUSCO) was established in the year 1962 and started its operation in the year 1963. Mahindra & Mahindra with 49% stake, along with Ugine Aciers, France, and International Finance Corporation, Washington were the promoters of the company. Tools, alloys and special steels are the major product being manufactured by the company which are either in the form of rolled, forged, or pealed condition. The products are, however, transformed and supplied as blooms, slabs, RCS, rounds, squares, hexagonals, octagonals or flats. Its products are mainly used in the automobile and general engineering industries. It is the only steel company with the ISO 9002 accreditation for all its operations. Console Estate & Investment Ltd., Mahindra Infrastructural Projects Ltd., Corbel Estate & Investment Pvt. Ltd. are the subsidiaries of MUSCO.

It is the only Indian steel company which is approved by big giants such as General Motors, Ford Motors, Mercedes Benz, BMW, and Mitsubishi with all specifying the use of MUSCO's steel for vital components sourced by them from India.

14. Tata Steel (TSL)

Incorporated in the year 1907 Tata Steel, a holding company, finds its commercial presence in more than 50 countries of the world. It has operation spreading across in 26 countries. Since its inception, there has been remarkable progress in the functioning of the company over the years. It is the first private sector integrated plant founded in Jamshedpur (named after J. N. Tata) being the first industrial city of the country. The group companies include Tata Steel Limited (India), Tata Steel Europe Limited (formerly Corus), Tata Steel Singapore and Tata Steel Thailand. The company is engaged in the manufacturing of various steel and steel products which include hot rolled coils, cold rolled coils, wire roads and rebars, and galvanized coils.

In India, operations are mainly carried out from Jamshedpur in Jharkhand with manufacturing divisions in Kharagpur (West Bengal), Joda and Bamnipal (Odisha), and

Tarapur (Maharashtra). Its mines, collieries and quarries are located in the States of Jharkhand, Odisha and Karnataka.

At present, the company is coming up with the two new Greenfield steel projects in the states of Jharkhand and Chhattisgarh. The vision of the company is to become a global steel company benchmark for value creation and corporate citizenship.

15. Welspun Corporation Limited (WCL)

Formerly Welspun Gujarat Stahl Rohren Ltd., the flagship company of Welspun Group, is today one of the largest large diameter line pipe company in the world. It has earned the credit of manufacturing and supplying some of the most vital pipelines in the world from its plants located in India and USA which have an installed line pipe capacity of nearly 2.285 MTPA.

The company has supplied pipes for the world's deepest pipeline project (Independence Trail', Gulf of Mexico), highest pipeline project (Peru LNG), longest pipeline (Canada to US) and the heaviest pipeline project (Persian Gulf). The company's client base includes Transcanada, Enterprise, Kinder Morgan, Texas Gas, Hunt Oil, Saudi Aramco, Elpaso, Exxon Mobil etc. Today it is the world's largest welded companies in India. It includes Welspun Pipes Division, Welspun Plates and Coil Division, Welspun Tubular LLC (USA), Welspun Natural Resources Ltd., Welspun Energy Ltd., Welspun Infratech Ltd, Welspun Middle East Pipe LLC, and Welspun Middle East Pipe Coating LLC.

16. Surana Industries Limited (SIL)

The company [formerly Surana Metals and Steels (India)] was incorporated in the year 1991. Later, in the year 1994, the company was registered as a public limited company. The company is engaged in the manufacturing and trading of iron and steel products which includes tor steel, CTD bars, TMT bars, wire rod coils, carbon grade wire rod coil, plain rounds, round cooling squares and various structurals. SURANA TMT is the brand name of its products. The company also produces alloy steels which are used in various industries including automotive and engineering industries.

17. Sunflag Iron and Steel Company Limited (SISCL)

The company was incorporated in the year 1984. It is a prestigious unit of the **SUN FLAG GROUP**. It is engaged in the production of rolled products, billets, sponge iron etc. The

Sunflag Group was founded by Satyadev Bhardwaj in Kenya in 1937. It has set up a state-of-art integrated plant at Bhandara, India, to produce 2,00,000 tonnes per annum of high quality steel using iron ore and non-coking coal as basic inputs. The outputs of the company are spring steel rounds flats, carbon steel and alloy steel to cater to the needs of automobile leaf spring manufacturers, engineering goods manufacturers. SUNFLAG STEEL is the brand name of its products.

SUNFLAG STEEL has been successful in establishing itself as a major global force in a very short span of time. It has been able to bag the position of market leader in the segment of alloy steel, stainless steel and micro alloyed steel because of adopting world-class technology, retaining expert human resources and a ever committed towards excellence. SUNFLAG STEEL is now in a position to go for export and is regularly receiving orders from Japan and many other Far East, Afro-Asian and Middle-East countries. Sunflag was accredited by EMS Award for being actively engaged in pollution control.

18. Man Industries (India) Limited (MIL)

The company was established on 19th May 1988. Mr. R.C. Manshukhani, a renowned visionary is the chairman of the group. The Company is an ISO-9001, ISO-14001 & OHSAS 18001 certified company. Presently, it is a leading manufacturer as well as the exporter of large diameter carbon steel line pipes for various high pressure transmission applications for gas, crude oil, petrochemical products and potable water. The company has state-of-the-art manufacturing facilities for Longitudinal Submerged Arc Welded (LSAW) and Helically Submerged Arc Welded (HSAW) Line Pipes and also for various types of Anti-Corrosion Coating Systems. Man Industries have at present recorded global presence with offices in U.K, U.S.A and India. In order to increase the supply of the SAW pipe plant, and for technical know-how and training for its personnel, the company had entered into Memorandum of Understanding with Haeusler in the year 1992. Man Industries (MANIIL) took over British company Man Intertrade (UK) Limited in the year 1997. The Company also had the strategic tie-up with Mitsubishi and Sumitomo for executing major projects in oil and gas sector in the year 2000. In the year 2005, the company commissioned its Anjar Line Pipe and Coating Complex in the State of Gujarat

on the West-Coast of India. In 2006, the company has demerged the Aluminium Extrusion into separate entity under the name of Man Aluminium Limited.

19. Uttam Galva Steel Limited (UGSL)

The company was established in the year 1985 under the guidance of visionary Mr. Rajendra Miglani. Uttam Galva Steel Ltd. is one of the largest producers of cold rolled closed annealed coils and galvanised steel in India. The company caters to the needs of many industries such as automobiles, white goods, general engineering, drums and barrels segments. It is located at Khopoli in the state of Maharashtra. It is in close proximity to the ports which help the company in having quick access to the imports and export of raw materials and finished goods. The company started its journey with 30, 000 MT per year of galvanizing capacity and at present it has reached the height of 7,50,000 MT per year. The company has bagged the ISO 9002 for all its plant and it is accredited with ISO 9001-2008. The company is in a position to export 50% of its products to 132 countries across the globe and also has a huge customer base in Australia, France, Germany, Greece, UK, and USA.

20. Tube Investments of India Limited (TIIL)

The company is part of business giant Murugappa Group which was formed in the year 1900. The group has well diversified twenty eight businesses of which eight are listed in the NSE and BSE. The company was formed by merging TI Cycles of India and Tube Products of India in the year 1949. The company manufactures precision steel tubes and strips, car doorframes, automotive and industrial chains and bicycles. Cycles, Engineering and Metal formed products are the three main division of the company. In order to increase its presence in their core business, the company has undergone various acquisitions, notable among them are Satavahana chains, Japanese tube plant and a German chains plant.

The company has been able to build significant skills in engineering and metallurgy with the help of R & D facilities. Tube Investments of India Ltd. is known for its Total Quality Management (TQM) which has made it possible to live up to the expectation of their present customers, thus making them happy and satisfied. Since inception, continuity of

financial prudence has helped the company to provide uninterrupted dividend to their worthy shareholders.

CHAPTER – 5

ANALYSIS OF TREND OF THE WORKING CAPITAL COMPONENTS OF THE SELECTED COMPANIES

Chapter Outline:

5.1 Company-Wise Trend Analysis of the Components of Working Capital

5.2 Component-Wise Trend Analysis of the Companies of Working Capital

CHAPTER – 5

ANALYSIS OF TREND OF THE WORKING CAPITAL COMPONENTS OF THE SELECTED COMPANIES

The present chapter analyses the trends of the selected working capital components of the companies under study. This analysis has been done in two stages namely, company-wise and component-wise.

At first, trend analysis for the entire study period has been performed and to measure the impact of financial recession on the growth rates of the selected working capital components, the entire study period has been further segmented into two sub-periods.

Thereafter, trend break is calculated to measure the impact of financial recession on the growth rates of the selected working capital components under study.

5.1 COMPANY-WISE TREND ANALYSIS OF THE COMPONENTS OF WORKING CAPITAL

Analysis of Inventory (Tables 5.1, 5.2 & 5.2A)

BSL: The company has achieved a significant positive annual growth rate of 28.7% during the entire study period. So far as the sub-period performances are concerned, BSL has registered a positive annual growth rate of 26.5% and 30.8 % during the 1st and the 2nd sub-period respectively. The growth rates are statistically significant at 1% level. The difference in performance levels of the company as given by the statistical significance of the kink in the trend growth equation is found to be statistically insignificant, indicating thereby that there is no significant difference in growth rates of inventory between the two sub-periods.

BSIL: A positive annual growth rate of 9.7% has been recorded by the company during the entire study period which is statistically significant at 1% level. In the 1st sub-period it has registered a growth rate of 2.0% which is statistically significant, whereas in the 2nd sub-period, a positive annual growth rate of 17.4% has been experienced by the company. This growth rate is statistically significant at 1% level of significance. The difference in

performance levels of the company as indicated by the kink is found to be 15.4% which is statistically significant. This indicates that there is significant difference in growth rates of inventory between the two sub-periods.

ECL: The company has experienced a positive growth rate of 17.8% during the whole study period which is statistically significant at 1% level. So far as the sub-period performances are concerned, the company has registered positive growth rate of 24.1% and 11.5% during the 1st and the 2nd sub-period respectively. The growth rates are statistically significant at 1% level. The difference in performance levels of the company as measured by kinked exponential trend break is found to be statistically significant (-12.6%), indicating that there is significant difference in growth rates of inventory between the two sub-periods.

SAIL: SAIL has registered a positive growth rate of 12.5% during the entire study period which is statistically significant at 1% level. The company has registered a growth rate of 7.8 % which is statistically insignificant during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive growth rate of 17.2% which is statistically significant at 1%. The difference in performance levels of the company as observed from the break in the trend line is found to be 9.4% which is statistically insignificant, indicating that there is no difference in growth rates of inventory between the two sub-periods.

TSL: A positive significant growth rate of 15.2% is observed by the company during the entire study period. TSL has registered a growth rate of 17.2% which is statistically significant during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive growth rate of 13.2% which is statistically significant at 1%. The difference in performance levels of the company is found to be statistically insignificant, thereby indicating that there is no significant difference in growth rates of inventory between the two sub-periods.

ES: The company has registered a significant positive annual growth rate of 21.9% in its inventory during the entire study period. ES has registered a positive growth rate of 23.8% which is statistically significant during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive growth rate of 19.9% which is statistically significant at 1%. The difference in performance levels of the company is found to be statistically insignificant,

indicating that there has been no significant difference in growth rates of inventory between the two sub-periods.

NSAIL: The company has registered a significant positive annual growth rate of 16.8% during the entire study period. NSAIL has registered a growth rate of 29.7% which is statistically significant during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a negative growth rate of 3.9% which is statistically insignificant. The difference in performance levels of the company is found to be -25.8% which is statistically significant at 1% level, indicating that there has been significant fall in the growth rates of inventory in the second sub-period.

WCL: The company has recorded a positive annual growth rate of 39.9% during the whole study period which is statistically significant at 1% level. So far as the sub-period performances are concerned, WCL has registered a significant positive annual growth rate of 60.8% during the 1st sub-period, whereas in the 2nd sub-period, it has recorded insignificant growth rate (19%). The difference in performance levels of the company as measured by kinked exponential trend break is found to be -41.8% which is statistically significant at 5%, indicating that there has been significant difference in growth rates of inventory between the two sub-periods.

UGSL: A positive annual growth rate of 21.7% has been experienced during the entire study period which is statistically significant at 1%, It has recorded a positive annual growth rate of 28.1% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 15.3% which is statistically significant at 5% level. The difference in performance levels of the company is found to be statistically insignificant, indicating that there has been no significant difference in growth rates of inventory between the two sub-periods.

ML: An analysis of trend has revealed a positive annual trend growth rate of 15.4% which is statistically significant at 1%, during the entire study period. During the 1st sub-period, it has registered a positive annual growth rate of 14.1% which is statistically significant at 1% level, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 16.6% which is statistically significant at 5% level. The difference in performance levels of the company as measured by kink is found to be statistically insignificant, indicating that

there has been no significant difference in growth rates of inventory between the two sub-periods under study.

TIIL: The company has experienced a positive annual growth rate of 14.4% which is statistically significant at 1% level during the entire study period. It has recorded a positive annual growth rate of 12.4% during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 16.5% which is statistically significant at 1% level. The difference in performance levels of the company is found to be statistically insignificant, thereby indicating that there has been no significant difference in growth rates of inventory between the two sub-periods.

RIL: A positive annual growth rate of 17.7% is observed during the entire study period which is statistically insignificant. During the 1st sub-period it has registered a positive growth rate of 64.9% which is statistically significant at 1% level, whereas in the 2nd sub-period, it has recorded a negative growth rate of 34.7% which is statistically significant at 5% level. The difference in performance levels of the company is found to be -99.6% which is statistically significant at 1% level, indicating that there has been significant difference in the annual growth rates of inventory between the two sub-periods.

MSL: The result of trend analysis indicates a positive annual growth rate of 27.3% which is statistically significant at 1% level, during the entire study period. In the 1st sub-period, it has registered a positive annual growth rate of 36.1% which is statistically significant at 1% level. In the 2nd sub-period, it has recorded a positive annual growth rate of 18.5% which is also statistically significant at 1% level. The difference in performance levels of the company between the two sub-periods is found to be -17.6% which is statistically significant at 1% level, indicating that there has been significant difference in growth rates of inventory between the two sub-periods under study.

SAL: An annual growth rate of 11.1% has been experienced by the company during the entire study period which is statistically significant at 1% level. The company has registered a positive annual growth rate of 27.3% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a negative annual growth rate of -5.0% which is statistically insignificant. A significant result has been observed in performance levels of the company which is found to be -32.3%,

indicating that there has been significant difference in annual growth rates of inventory between the two sub-periods.

MIL: The company has registered an annual growth rate of 34.3% during the entire study period which is statistically significant at 1% level. It has registered a positive annual growth rate of 53.3% during the 1st sub-period, whereas in the 2nd sub-period, it has been only 15.2% which is statistically significant at 1%. The difference in performance levels of the company is found to be -38.1% which is statistically insignificant, indicating that there has been no significant difference in growth rates of inventory between the two sub-periods.

SISCL: An annual growth rate of 17.2% is observed during the entire study period which is statistically significant at 1% level. However, in the 1st sub-period it has registered a positive annual growth rate of 19.2% which is statistically significant at 1% level, whereas in the 2nd sub-period, it has recorded a negative growth rate of 4% which is statistically insignificant. The difference in performance levels of the company as given by the value and statistical significance of kink is found to be -23.2% which is statistically significant at 1% level, indicating that there has been significant difference in growth rates of inventory between the two sub-periods.

SIL: The company has registered a significant positive annual growth rate of 25.2% which is statistically significant at 1% during the entire study period. It has experienced a positive annual growth rate of 39.4% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has observed a positive annual growth rate of 11% which is also statistically significant at 1% level. The difference in performance levels of the company as given by the value and statistical significance of kink is found to be -28.4% which is statistically significant at 1% level, indicating that there is significant difference in the growth rates of inventory between the two sub-periods.

MUSCO: An analysis of trend for the entire study period reveals a significant positive annual growth rate of 13.4% which is statistically significant at 1%. SIL has registered a positive growth rate of 19.7% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive growth rate of 7.1% which is also statistically significant at 1% level. The difference in performance levels of

the company is found to be -12.6% which is statistically significant at 1% level, indicating that there is significant fall in the growth rates of inventory in the 2nd sub-period.

KSL: The company has registered a positive annual growth rate of 23.9% which is statistically significant at 1%, during the entire study period. It has recorded a positive annual growth rate of 38.5% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 9.4% which is also statistically insignificant. The difference in performance levels of the company is found to be -29.1% which is statistically significant at 5% level, indicating that there is significant difference in growth rates of inventory between the two sub-periods.

JSW: A positive and significant annual growth rate of 31.8% has been experienced by the company during the entire study period. The company has recorded a positive annual growth rate of 32.3% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 31.2% which is also statistically significant at 1% level. The difference in performance levels of the company is found to be statistically insignificant, indicating that there is no significant difference in growth rates of inventory between the two sub-periods.

Analysis of Sundry Debtors (Tables 5.1, 5.3 & 5.3A)

BSL: The company has recorded a positive annual growth rate of 12.1% which is statistically significant at 1% during the entire study period. So far as the sub-period performances are concerned, the company has registered a positive growth rate of 11.6% and 12.5% during the 1st and the 2nd sub-period respectively. These growth rates are statistically significant at 1% level. The difference in performance levels of the company is found to be statistically insignificant, indicating that there is no significant difference in growth rates of sundry debtors between the two sub-periods.

BSIL: A positive growth rate of 18.3% is experienced which is statistically significant at 1% during the whole study period. During the 1st sub-period, it has registered a positive growth rate of 213.1% which is statistically insignificant, whereas in the 2nd sub-period, it has recorded a positive growth rate of 695.9% which is statistically significant at 1% level. The difference in performance levels of the company as given by the value and statistical significance of kink is found to be 482.8% which is statistically insignificant, indicating

that there is no significant difference in growth rates of sundry debtors between the two sub-periods.

ECL: Analysis of trend reveals that a positive annual growth rate of 9.9% during the whole study period which is statistically significant at 1% level. It has experienced a positive annual growth rate of 17.4% during the 1st sub-period which is statistically significant at 1% level. The growth rate of 2nd sub-period is statistically insignificant. The difference in performance levels of the company as measured by kinked exponential trend break is found to be -15.1% which is statistically significant at 5% level, indicating that there is significant difference in growth rates of sundry debtors between the two sub-periods.

SAIL: It has registered a positive annual growth rate of 11% which is statistically significant at 1% level during the entire study period. The company has registered a annual growth rate of 6.4% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 15.6% which is statistically significant at 1% level. The difference in performance levels of the company as measured by kink is found to be 9.2% which is statistically significant at 5% level, indicating that there has been difference in growth rates of sundry debtors between the two sub-periods.

TSL: A negative annual growth rate is observed to be -6.2% which is statistically significant at 5% during the entire study period. During the 1st sub-period, TSL has registered a negative growth rate of 16.6% which is statistically significant at 1% level, whereas in the 2nd sub-period, it has recorded a positive growth rate which is statistically insignificant. The difference in performance levels of the company is found to be 20.6% which is statistically significant at 5% level, indicating that there has been significant difference in growth rates of sundry debtors between the two sub-periods under study.

ES: A positive annual growth rate of 2% has been achieved by the company during the whole study period which is statistically insignificant. An insignificant result has been observed during the 1st sub-period as well as in the 2nd sub-period. The difference in performance levels of the company measured by kink is found to be statistically insignificant, indicating that there is no significant difference in the annual growth rates of sundry debtors between the two sub-periods.

NSAIL: A positive annual growth rate of 17.0% has been experienced by the company during the entire study period which is statistically significant at 1%. An analysis of the 1st sub-period reveals a positive annual growth rate of 22.8% which is statistically significant at 1% level, whereas in the 2nd sub-period it has recorded a positive annual growth rate of 11.3% which is statistically significant at 1% level. The difference in performance levels of the company as indicated by the statistical significance of kink is found to be -11.6% which is statistically significant at 5% level, indicating that there has been significant difference in growth rates of sundry debtors between the two sub-periods.

WCL: During the whole period under study, the company has recorded a positive annual growth rate of 28.1% which is statistically significant at 1% level. So far as the sub-period performances are concerned, WCL has registered positive annual growth rate of 37.6% which is statistically significant at 1% during the 1st sub-period, whereas, in the 2nd sub-period it has recorded a positive and significant annual growth rate of 18.4% at 5% level. The difference in performance levels of the company is found to be statistically insignificant, indicating that there has been no significant difference in growth rates of sundry debtors between the two sub-periods under study.

UGSL: An analysis of performance of the company with regard to sundry debtors for the whole study period reveals a positive annual growth rate of 27.0% which is statistically significant at 1% level. During the 1st sub-period, UGSL has registered a positive annual growth rate of 21.8% which is statistically significant at 1% level, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 32.2% which is statistically significant at 1% level. The difference in performance levels of the company as measured by kink is found to be statistically insignificant, indicating that there has been no significant difference in growth rates of sundry debtors between the two sub-periods.

ML: The Company has registered a positive annual growth rate of 10.0% which is statistically significant at 1% during the entire study period. ML has registered a positive annual growth rate of 9.0% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 11.0% which is statistically significant at 1% level. The difference in performance levels of the company is found to be statistically insignificant, indicating that there has been no

significant difference in the growth rates of sundry debtors between the two sub-periods under study.

TIIL: A positive annual growth rate of 5.10% is observed during the entire study period which is statistically significant at 1%. In the sub-period analysis, both the sub-period has recorded insignificant results. The difference in performance levels of the company is found to be 9.0% which is statistically significant at 1% level, indicating that there has been significant difference in growth rates of sundry debtors between the two sub-periods.

RIL: The company has experienced a positive annual growth rate of 32.4% during the entire study period which is statistically significant at 1% level. RIL has registered a positive annual growth rate of 50.6% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded insignificant growth rate. The difference in performance levels of the company is found to be -42.4% which is statistically significant at 5% level, indicating that there has been significant difference in growth rates of sundry debtors between the two sub-periods for RIL.

MSL: A positive annual growth rate of 24.7% is observed during the entire study period which is significant at 1% level. MSL has registered a positive growth rate of 38.1% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive growth rate of 11.2% which is also statistically significant at 5% level. The difference in performance levels of the company is found to be -26.9% which is statistically significant at 1% level, indicating that there has been significant difference in growth rates of sundry debtors between the two sub-periods under study.

SAL: The company has registered a growth rate of 2.6% during the entire study period which is statistically insignificant. SAL has registered insignificant growth rate in both the sub-periods under study. The difference in performance levels of the company is also found to be statistically insignificant, indicating that there has been no significant difference in growth rates of sundry debtors between the two sub-periods.

MIL: An insignificant annual growth rate of 26.0% is recorded during the entire study period which is statistically significant at 1% level. MIL has registered a positive annual growth rate of 44.6% which is statistically significant at 1% during the 1st sub-period, whereas in the 2nd sub-period, the result is found to be statistically insignificant. The

difference in performance levels of the company as measured by kink is found to be -37.2% which is statistically significant at 1% level, indicating that there has been significant fall in the growth rate of sundry debtors in the second sub-period.

SISCL: A look into the whole year performance of the company reveals a significant positive growth rate of 6.5% which is statistically significant at 5% level. So far as the sub-period performances are concerned, SISCL has registered a negative growth rate of 8.7% which is statistically significant at 5% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive growth rate of 21.7% which is statistically significant at 1% level. The difference in performance levels of the company is found to be 30.4% which is statistically significant at 1% level, indicating that there has been significant difference in growth rates of sundry debtors between the two sub-periods.

SIL: A positive annual growth rate of 23.5% has been accounted during the entire study period which is significant at 1% level. During the 1st sub-period, the company has registered a positive annual growth rate of 28.1% which is statistically significant at 1% level, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 18.9% which is also statistically significant at 1% level. The difference in performance levels of the company is found to be -9.2% which is statistically insignificant, indicating that there has been no significant difference in growth rates of sundry debtors between the two sub-periods.

MUSCO: The company has registered a positive growth rate of 17.9% during the entire study period which is statistically significant at 1% level. In the 1st sub-period, the company has registered a positive annual growth rate of 23.9% which is statistically significant at 1% level, whereas in the 2nd sub-period, a positive annual growth rate of 11.9% which is also statistically significant at 1% level has been experienced by the company. The difference in performance levels of the company is found to be -12.0% which is statistically significant at 5% level, indicating that there has been significant fall in growth rates of sundry debtors in the 2nd sub-period.

KSL: An analysis of performance of the company with regard to sundry debtors for the whole study period reveals a positive annual growth rate of 6.1% which is statistically significant at 1% level. KSL has registered a annual growth rate of 0.8% which is

statistically insignificant during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 11.3% which is statistically significant at 5% level. The difference in performance levels of the company is found to be -10.5% which is statistically insignificant, indicating that there has been no significant difference in growth rates of sundry debtors between the two sub-periods.

JSW: A positive and significant annual growth rate of 11.5% has been observed during the entire study period which is statistically significant at 1%. JSW has registered a growth rate of -5.0% which is statistically insignificant during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 28.1% which is statistically significant at 1% level. The difference in performance levels of the company is found to be 33.1% which is statistically significant at 1% level, indicating that there has been significant difference in growth rates of sundry debtors between the two sub-periods.

Analysis of Cash and Bank (Tables 5.1, 5.4 & 5.4A)

BSL: A positive annual growth rate of 25.7% has been observed during the entire study period which is statistically significant at 1% level. So far as the sub-period performances are concerned, BSL has registered insignificant growth rate in both the sub-periods under study. The difference in performance levels of the company is also found to be statistically insignificant, indicating that there has been no significant difference in growth rates of cash and bank between the two sub-periods.

BSIL: An analysis of performance of the company with regard to cash and bank for the whole study period reveals a positive annual growth rate of 27.6% which is statistically significant at 1% level. During the 1st sub-period, the company has registered an annual growth rate of 32.1% which is statistically significant at 1% level, whereas in the 2nd sub-period, it has recorded a positive growth rate of 23.1% which is statistically significant at 1%. The difference in performance levels of the company during the two sub-periods is found to be -9.0% which is statistically insignificant, indicating that there has been no significant difference in growth rates of cash and bank.

ECL: The company has recorded a positive growth rate of 46.8% during the whole study period which is statistically significant at 1% level. So far as the sub-period performances

are concerned, ECL has registered a positive annual growth rate of 71.0% which is statistically significant at 5% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded an insignificant change in growth rate of 22.4%. The difference in performance levels of the company as measured by kinked exponential trend break is found to be statistically insignificant, indicating there has been no significant difference in growth rates of cash and bank between the two sub-periods.

SAIL: SAIL has registered a positive annual growth rate of 34.6% during the entire study period which is statistically significant at 1% level. The company has registered an annual growth rate of 65.5% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded insignificant growth rate of 3.6%. The difference in performance levels between the two sub-periods of the company is found to be -61.9% which is statistically significant at 1% level, indicating there has been significant difference in growth rates of cash and bank.

TSL: For this company there has been positive annual growth rate of 30.4% during the entire study period which is statistically significant at 1% level. So far as the sub-period performances are concerned, TSL has registered insignificant growth rate in both the sub-periods under study. The difference in performance levels of the company is found to be statistically insignificant, indicating that there has been no significant difference in growth rates of cash and bank between the two sub-periods.

ES: The company has recorded a positive annual growth rate of 29.0% during the entire study period which is statistically significant at 1% level. An analysis of sub-period performances reveals a significant positive annual growth rate of 44.0% during the 1st sub-period, whereas in the 2nd sub-period, it has recorded an insignificant change in the annual growth rate. The difference in performance levels of the company between the two sub-periods is found to be statistically insignificant, indicating that there is no significant difference in growth rates of cash and bank.

NSAIL: A look into the performance of entire study period reveals a positive annual growth rate of 8.5% which is statistically significant at 1% level. NSAIL has registered an annual growth rate of 13.8% which is statistically significant at 5% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded an insignificant change in annual

growth rate. The difference in performance levels of the company, relating to the management of cash & bank, is found to be statistically insignificant, indicating that there is no significant difference in the annual growth rates of cash and bank between the two sub-periods.

WCL: The WCL has achieved a positive annual growth rate of 39.3% during the whole study period which is statistically significant at 1% level. An analysis of sub-period performances reveal a significant positive growth rate of 64.4% during the 1st sub-period, whereas in the 2nd sub-period it has recorded insignificant growth rate of 14.2%. The difference in performance levels of the company as measured by kinked exponential trend break is found to be -50.2% which is statistically significant at 5% level, indicating that there is significant difference in growth rates of cash and bank between the two sub-periods.

UGSL: The company has experienced a positive annual growth rate of 36.1% which is statistically significant at 1% level during the whole period study period. A positive annual growth rate of 76.3% is observed during the 1st sub-period which is statistically significant at 1% level, whereas in the 2nd sub-period, it has recorded a negative annual growth rate of -4.2% which is statistically insignificant. The difference in performance levels of the company as measured by kink is found to be -80.5% which is statistically significant at 5% level, indicating that there is significant difference in annual growth rates of cash and bank between the two sub-periods.

ML: An analysis of trend for the whole period reveals a positive annual growth rate of 19.6% during the entire study period which is statistically significant at 1% level of significance. ML has registered a positive annual growth rate of 41.1% which is statistically significant at 5% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a negative annual growth rate of –1.9% which is statistically insignificant. An insignificant growth rate has been observed so far as the difference in performance levels of the company is concerned, indicating that there is no significant difference in growth rates of cash and bank between the two sub-periods under study.

TIIL: The company has registered an insignificant growth rate during the entire study period. So far as the sub-period performances are concerned, TIIL has registered

insignificant growth rate in both the sub-periods under study. The difference in performance levels of the company is also found to be statistically insignificant, indicating that there is no significant difference in growth rates of cash and bank between the two sub-periods.

RIL: The company has recorded an insignificant annual growth rate during the entire study period. RIL has registered a positive growth rate of 108.3% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a negative growth rate of – 40.4% which is statistically insignificant. This highly negative growth rate has completely offset the significant positive growth rate in the 1st sub-period. The difference in performance levels of the company is found to be – 148.7% which is statistically insignificant, indicating that there is no significant difference at 5% level in annual growth rates of cash and bank between the two sub-periods.

MSL: An insignificant annual growth rate is observed during the entire study period. A positive annual growth rate of 106.5% has been observed during the 1st sub-period which is statistically significant at 1% level, whereas in the 2nd sub-period it has a negative growth rate of -46.2% which is statistically insignificant. The difference in performance levels of the company is found to be – 152.7% which is statistically significant at 5% level, indicating that there is significant difference in growth rates of cash and bank between the two sub-periods.

SAL: An analysis of trend for the whole period reveals an insignificant growth rate during the entire study period. During the 1st sub-period, the company has registered a positive annual growth rate of 30.9% which is statistically significant at 5% level whereas a negative growth rate of -55.8% has been recorded in the 2nd sub-period which is statistically significant at 1% level. A significant result is observed in performance levels of the company which is measured by kink is found to be 86.7%, indicating that there has been significant difference in annual growth rates of cash and bank between the two sub-periods.

MIL: An annual growth rate of 42.3% in cash and bank during the whole period under study is found to be statistically significant at 1% level. MIL has registered a significant positive annual growth rate of 58.4% during the 1st sub-period, whereas in the 2nd sub-

period, it has recorded a positive annual growth rate of 25.4% which is statistically insignificant. An insignificant result is observed as far as the difference in performance levels of the company measured by kink of the kinked exponential trend equation is concerned. It is found to be -33.0%, which is statistically insignificant, indicating that there is no significant difference in annual growth rates of cash and bank between the two sub-periods.

SISCL: It is observed that the company has achieved a positive annual growth rate of 19.1% during the entire study period which is statistically significant at 1% level of significance. Same result is reflected in the sub-period performances. The company has registered a positive growth rate of 17.7% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive growth rate of 20.2% which is statistically significant at 1% level. The difference in performance levels of the company is found to be 2.5% which is statistically insignificant, indicating that there is no significant difference in annual growth rates of cash and bank between the two sub-periods of the company under study.

SIL: The company has registered an insignificant annual growth rate during the entire study period. SIL has registered a positive growth rate of 45.7% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a negative annual growth rate of 15.3% which is also statistically insignificant. The difference in performance levels of the company is found to be -61.0% which is statistically insignificant, indicating that there is no significant difference in annual growth rates of cash and bank between the two sub-periods

MUSCO: An insignificant annual growth rate is registered by the company during the entire study period. MUSCO has registered insignificant annual growth rate in both the sub-periods under study. So far as the difference in performance levels of the company is concerned, it is found to be statistically insignificant, indicating that there is no significant difference in growth rates of cash and bank between the two sub-periods.

KSL: The company has registered an insignificant annual growth rate during the entire study period. It has registered insignificant growth rate in both the sub-periods under study. The difference in performance levels of the company is also found to be statistically

insignificant, indicating that there is no significant difference in growth rates of cash and bank between the two sub-periods

JSW: The company has achieved a positive annual growth rate of 42.6% which is statistically significant at 1% level during the entire study period. JSW has registered a positive annual growth rate of 39.2% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 45.1% level which is also statistically significant at 1% level. The difference in performance levels of the company is found to be 5.9% which is statistically insignificant, indicating that there is no significant difference in annual growth rates of cash and bank between the two sub-periods.

Analysis of Loans and Advances (Tables 5.1, 5.5 & 5.5A)

BSL: The company has achieved a positive annual growth rate of 32.4% during the entire study period which is statistically significant at 1% level. So far as the sub-period performances are concerned, BSIL has registered positive annual growth rate of 47.4% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a negative growth rate of -16.7% which is statistically significant at 5% level. The difference in performance levels of the company is also found to be -30.7% which is statistically significant at 5% level, indicating that there is significant difference in growth rates of loans and advances between the two sub-periods under study.

BSIL: A positive annual growth rate of 5.4 % is recorded by the company during the entire study period which is statistically significant at 5% level. It has registered insignificant growth rate in both the sub-periods under study. The difference in performance levels of the company as measured by kink is also found to be statistically insignificant, indicating that there is no significant difference in annual growth rates of loans and advances between the two sub-periods.

ECL: It is observed that the company has recorded a positive annual growth rate of 22.0 % during the whole study period which is statistically significant at 1% level. So far as the sub-period performances are concerned, ECL has registered a positive growth rate of 28.8

% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period it has recorded an insignificant change in annual growth rate of 14.8 %. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be statistically insignificant, indicating that there is no significant difference in growth rates of loans and advances between the two sub-periods.

SAIL: SAIL has registered a positive annual growth rate of 11.0 % during the entire study period which is statistically significant at 1% level. The company has registered annual growth rate of 6.0 % which is statistically insignificant during the 1st sub-period, whereas in the 2nd sub-period, it has recorded significant growth rate of 15.7 %. The difference in performance levels of the company is found to be 9.7 % which is statistically insignificant, indicating that there is no difference in annual growth rates of loans and advances between the two sub-periods.

TSL: A positive annual growth rate of 21.3 % which is statistically significant at 5% level is observed during the entire study period. So far as the sub-period performances are concerned, TSL has registered insignificant annual growth rate in both the sub-periods under study. The difference in performance levels of the company is also found to be statistically insignificant, indicating that there is no significant difference in annual growth rates of loans and advances between the two sub-periods.

ES: An analysis of trend for the entire period reveals a positive annual growth rate of 12.4 % during the entire study period which is statistically significant at 1% level. ES has registered annual growth rate of 1.2 % which is statistically insignificant during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a significant change in annual growth rate of 23.1%. The difference in performance levels of the company is found to be 21.9 % which is statistically significant at 1% level, indicating that there is significant difference in annual growth rates of loans and advances between the two sub-periods under study.

NSAIL: The company has registered a positive annual growth rate of 16.4 % which is statistically significant at 1% level during the entire study period. It has registered an annual growth rate of 29.8 % which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded an insignificant change in annual growth rate of 2.7 %. The difference in performance levels of the company as given by the

value and statistical significance of the kink is found to be statistically insignificant, indicating that there is no significant difference in annual growth rates of loans and advances between the two sub-periods.

WCL: The company has recorded a positive annual growth rate of 35.5% during the whole study period which is statistically significant at 1% level. During the 1st sub-period, WCL has registered a significant positive growth rate of 45.4 %, whereas in the 2nd sub-period, it has recorded a significant growth rate of 24.6 % at 1% level. The difference in performance levels of the company as measured by kink of the kinked exponential trend equation is found to be – 20.8 % which is statistically insignificant, indicating that there is no significant difference in annual growth rates of loans and advances between the two sub-periods under study.

UGSL: A positive annual growth rate of 26.1% which is statistically significant at 1% level is observed during the entire study period. UGSL has registered a positive annual growth rate of 46.5% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 5.3% which is statistically insignificant. The difference in performance levels of the company is found to be -41.2 % which is statistically significant at 1% level, indicating that there has been significant difference in growth rates of loans and advances between the two sub-periods.

ML: The company has recorded a negative annual growth rate of -3.0 % during the entire study period which is statistically insignificant. It has registered a positive annual growth rate of 3.5% which is statistically insignificant during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a negative annual growth rate of -9.4 % which is statistically significant at 5% level. The difference in performance levels of the company is found to be statistically insignificant, indicating that there is no significant difference in growth rates of loans and advances between the two sub-periods under study.

TIIL: An annual growth rate of –7.0 % is observed during the whole period which is statistically insignificant. In terms of sub-period performances, it has registered a positive annual growth rate of 16.4 % which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a negative growth rate of –29.9 % which is also statistically significant at 1% level. The difference in performance levels

of the company is found to be – 46.3 % which is statistically significant at 1% level, indicating that there has been significant difference in growth rates of loans and advances between the two sub-periods.

RIL: The company has achieved an annual growth rate of 54.2 % during the entire study period which is statistically significant at 1% level. RIL has registered a positive growth rate of 93.3% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded an insignificant growth rate of 14.9 %. The difference in performance levels of the company is found to be –78.4% which is statistically significant at 1% level, indicating that there is significant difference in growth rates of loans and advances between the two sub-periods under study.

MSL: A positive annual growth rate of 20.9% is observed during the entire study period which is statistically significant at 1% level. During the 1st sub-period, a positive annual growth rate of 10.9% has been recorded which is statistically insignificant, whereas in the 2nd sub-period, it has registered a positive growth rate of 30.3% which is statistically significant at 5% level of significance. The difference in performance levels of the company is found to be 19.4% which is statistically insignificant, indicating that there is no significant difference in growth rates of loans and advances between the two sub-periods.

SAL: The company has registered a positive but insignificant growth rate of 6.7% during the entire study period. SAL has registered a positive growth rate of 38.1% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period it has recorded a negative growth rate of –24.8% which is statistically significant at 1% level. The difference in performance levels of the company is found to be -62.9 % which is statistically significant at 1% level, indicating that there has been significant difference in growth rates of loans and advances between the two sub-periods.

MIL: A positive annual growth rate of 34.5% has been registered during the whole study period which is statistically significant at 1% level. MIL has recorded a significant positive annual growth rate of 52.2% during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 16.1% which is statistically insignificant. The difference in performance levels of the company is found to be -36.1% which is

statistically insignificant, indicating that there is no significant difference in annual growth rates of loans and advances between the two sub-periods.

SISCL: The company has registered a growth rate of 17.9 % during the entire study period which is statistically significant at 5% level. SISCL has registered a positive growth rate 33.4 % which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive growth rate of 1.9 % which is statistically insignificant. The difference in performance levels of the company is found to be -31.5% which is statistically significant at 1% level, indicating that there is significant difference in growth rates of loans and advances between the two sub-periods.

SIL: A statistically significant annual growth rate of 44.1% has been registered by the company during the entire study period which is statistically significant at 1% level. During the 1st sub-period, the company has registered a positive annual growth rate of 26.1% which is statistically insignificant, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 60.6% which is also statistically significant at 1% level. The difference in performance levels of the company is found to be 34.5% which is statistically insignificant, indicating that there has been no significant difference in annual growth rates of loans and advances between the two sub-periods.

MUSCO: The company has registered an insignificant growth rate of 8.1% during the entire study period. It has registered insignificant growth rate in both the sub-periods under study. The difference in performance levels of the company is found to be –14.2 % which is statistically significant at 1% level, indicating that there has been significant difference in annual growth rates of loans and advances between the two sub-periods under study.

KSL: An insignificant annual growth rate of 6.1% is observed during the entire study period. It has registered a positive annual growth rate of 35.8 % which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a negative growth rate of – 23.7 % which is also statistically significant at 1% level. The difference in performance levels of the company is found to be -59.5% which is statistically significant at 1% level, indicating that there is significant difference in growth rates of loans and advances between the two sub-periods.

JSW: It has achieved a positive annual growth rate of 28.9% which is statistically significant at 1% level during the entire study period. JSW has registered a positive annual growth rate of 33.1% which is statistically significant at 5% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 24.1% which is also statistically significant at 5% level. The difference in performance levels of the company as given by the value and statistical significance of the kink is found to be statistically insignificant, indicating that there is no significant difference in annual growth rates of loans and advances between the two sub-periods.

Analysis of Total Current Assets (Tables 5.1, 5.6 & 5.6A)

BSL: The company has achieved a positive annual growth rate of 23.9 % during the entire study period which is statistically significant at 1% level. So far as the sub-period performances are concerned, BSIL has registered positive annual growth rate of 23.3% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 24.4 % which is statistically significant at 1% level. The difference in performance levels of the company is found to be 1.1% which is statistically insignificant, indicating that there is no significant difference in annual growth rates of total current assets between the two sub-periods.

BSIL: A positive annual growth rate of 11.2% is observed during the entire study period which is statistically significant at 1% level. So far as the sub-period performances are concerned, it has registered a positive annual growth rate of 8.2 % which is statistically significant at 5% level during the 1st sub-period, whereas in the 2nd sub-period it has recorded an annual growth rate of 14.2% which is statistically significant at 1% level. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be statistically insignificant, indicating that there is no significant difference in growth rates of total current assets between the two sub-periods under study.

ECL: Trend analysis of total current assets of the company relating to the entire study period reveals a positive annual growth rate of 16.2 % which is statistically significant at 1% level. In terms of sub-period performances, ECL has registered a positive annual growth rate of 24.4 % which is statistically significant at 1% level during the 1st sub-

period, whereas in the 2nd sub-period, it has recorded a significant annual growth rate of 7.9 %. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be -16.5 % which is statistically significant 1% level, indicating that there is significant difference in annual growth rates of total current assets between the two sub-periods.

SAIL: SAIL has achieved a positive annual growth rate of 17.2 % during the entire study period which is statistically significant at 1% level. During the 1st sub-period, the company has registered a positive annual growth rate of 21.0% which is statistically significant at 1% level, whereas in the 2nd sub-period, it has recorded growth rate of 13.2% which is significant at 5% level. The difference in performance levels of the company is found to be -7.5 % which is statistically insignificant, indicating that there is no significant difference in annual growth rates of total current assets between the two sub-periods.

TSL: A positive annual growth rate of 17.9 % has been achieved by the company during the entire study period which is statistically significant at 1% level. So far as the sub-period performances are concerned, TSL has registered a positive growth rate of 25.5% during the 1st sub-period, which is significant at 5% level, whereas it has recorded insignificant change in annual growth rate in the 2nd sub-period under study. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be statistically insignificant, indicating that there is no significant difference in annual growth rates of total current assets between the two sub-periods.

ES: A performance analysis of total current assets of the company relating to the entire study period reveals a positive annual growth rate of 15.8 % during the entire study period which is statistically significant at 1% level. ES has registered a significant positive growth rate of 12.5% during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a significant annual growth rate of 19.0%. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be – 6.5% which is statistically insignificant, indicating that there is no significant difference in growth rates of total current assets between the two sub-periods.

NSAIL: A positive annual growth rate of 16.0% which is statistically significant at 1% level has been achieved by the company during the entire study period. NSAIL has

registered a growth rate of 26.0 % which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a change in annual growth rate of 6.0 % which is statistically significant at 1% level. The difference in performance levels of the company is found to be -20.0 % which is statistically significant at 1% level, indicating that there is significant fall in annual growth rates of total current assets between the two sub-periods.

WCL: A positive annual growth rate of 34.8 % is recorded by the company during the whole study period which is statistically significant at 1% level. So far as the sub-period performances are concerned, WCL has registered a positive annual growth rate of 51.3 % during the 1st sub-period which is statistically significant at 1% level, whereas in the 2nd sub-period, it has recorded an annual growth rate of 18.7% which is statistically significant at 5% level. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be –32.6% which is statistically significant at 5% level, indicating that there is significant difference in annual growth rates of total current assets between the two sub-periods.

UGSL: During the whole study period, the company has achieved a positive annual growth rate of 24.3 % which is statistically significant at 1% level. In terms of sub-period performances, UGSL has registered a positive annual growth rate of 35.2% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a annual growth rate of 13.4% which is statistically significant at 1% level. The difference in performance levels of the company is found to be -21.8 % which is statistically significant at 1% level, indicating that there is significant fall in annual growth rates of total current assets in the 2nd sub-period.

ML: The company has registered a positive annual growth rate of 9.2 % during the entire study period which is significant at 1% level. During the 1st sub-period, it has registered a positive annual growth rate of 9.5% which is statistically significant at 1% level, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 8.9 % which is statistically significant at 1% level. The difference in performance levels of the company so far as the management of total current assets is concerned is found to be -0.6% which is

statistically insignificant, indicating that there is no significant difference in annual growth rates between the two sub-periods under study.

TIIL: A positive annual growth rate of 6.0 % is observed during the entire study period which is statistically significant at 1% level. So far as the sub-period performances are concerned, TIIL has registered a positive annual growth rate of 7.0% which is statistically insignificant during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 4.9 % which is also statistically significant at 5% level. The difference in performance levels of the company is found to be – 2.1% which is statistically insignificant, indicating that there is no significant difference in annual growth rates of total current assets between the two sub-periods.

RIL: Statistically significant annual growth rate of 48.8 % is observed by the company during the entire study period which is significant at 5% level. RIL has registered a positive growth rate of 118.6 % which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded an insignificant annual growth rate of -21.0 %. The difference in performance levels of the company is found to be – 139.6 % which is statistically significant at 5% level, indicating that there is significant fall in growth rates of total current assets in the 2nd sub-period.

MSL: A positive annual growth rate of 26.0 % has been experienced by the company during the entire study period which is statistically significant at 1% level. MSL has registered annual growth rate of 42.5% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 9.5% which is statistically insignificant. The difference in performance levels of the company is found to be –33.0% which is statistically significant at 1% level, indicating that there is significant difference in annual growth rates of total current assets between the two sub-periods.

SAL: During the whole study period, the company has obtained a positive annual growth rate of 6.5% which is statistically significant at 5% level. It has registered a growth rate of 21.5% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a negative growth rate of -8.5% which is statistically significant at 1% level. The difference in performance levels of the company as measured

by kinked exponential trend equation is found to be –30.0% which is statistically significant at 1% level, indicating that there is significant difference in annual growth rates of total current assets between the two sub-periods.

MIL: The company has registered a growth rate of 32.0 % during the entire study period which is statistically significant at 1% level. MIL has registered a significant positive annual growth rate of 51.8 % during the 1st sub-period, whereas in the 2nd sub-period, it has recorded an annual growth rate of 12.1% which is statistically insignificant. The difference in performance levels of the company is found to be 39.7 % which is statistically insignificant, indicating that there is no significant difference in annual growth rates of total current assets between the two sub-periods.

SISCL: A positive growth rate of 14.2 % is observed during the entire study period which is statistically significant at 1% level. SISCL has registered a positive annual growth rate of 13.8% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 14.6 % which is statistically significant at 1% level. The difference in performance levels of the company is found to be 0.8% which is statistically insignificant, indicating that there is no significant difference in growth rates of total current assets between the two sub-periods under study.

SIL: The company has marked a positive annual growth rate of 25.7 % during the entire study period which is statistically significant at 1% level. During the 1st sub-period, SIL has registered a positive annual growth rate of 35.4 % which is statistically significant at 1% level, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 15.9 % which is also statistically significant at 1% level. The difference in performance levels of the company is found to be -19.5% which is significant at 5% level.

MUSCO: Trend analysis of total current assets of the company relating to the entire study period reveals a positive annual growth rate of 14.8 % during the entire study period which is statistically significant at 1% level. It has registered a positive annual growth rate of 21.5% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 8.2% which is also statistically significant at 1% level. The difference in performance levels of the company is found to be -13.3% which is statistically significant at 1% level, indicating that there is

significant difference in annual growth rates of total current assets between the two sub-periods.

KSL: A positive annual growth rate of 9.6 % is recorded by KSL during the entire study period which is statistically significant at 1% level. During the 1st sub-period, it has registered a positive annual growth rate of 18.4 % which is statistically significant at 1% level, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 0.7 % which is statistically insignificant. The difference in performance levels of the company is found to be -17.7 % which is statistically significant at 5% level, indicating that there is significant difference in annual growth rates of total current assets between the two sub-periods.

JSW: A positive annual growth rate of 27.5% which is significant at 1% level has been achieved by the company during the entire study period. In terms of sub-period performances, the company has recorded a positive annual growth rate of 24.5% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has registered a positive annual growth rate of 30.7 % which is statistically significant at 1% level. Kinked exponential trend equation has revealed insignificant results, indicating that there is no significant difference in annual growth rates of total current assets between the two sub-periods.

Analysis of Sundry Creditors (Tables 5.1, 5.7 & 5.7A)

BSL: During the whole study period the company has achieved a positive annual growth rate of 25.2 % which is statistically significant at 1% level. So far as the sub-period performances are concerned, BSL has registered a positive annual growth rate of 38.2% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 11.7 % which is statistically significant at 1% level. The difference in performance levels of the company is found to be – 26.5% which is statistically significant at 1% level, indicating that there is significant difference in growth rates of sundry creditors between the two sub-periods under study.

BSIL: A positive annual growth rate of 34.9 % is observed during the entire study period which is statistically significant at 1% level. In terms of sub-period performances, it has

maintained a positive annual growth rate of 39.8% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 29.2 % which is statistically significant at 5% level. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be statistically insignificant, indicating that there is no significant difference in growth rates of sundry creditors between the two sub-periods.

ECL: An analysis of trend of sundry creditors for whole study period reveals a positive annual growth rate of 24.9 % which is statistically significant at 1% level. ECL has registered a positive annual growth rate of 9.9 % which is statistically insignificant during the 1st sub-period. In the 2nd sub-period, it has recorded a annual positive growth rate of 39.3 % which is significant at 5% level. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be 29.4 % which is statistically significant 1% level, indicating that there is significant difference in annual growth rates of sundry creditors between the two sub-periods.

SAIL: SAIL has registered a positive annual growth rate of 11.2 % during the entire study period which is statistically significant at 1% level. The company has recorded annual growth rate of 7.3% which is statistically insignificant during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 14.9 % which is significant at 1% level. As far as difference in performance levels of the company is concerned, we find insignificant results, indicating that there is no significant difference in growth rates of sundry creditors between the two sub-periods.

TSL: The company has registered a positive annual growth rate of 12.4 % during the entire study period which is statistically significant at 1% level. So far as the sub-period performances are concerned, TSL has registered annual growth rate of 11.8 % which is significant at 1% level during the 1st sub-period, whereas it has recorded significant positive change in annual growth rate of 12.7 % in the 2nd sub-periods under study. The difference in performance levels of the company is found to be statistically insignificant, indicating that there is no significant difference in annual growth rates of sundry creditors between the two sub-periods.

ES: Whole period trend analysis of sundry creditors has revealed a positive annual growth rate of 13.0 % during the entire study period which is statistically significant at 1% level. ES has registered a positive annual growth rate of 3.7 % during the 1st sub-period which is statistically insignificant, whereas in the 2nd sub-period, it has recorded a significant growth rate of 21.8% at 1% level. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be 18.1% which is statistically insignificant, indicating that there is no significant difference in growth rates of sundry creditors between the two sub-periods.

NSAIL: A positive annual growth rate of 17.6 % which is statistically significant at 1% level has been recorded by the company during the entire study period. NSAIL has registered a growth rate of 27.7 % which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a change in growth rate of 7.2 % which is statistically significant at 1% level. The difference in performance levels of the company is found to be 20.5% which is statistically significant at 1% level, indicating that there is significant difference in growth rates of sundry creditors between the two sub-periods.

WCL: Trend analysis of sundry creditors for whole study period reveals a positive annual growth rate of 54.6 % which is statistically significant at 1% level. So far as the sub-period performances are concerned, the company has registered a positive annual growth rate of 62.2 % during the 1st sub-period which is statistically significant at 1% level, whereas in the 2nd sub-period, it has recorded a growth rate of 46.0% which is statistically significant at 1% level. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be –16.2 % which is statistically insignificant, indicating that there is no significant difference in growth rates of sundry creditors between the two sub-periods under study.

UGSL: Trend analysis of sundry creditors for the whole period indicates that the company has registered a positive annual growth rate of 18.2 % which is statistically significant at 5% level. In 1st sub-period, the company has registered a positive annual growth rate of 23.0 %, which is insignificant, whereas in the 2nd sub-period, it has recorded an annual growth rate of 13.4 % which is also observed to be insignificant. The difference in

performance levels of the company is found to be – 9.6 % which is statistically significant at 1% level, indicating that there is significant difference in growth rates of sundry creditors between the two sub-periods.

ML: Trend analysis of sundry creditors reveals that ML has registered a positive annual growth rate of 10.5% during the entire study period which is significant at 1% level of significance. It has registered a positive annual growth rate of 1.6 % which is statistically insignificant during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a growth rate of 19.0 % which is statistically significant at 1% level. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be 17.4% which is statistically significant at 5% level, indicating that there is significant difference in annual growth rates of sundry creditors between the two sub-periods under study.

TIIL: The company has registered an annual growth rate of 13.0 % during the entire study period which is statistically significant at 1% level. So far as the sub-period performances are concerned, TIIL has registered a positive annual growth rate 12.1% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 13.6 % which is also statistically significant at 1% level. The difference in performance levels of the company is found to be 1.5 % which is statistically insignificant, indicating that there is no significant difference in annual growth rates of sundry creditors between the two sub-periods.

RIL: The company has achieved an annual growth rate of 21.7 % during the entire study period which is statistically significant at 5% level. During the 1st period, RIL has registered a positive annual growth rate of 38.4 % which is insignificant, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 4.9 % which is statistically insignificant. The difference in performance levels of the company as measured by kink is found to be –33.5% which is statistically insignificant, indicating that there is no significant difference in annual growth rates of sundry creditors between the two sub-periods.

MSL: The company has experienced a statistically significant annual growth rate of 19.2 % during the entire study period. It has registered a growth rate of 17.9 % which is

statistically significant at 5% level during the 1st sub-period, whereas in the 2nd sub-period, it has a recorded a positive significant growth rate of 19.9 % which is statistically significant at 5% level. The difference in performance levels of the company is found to be 2.0% which is statistically insignificant, indicating that there is no significant difference in annual growth rates of sundry creditors between the two sub-periods under study.

SAL: An annual negative growth rate of -0.5% has been maintained by the company during the whole study period which is statistically insignificant. During the 1st sub-period, it has registered an annual growth rate of 13.0%, whereas in the 2nd sub-period, it has recorded a negative annual growth rate of –13.5%. The growth rates of both the sub-periods are statistically insignificant. The difference in performance levels of the company is found to be 26.5% which is statistically insignificant, indicating that there is no significant difference in annual growth rates of sundry creditors between the two sub-periods.

MIL: Trend analysis of sundry creditors for whole study period reveals a positive annual growth rate of 32.9 % which is statistically significant at 1% level. MIL has registered a significant positive annual growth rate of 60.3 % during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a growth rate of .04% which is statistically insignificant. The difference in performance levels of the company is found to be -55.3% which is statistically insignificant, indicating that there is no significant difference in annual growth rates of sundry creditors between the two sub-periods.

SISCL: An insignificant annual growth rate of 3.5% has been registered by the company during the entire study period. It has registered an annual growth rate of 3.5% during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive growth rate of 3.4 %. The growth rates of both the sub-periods are statistically insignificant. The difference in performance levels of the company is found to be -0.1% which is statistically insignificant, indicating that there is no significant difference in growth rates of sundry creditors between the two sub-periods.

SIL: A positive annual growth rate of 20.5% is observed by the company during the whole study period which is statistically significant at 1% level. SIL has registered a positive annual growth rate of 31.5% which is statistically significant at 1% level during the 1st sub-

period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 9.3 % which is statistically insignificant. The difference in performance levels of the company as given by the value and statistical significance of the kink is found to be statistically insignificant, indicating that there is no significant difference in annual growth rates of sundry creditors between the two sub-periods.

MUSCO: A statistically significant (at 1% probability level) and positive annual growth rate of 9.6% has been recorded by the company during the entire study period. During the 1st sub-period, it has registered a positive annual growth rate of 10.4% which is statistically significant at 1% level, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 8.7 % which is statistically significant at 1% level. The difference in performance levels of the company is found to be -1.7% which is statistically insignificant, indicating that there is no significant difference in annual growth rates of sundry creditors between the two sub-periods under study.

KSL: The company has recorded a positive annual growth rate of 8.4 % during the entire study period which is statistically significant at 5% level. KSL has registered a positive annual growth rate of 27.4 % which is statistically significant at 1% level during the 1st sub-period , whereas in the 2nd sub-period, it has recorded a negative annual growth rate of –10.8 % which is statistically significant at 5% level. The difference in performance levels of the company is found to be -38.2 % which is statistically significant at 1% level, indicating that there is significant difference in annual growth rates of sundry creditors between the two sub-periods.

JSW: Analysis of the trend in sundry creditors reveals that the company has recorded a significant positive annual growth rate of 21.3 % during the entire study period. JSW has registered a growth rate of 3.1% which is statistically insignificant during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 38.7 % which is statistically significant at 1% level. The difference in performance levels of the company is found to be 35.6 % which is statistically significant at 1% level, indicating that there is significant difference in annual growth rates of sundry creditors between the two sub-periods.

Analysis of Provisions (Tables 5.1, 5.8 & 5.8 A)

BSL: A positive annual growth rate of 23.2 % which is statistically significant at1% probability level has been recorded by the company during the entire study period. So far as the sub-period performances are concerned, BSIL has registered a positive annual growth rate of 15.9 % which is statistically significant at 5% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 29.7 % which is statistically significant at 1% level. The difference in performance levels of the company is found to be 13.8% which is statistically insignificant, indicating that there is no significant difference in annual growth rates of provisions between the two sub-periods.

BSIL: Analysis of the trend in provisions reveals that the company has achieved a positive annual growth rate of 0.4 % during the whole study period which is statistically insignificant. It has registered a positive annual growth rate 0.8 % which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a negative annual growth rate of - 0.7 % which is statistically significant at 5% level. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be – 1.5% which is statistically significant at 1% level indicating that there is significant difference in annual growth rates of provisions between the two sub-periods.

ECL: The company has recorded a positive annual growth rate of 23.7 % during the whole study period which is statistically significant at 1% level. During the 1st sub-period, ECL has registered a positive annual growth rate of 18.4 % which is statistically significant at 5% level, whereas in the 2nd sub-period, it has recorded a growth rate of 28.2 % which is statistically significant at 1% level. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be 9.8 % which is statistically insignificant, indicating that there is no significant difference in annual growth rates of provisions between the two sub-periods under study.

SAIL: Trend analysis of sundry creditors for whole study period reveals a positive annual growth rate of 5.4 % during the entire study period which is statistically significant at 1% level. The company has registered a growth rate of 28.1% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a

negative annual growth rate of –17.1% which is significant at 5% level. Trend break as measured by kinked exponential trend equation is found to be -45.2% which is statistically significant at 1% level, indicating that there is significant difference in growth rates of provisions between the two sub-periods.

TSL: A positive annual growth rate of 5.4 % is observed during the entire study period which is statistically significant at 1% level. TSL has registered a positive annual growth rate of 18.5% which is statistically significant at 1% level during the 1st sub-period, whereas it has recorded insignificant negative change in growth rate of -7.8 % in the 2nd sub-period under study. The difference in performance levels of the company is found to be -26.3% which is statistically significant at 1% level, indicating that there is significant difference in annual growth rates of provisions between the two sub-periods under study.

ES: Trend Analysis of provisions reveals that the company has recorded a positive annual growth rate of 47.9 % during the entire study period which is statistically significant at 1% level. ES has registered a positive annual growth rate of 16.0 % during the 1st sub-period which is statistically insignificant, whereas in the 2nd sub-period, it has recorded a negative annual growth rate of -27.1% which is statistically significant at 5% level. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be –43.1% which is statistically significant at 5% level, indicating that there is significant difference in annual growth rates of provisions between the two sub-periods.

NSAIL: The company has achieved a positive annual growth rate of 14.3 % which is statistically significant at 1% level during the entire study period. During the 1st sub-period, NSAIL has registered a growth rate of 52.0% which is statistically significant at 1% level, whereas in the 2nd sub-period, it has recorded a negative change in growth rate of -23.4 % which is statistically insignificant. The difference in performance levels of the company is found to be – 75.4% which is statistically significant at 5% level, indicating that there is significant difference in annual growth rates of provisions between the two sub-periods under study.

WCL: A positive annual growth rate of 58.7 % is observed during the whole study period which is statistically significant at 1% level. Analysis of sub-period performances reveal positive annual growth rate of 93.2 % during the 1st sub-period which is statistically

significant at 1% level, whereas in the 2nd sub-period, it has recorded a growth rate of 23.2 % which is statistically significant at 1% level. The difference in performance levels of the company as measured by kinked exponential trend break is found to be –70.0% which is statistically significant at 1% level, indicating that there is significant difference in annual growth rates of provisions between the two sub-periods.

UGSL: The company has registered a positive insignificant growth rate of 3.8 % during the entire study period. It has registered insignificant annual growth rate during the 1stsub-period as well as in the 2nd sub-period. The difference in performance levels of the company is found to be – 22.2% which is also statistically insignificant, indicating that there is no significant difference in annual growth rates of provisions between the two sub-periods.

ML: The company has registered a positive insignificant growth rate of 9.4 % during the entire study period. ML has registered insignificant growth rate during the 1st sub-period as well as in the 2nd sub-period. The difference in performance levels of the company is found to be – 55.2% which is statistically insignificant, indicating there is no significant difference in growth rates of provisions between the two sub-periods under study.

TIIL: Analysis of the trend in provisions reveals that the company has recorded a negative annual growth rate of -7.1% during the entire study period which is statistically insignificant. So far as the sub-period performances are concerned, TIIL has recorded a growth rate of 14.5% which is statistically insignificant during the 1st sub-period, whereas in the 2nd sub-period, it has maintained a negative annual growth rate of -28.1% level which is significant at 5% level. The difference in performance levels of the company is found to be –42.6 % which is statistically significant at 5% level, indicating that there is significant difference in annual growth rates of provisions between the two sub-periods.

RIL: RIL has registered a growth rate of 38.7% during the entire study period which is statistically significant at 1% level. It has recorded a significant positive annual growth rate of 2.3% during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a growth rate of -0.4% which is statistically insignificant. The difference in performance levels of the company is found to be –2.7% which is statistically significant at 5% level, indicating

that there is significant difference in annual growth rates of provisions between the two sub-periods.

MSL: The company has registered annual growth rate of 15.6% during the entire study period which is statistically significant at 1% level. MSL has registered a growth rate of 20.9% which is statistically significant at 5% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded an annual growth rate of 9.8% which is statistically insignificant. Trend break as measured by kinked exponential trend equation is found to be -11.1% level which is statistically insignificant, indicating that there is no significant difference in growth rates of provisions between the two sub-periods.

SAL: An annual growth rate of 4.3% is recorded by the company during the entire study period which is statistically insignificant. It has registered a growth rate of 24.8% during the 1st sub-period which is statistically significant at 5% level, whereas in the 2nd sub-period, it has recorded a negative annual growth rate of –15.9% which is statistically insignificant. The difference in performance levels of the company is found to be 40.7 % which is statistically significant at 5% level, indicating that there is significant difference in annual growth rates of provisions between the two sub-periods under study.

MIL: MIL has registered an annual growth rate of 21.9% during the whole study period which is statistically insignificant. During the 1st sub-period, it has registered a positive annual growth rate of 69.6% which is statistically significant at 1% level, whereas in the 2nd sub-period, it has recorded a growth rate of -25.9% which is statistically insignificant. The difference in performance levels of the company is found to be – 95.5% which is statistically significant at 1% level, indicating that there is significant difference in growth rates of provisions between the two sub-periods.

SISCL: A positive annual growth rate of 18.3% is observed during the entire study period which is statistically insignificant. It has registered a growth rate of 42.7% during the 1st sub-period which is statistically significant at 1% level, whereas in the 2nd sub-period, it has recorded a growth rate of -6.3% which is statistically insignificant. The difference in performance levels of the company is found to be -49.0% which is statistically significant at 1% level, indicating that there is significant difference in growth rates of provisions between the two sub-periods under study.

SIL: During the whole study period, the company has observed a positive annual growth rate of 33.2 % which is statistically significant at 1% level. It has registered a significant positive annual growth rate 46.8% during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate 18.9% which is statistically significant at 1% level. The difference in performance levels of the company is found to be – 27.9% which is statistically significant at 5% level, indicating that there is significant difference in growth rates of provisions between the two sub-periods.

MUSCO: An insignificant growth rate of provisions is observed during the entire study period. It has registered insignificant growth rate both during the 1st sub-period as well as in the 2nd sub-period. The difference in performance levels of the company is found to be – 36.8% which is statistically insignificant, indicating that there is no significant difference in growth rates of provisions between the two sub-periods.

KSL: Analysis of the trend in provisions reveals that the company, KSL has achieved a significant positive annual growth rate of 18.7 % during the entire study period. During the 1st sub-period, it has registered a positive annual growth rate 67.8% which is statistically significant at 1% level, whereas in the 2nd sub-period, it has recorded a negative annual growth rate of -30.8% which is statistically insignificant. The difference in performance levels of the company is found to be -98.6% which is statistically significant at 1% level, indicating that there is significant difference in growth rates of provisions between the two sub-periods under study

JSW: The company has registered a positive annual growth rate of 725% during the entire study period which is statistically significant at 1% level. JSW has registered a growth rate 133% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a negative annual growth rate of -3.9% which is statistically insignificant. The difference in performance levels of the company is found to be -136.9% which is statistically significant at 1% level, indicating that there is significant difference in growth rates of provisions between the two sub-periods.

Analysis of Total Current Liabilities (Tables 5.1, 5.9 & 5.9A)

BSL: Trend analysis of total current liabilities reveals that the company has experienced a significant positive annual growth rate of 27.1% during the entire study period which is

statistically significant at 1% level. So far as the sub-period performances are concerned, BSIL has registered a positive annual growth rate of 36.5% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 16.6% which is statistically significant at 1% level. The difference in performance levels of the company is found to be -19.9% which is statistically significant 5% level, indicating that there is significant difference in growth rates of total current liabilities between the two sub-periods.

BSIL: During the whole study period, the company has registered a positive annual growth rate of 26.6% which is statistically significant at 1% level. In terms of sub-period performances, it has registered a positive annual growth rate of 31.4% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a growth rate of 22.8% which is statistically significant at 1% level. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be statistically insignificant, indicating that there is no significant difference in growth rates of total current liabilities between the two sub-periods.

ECL: A positive annual growth rate of 17.4% has been recorded during the whole study period which is statistically significant at 1% level. So far as the sub-period performances are concerned, ECL has registered a significant positive annual growth rate of 19.6% during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a growth rate of 15.2% which is statistically significant at 1% level. Trend break as measured by kinked exponential trend equation is found to be -4.4 % which is statistically insignificant, indicating that there is no significant difference in growth rates of total current liabilities between the two sub-periods.

SAIL: Analysis of the trend in total current liabilities reveals that the company has observed a significant positive annual growth rate of 8.5% level during the entire study period which is statistically significant at 1% level. The company has registered a growth rate of 12.0% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a growth rate of 5.1% which is statistically significant at 1% level. The difference in performance levels of the company is found to be

-6.9% which is statistically insignificant, indicating that there is no significant difference in growth rates of total current liabilities between the two sub-periods under study.

TSL: The company has registered a positive annual growth rate of 12.8% during the entire study period which is statistically significant at 1% level. So far as the sub-period performances are concerned, TSL has registered a growth rate of 14.3% in the 1st sub-period, whereas in the 2nd sub-period, it has recorded a growth rate of 11.3%. The sub-period growth rates are statistically significant at 1% level. The difference in performance levels of the company is found to be statistically insignificant, indicating that there is no significant difference in growth rates of total current liabilities between the two sub-periods

ES: During the whole study period, the company has registered a positive annual growth rate of 11.6%, which is statistically significant at 1% level. ES has registered a positive annual growth rate of 2.3% during the 1st sub-period which is statistically insignificant, whereas in the 2nd sub-period, it has recorded a significant growth rate of 20.9% at 5% level. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be 18.6% which is statistically insignificant, indicating that there is no significant difference in growth rates of total current liabilities between the two sub-periods.

NSAIL: A positive and significant annual growth rate of 17.4% has been recorded by the company during the entire study period. NSAIL has registered a significant positive growth rate of 28.2% during the 1st sub-period, whereas in the 2nd sub-period, it has recorded an annual growth rate of 6.7%. The sub-period growth rates are statistically significant at 1% level. The difference in performance levels of the company is found to be -21.5 % which is statistically significant at 1% level, indicating that there is significant difference in annual growth rates of total current liabilities between the two sub-periods under study.

WCL: Analysis of the trend in total current liabilities reveals that the company has maintained a significant positive annual growth rate of 39.6% during the whole study period which is statistically significant at 1% level. So far as the sub-period performances are concerned, WCL has registered a positive annual growth rate of 62.6 % during the 1st

sub-period which is statistically significant at 1% level, whereas in the 2nd sub-period, it has recorded a growth rate of 16.6 % which is statistically insignificant. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be – 46.0% which is statistically significant at 5% level, indicating that there is significant difference in annual growth rates of total current liabilities between the two sub-periods.

UGSL: Trend analysis of total current liabilities for the company under study reveals a positive annual growth rate of 25.2% during the entire study period which is significant at 1% level. UGSL has recorded a significant positive annual growth rate of 33.1% during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a growth rate of 17.4% which is statistically significant at 1% level. The difference in performance levels of the company is found to be -15.7% which is statistically significant at 1% level, indicating that there is significant difference in growth rates of total current liabilities between the two sub-periods.

ML: The company has registered a positive annual growth rate of 10.1% during the entire study period which is significant at 1% level. It has registered a positive annual growth rate of 8.1% during the 1st sub-period, whereas in the 2nd sub-period, it has recorded an annual growth rate of 12.2%. The growth rates of both the sub-periods are statistically significant at 1% level. The difference in performance levels of the company is found to be 4.1% which is statistically insignificant, indicating that there is no significant difference in growth rates of total current liabilities between the two sub-periods under study.

TIIL: Analysis of the trend in total current liabilities reveals that the company has achieved a significant positive annual growth rate of 8.3% during the entire study period which is statistically significant at 1% level. During the 1st sub-period, TIIL has registered a positive annual growth rate of 12.2% which is significant at 1% level, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 4.4% which is statistically insignificant. Trend break as measured by kinked exponential trend equation is found to be –7.8% which is statistically insignificant, indicating that there is no significant difference in growth rates of total current liabilities between the two sub-periods.

RIL: A positive annual growth rate of 55.4% is observed during the entire study period which is statistically significant at 1% level. RIL has registered a positive annual growth rate of 129.6% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded an insignificant growth rate of -18.9%. The difference in performance levels of the company is found to be –148.5% which is statistically significant at 5% level, indicating that there is significant difference in annual growth rates of total current liabilities between the two sub-periods.

MSL: Trend Analysis of total current liabilities shows that the company has achieved a significant positive annual growth rate of 19.6% during the entire study period which is statistically significant at 1% level. It has registered a growth rate of 23.6% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 15.6 % which is statistically significant at 5% level. The difference in performance levels of the company is found to be –8.0% which is statistically insignificant, indicating that there is no significant difference in annual growth rates of total current liabilities between the two sub-periods under study.

SAL: The company has registered an annual growth rate of 8.3% during the whole study period which is statistically significant at 5% level. It has recorded insignificant growth rate in both the sub-periods. The difference in performance levels of the company is found to be statistically insignificant, indicating that there is no significant difference in growth rates of total current liabilities between the two sub-periods.

MIL: A look into the company's performance with regard to trend reveals a significant annual growth rate of 31.3% during the entire study period which is statistically significant at 1% level. MIL has registered a positive annual growth rate of 60.2% during the 1st sub-period which is statistically significant at 1% level, whereas in the 2nd sub-period, it has recorded a growth rate of 2.3% which is statistically insignificant. The difference in performance levels of the company is found to be statistically insignificant, indicating that there is no significant difference in annual growth rates of total current liabilities between the two sub-periods.

SISCL: Analysis of the trend in total current liabilities reveals that the company has recorded a significant positive annual growth rate of 10.2% during the entire study period

which is statistically significant at 1%. During the 1st sub-period, it has registered a positive annual growth rate of 12.2 %, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 8.1%. The growth rates in both the sub-periods are statistically insignificant. Trend break as measured by kinked exponential trend equation is found to be -4.2% which is statistically insignificant, indicating that there is no significant difference in annual growth rates of total current liabilities between the two sub-periods.

SIL: The company has registered a positive annual growth rate of 21.3% during the entire study period which is statistically significant at 1% level. SIL has registered a positive annual growth rate of 32.6% which is statistically significant at 1% level during the 1st sub-period, , whereas in the 2nd sub-period,, it has recorded a positive annual growth rate of 10% which is statistically insignificant. The difference in performance levels of the company is found to be -22.6% which is statistically insignificant, indicating that there is no significant difference in growth rates of total current liabilities between the two sub-periods under study.

MUSCO: Trend analysis of total current liabilities shows that the company has achieved a significant positive annual growth rate of 14.8 % during the whole study period which is statistically significant at 1% level. It has registered a positive annual growth rate of 17.1% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 12.5% level which is also statistically significant at 1% level. The difference in performance levels of the company is found to be -4.6% which is statistically insignificant, indicating that there is no significant difference in growth rates of total current liabilities between the two sub-periods.

KSL: During the whole study period, the company has registered a positive annual growth rate of 9.3% which is statistically significant at 5% level. KSL has registered a positive annual growth rate of 30.7% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a negative annual growth rate of -12.1% which is also statistically significant at 1% level. The difference in performance levels of the company is found to be -42.8% which is statistically significant at 1% level, indicating that there is significant fall in growth rates of total current liabilities between the two sub-periods.

JSW: Analysis of the trend in total current liabilities indicates that the company has achieved a significant positive annual growth rate of 27.4% during the entire study period. It has registered a positive annual growth rate of 19.5% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 35.2% which is statistically significant at 1% level. The difference in performance levels of the company is found to be 15.7% which is statistically insignificant, indicating that there is no significant difference in growth rates of total current liabilities between the two sub-periods under study.

Analysis of Net Working Capital (Tables 5.1, 5.10 & 5.10A)

BSL: During the whole study period, the company has registered a positive annual growth rate of 21.9% which is statistically significant at 1% level. So far as the sub-period performances are concerned, BSL has registered a positive annual growth rate of 14.5% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 29.2% which is statistically significant at 1% level. The difference in performance levels of the company is found to be 14.7% which is statistically significant 5% level, indicating that there is significant difference in annual growth rates of net working capital between the two sub-periods.

BSIL: Analysis of the trend in net working capital reveals that the company has achieved a significant positive annual growth rate of 3.1% during the entire study period which is statistically significant at 5% level. So far as the sub-period performances are concerned, it has registered insignificant growth rate in both the sub-periods under study. The difference in performance levels of the company as measured by kinked exponential trend equation is also found to be statistically insignificant, indicating that there is no significant difference in growth rates of net working capital between the two sub-periods under study.

ECL: During the whole study period, the company has registered a positive annual growth rate of 15.5% level during the whole study period which is statistically significant at 1% level. In terms of sub-period performances, ECL has registered a positive annual growth rate of 26.2% during the 1st sub-period which is statistically significant at 1% level, whereas in the 2nd sub-period, it has recorded a growth rate of 4.7% which is statistically

insignificant. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be -21.5% which is statistically significant 5% level, indicating that there is significant difference in annual growth rates of net working capital between the two sub-periods.

SAIL: Trend analysis of net working capital for the company under study has registered a positive annual growth rate of 44% during the entire study period which is statistically insignificant. The company has registered an annual growth rate 42.4% during the 1st sub-period which is statistically insignificant, whereas in the 2nd sub-period, it has recorded growth rate of 45.5% which is statistically insignificant. The difference in performance levels of the company is found to be -3.1% which is statistically insignificant, indicating that there is no significant difference in annual growth rates of net working capital between the two-sub-periods under study.

TSL: Analysis of the trend in net working capital indicates that the company has achieved a significant positive annual growth rate of 23.1% level during the entire study period which is statistically insignificant. So far as the sub-period performances are concerned, TSL has registered a growth rate of 20.4% during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a growth rate of 25.9%. The results of both the sub-periods are statistically insignificant. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be 5.5% which is statistically insignificant, indicating that there is no significant difference in growth rates of net working capital between the two sub-periods.

ES: The company has achieved a positive annual growth rate of 30.3% during the entire study period which is statistically insignificant. ES has registered a growth rate of 55.8% during the 1st sub-period which is insignificant, whereas in the 2nd sub-period it has recorded a growth rate of 4.9% which is statistically insignificant. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be statistically insignificant, indicating that there is no significant difference in annual growth rates of net working capital between the two sub-periods.

NSAIL: Analysis of the trend in net working capital reveals that the company has observed a significant positive annual growth rate of 14.3% during the entire study period. It has

registered a significant annual growth rate of 23.5% during the 1st sub-period, whereas in the 2nd sub-period it has recorded a growth rate of 5.0% which is statistically significant at 5% level. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be -18.5 % which is statistically significant at 1% level, indicating that there is significant difference in growth rates of net working capital between the two sub-periods under study.

WCL: : Trend analysis of net working capital for the company under study has registered a positive annual growth rate of 28.1% during the whole study period which is statistically significant at 1% level. So far as the sub-period performances are concerned, WCL has registered a positive annual growth rate of 36.3 % during the 1st sub-period which is statistically significant at 1% level, whereas in the 2nd sub-period it has recorded a growth rate of 20% which is also statistically significant at 1% level. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be –16.3% which is statistically insignificant, indicating that there is no significant difference in annual growth rates of net working capital between the two sub-periods.

UGSL: Trend analysis of net working capital reveals that the company has achieved a significant positive annual growth rate of 14.1% during the entire study period which is statistically insignificant. UGSL has registered a positive annual growth rate of 38.5% which is statistically significant at 5% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a growth rate of -10.4% which statistically insignificant. The difference in performance levels of the company is found to be -48.9% which is statistically insignificant, indicating that there is no significant difference in growth rates of net working capital between the two sub-periods.

ML: During the whole study period, the company has registered a positive annual growth rate of 8.6% which is significant at 1% level. It has registered a positive annual growth rate of 10.1% during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a growth rate of 7.0%. The growth rates of both the sub-periods are statistically significant at 1% level. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be -3.1% which is statistically insignificant,

indicating that there is no significant difference in growth rates of net working capital between the two sub-periods.

TIIL: Analysis of the trend in net working capital reveals that the company has recorded an insignificant positive annual growth rate of 2.4% during the entire study period. So far as the sub-period performances are concerned, TIIL has registered a negative annual growth rate of -0.2% during the 1st sub-period which is significant, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 4.9% which is statistically insignificant. The difference in performance levels of the company is found to be 5.1% which is statistically insignificant, indicating that there is no significant difference in annual growth rates of net working capital between the two sub-periods.

RIL: The company has registered an annual growth rate of -10.6% during the entire study period which is statistically insignificant. RIL has registered a positive annual growth rate of 70.5% level during the 1st sub-period which is insignificant, whereas in the 2nd sub-period, it has recorded an insignificant growth rate of -91.7%. The difference in performance levels of the company is found to be –162.2% which is statistically insignificant, indicating that there is no significant difference in annual growth rates of net working capital between the two sub-periods.

MSL: During the whole study period, the company has registered a positive annual growth rate of 28.7% which is statistically significant at 1% level. MSL has registered a growth rate of 49.4% which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 8.0% which is statistically insignificant. The difference in performance levels of the company is found to be –41.4% which is statistically significant at 1% level, indicating that there is significant difference in growth rates of net working capital between the two sub-periods.

SAL: Trend analysis of net working capital reveals that the company has maintained a significant positive annual growth rate of -8.7% during the entire study period which is statistically insignificant. It has recorded an insignificant growth rate of 27.1% in the 1st sub-period, where in the 2nd sub-period, it has recorded negative annual growth rate of -41.3% which is statistically significant at 5% level. The difference in performance levels of the company as measured by kinked exponential trend equation is found to be -71.3%

which is statistically significant at 5% level, indicating that there is significant difference in annual growth rates of net working capital between the two sub-periods under study.

MIL: The company has registered an annual growth rate of 30.6% during the entire study period which is statistically significant at 1% level. MIL has registered a significant positive annual growth rate of 42.2% during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a growth rate of 19.0% which is statistically significant at 5% level. The difference in performance levels of the company is found to be statistically insignificant, indicating that there is no significant difference in annual growth rates of net working capital between the two sub-periods.

SISCL: During the whole study period, the company has registered a positive annual growth rate of 16.6% which is statistically significant at 1%. SISCL has registered a positive annual growth rate of 15.1% during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 18.1%. The growth rates of both the sub-periods are statistically significant at 1% level. The difference in performance levels of the company is found to be 3.0% which is statistically insignificant, indicating that there is no significant difference in annual growth rates of net working capital between the two sub-periods under study.

SIL: Analysis of the trend in net working capital reveals that the company has experienced a significant positive annual growth rate of 27.6% during the entire study period which is statistically significant at 1% level. SIL has registered a positive annual growth rate of 36.5% level during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 18.7%. The growth rates of both the sub-periods are statistically significant at 1% level. The difference in performance levels of the company is found to be -17.8% which is statistically significant at 1% level, indicating that there is significant difference in growth rates of net working capital between the two sub-periods under study.

MUSCO: : Trend analysis of net working capital for MUSCO has registered a positive annual growth rate of 14.5% during the entire study period which is statistically significant at 1% level. It has registered a positive annual growth rate of 26.8 % which is statistically significant at 1% level during the 1st sub-period, whereas in the 2nd sub-period, it has

recorded a positive annual growth rate of 2.1% which is statistically insignificant. The difference in performance levels of the company is found to be -24.7% which is statistically significant at 1% level, indicating that there is significant difference in growth rates of net working capital between the two sub-periods under study.

KSL: Analysis of trend reveals that the company has achieved a significant positive annual growth rate of 9.4% during the entire study period which is statistically significant at 1% level. KSL has registered a positive annual growth rate of 6.7% which is statistically insignificant during the 1st sub-period, whereas in the 2nd sub-period, it has recorded a positive annual growth rate of 12.2% which is statistically significant at 5% level. The difference in performance levels of the company is found to be 5.5% which is statistically insignificant, indicating that there is no significant difference in growth rates of net working capital between the two sub-periods.

JSW: During the whole study period, the company has registered a positive annual growth rate of 9.4% which is statistically insignificant. JSW has registered a negative growth rate of -12.2% which is statistically insignificant during the 1st sub-period. Similarly, in the 2nd sub-period, it has recorded a negative growth rate of -6.6% which is also statistically insignificant. The difference in performance levels of the company is found to be 5.6% which is statistically insignificant, indicating that there is no significant difference in growth rates of net working capital between the two sub-periods.

5.2 COMPONENT-WISE TREND ANALYSIS OF THE COMPANIES OF WORKING CAPITAL

In this section, an attempt is made to examine the trend growth rates of the selected companies with respect to working capital performance indicators i.e., its various components. To measure the trend growth rates of the selected performance indicators, we have employed the technique of log linear regression equation. To examine whether there is any trend break of the same, Kinked exponential trend equation has been fitted to the annual time series data.

Inventory

Analysis of inventory reveals significant positive growth rate for 19 companies out of 20 companies selected for the study, which are statistically significant either at 1% or 5% level .The growth rate (39.9%) in inventory is found to be the highest for WCL, while BSIL has registered the lowest growth rate (9.7%) in inventory during the entire study period.

In terms of sub-period performances, the first sub-period shows significant positive growth rate in inventory for 17 companies out of 20 companies. The growth rate (71.2%) in inventory is found to be the highest for TSL and the lowest for TIIL (12.4%).

In the second sub-period, 15 companies of the 20 selected companies have recorded significant growth rate in inventory. In rest of the cases, the results are found to be statistically insignificant. JSW has recorded a highest positive growth rate (31.2%), whereas RIL has recorded the lowest negative growth rate (-34.7%) in inventory.

So far as trend break in inventory is concerned, we find significant result in 10 companies out of 20 selected companies. In rest of the companies, there is no significant difference in growth rates of inventory between the two sub-periods as the results are found to be statistically insignificant.

Overall, it may be stated that majority of the companies have shown significant positive growth rates during the whole period as well as in the two sub-periods. The results of kinked exponential trend equation reveal that for 10 companies, there is significant change in growth rate in inventory between the two sub-periods under study. This leads to the rejection of the first hypothesis of the study. Out of these 10 companies (i.e., registering change in growth rate), 8 companies have negative change in growth rate between the two sub-periods. In rest of the cases, the results are found to be insignificant. This indicates that financial recession has significant negative impact on the growth rate in inventory between the two sub-periods.

Sundry Debtors

The results reveals significant positive growth rate for as many as 17 companies out of 20 companies selected for the study which are statistically significant either at 1% or 5% level

.The growth rate (28.1%) in sundry debtors is found to be the highest for WCL, while TIIL has registered a lowest growth rate (5.1%) in sundry debtors during the entire study period. With respect to sub-period performances, the first sub-period shows significant positive growth rate in sundry debtors for 12 companies out of 20 companies. The growth rate (50.6%) in sundry debtors is found to be the highest for RIL and the lowest for TSL (-16.6%).

In the second sub-period, 13 companies of the 20 selected companies have recorded significant positive growth rate in sundry debtors. In rest of the cases, the results are found to be statistically insignificant. BSIL has recorded highest positive growth rate (695%) whereas ML has recorded lowest growth rate (11.1%) in sundry debtors.

So far as trend break in sundry debtors is concerned, we find significant result in 10 companies out of 20 selected companies. In rest of the companies, there is no significant difference in growth rates of sundry debtors between the two sub-periods as the results are found to be statistically insignificant.

On the whole, it may be stated that majority of the companies have shown significant positive growth rates during the entire period and also in the two sub-periods. The results of kinked exponential trend equation reveal that for 11 companies, there is significant change in growth rate in sundry debtors between the two sub-periods under study. This leads to the rejection of the first hypothesis of the study. Out of these 11 companies (i.e., registering change in growth rate), 7 companies have recorded negative change in growth rate and the remaining four companies have recorded positive growth rate between the two sub periods. In rest of the cases, the results are found to be insignificant. This indicates that financial recession has significant negative impact on the growth rates in sundry debtors between the two sub-periods for most of the companies, negative for 7 and no significant change for as many as 9 companies. But this 'no significant change' between these two sub-periods may be interpreted as negative impact of recession since all these companies experienced statistically significant positive growth rates in the 1st sub-period.

Cash and Bank

Analysis of cash and bank reveals significant positive growth rate for 13 companies out of 20 companies selected for the study which are statistically significant either at 1% or 5%

level .The growth rate (46.8%) in Cash and bank is found to be the highest for ECL, while NSAIL has registered the lowest growth rate (8.5%) in cash and bank during the entire study period.

In terms of sub-period performances, the first sub-period shows significant positive growth rate in cash and bank for 15 companies out of 20 companies. The growth rates in cash and bank is found to be the highest for RIL (108.3%) and the lowest for NSAIL (13.8%).

In the second sub-period, only 4 companies of the 20 selected companies recorded significant positive growth rates in cash and bank. In rest of the cases, the results are found to be statistically insignificant. JSW has recorded the highest positive growth rate (45.1%), whereas ML has recorded the lowest growth rate (-55.8%) in cash and bank. The annual growth rate of -55.8% for ML indicates adverse impact of financial recession on mid decade of 2000 on ML.

So far as trend break in cash and bank is concerned, we find significant result in 6 companies out of 20 selected companies. In rest of the companies, there is no significant difference in growth rates of cash and bank between the two sub periods as the results are found to be statistically insignificant. No significant change in growth rate for some companies may be interpreted as having negative impact on the cash and bank component of current assets of those companies which have experienced positive growth rates during the first sub-period because one can quite reasonably expect statistically significant increase in growth rates during the second sub-period as a logical continuation of the upward (positive) growth rates experienced during the 1st sub-period.

Overall, it may be inferred that majority of the companies have shown significant positive growth rates during the whole period. The results of kinked exponential trend equation reveal that for 6 companies, there is significant change in growth rate in cash and bank between the two sub-periods under study. This leads to the rejection of the first hypothesis of the study. All these companies have recorded negative change in growth rate. In rest of the cases, the results are found to be insignificant. This indicates that financial recession has overall significant negative impact on the growth rate in cash and bank between the two sub-periods.

Loan and Advances

The result of the study reveals significant positive growth rates for 15 companies out of 20 companies and these growth rates are statistically significant either at 1% or 5% level .The growth rate (54.2%) in loan and advances is found to be the highest for RIL, while BSIL has registered the lowest growth rate (5.4%) in loan and advances during the entire study period.

In terms of sub-period performances, the first sub-period shows significant positive growth rate in loan and advances for 12 companies out of 20 companies. The growth rate (93.3%) in loan and advances is found to be the highest for RIL and lowest in case of TIIL (16.4%). In the second sub-period, 11 companies of the 20 selected companies recorded significant growth rates in loan and advances. Of these 11 companies, 7 companies show positive growth rates and 4 company reveal negative growth rates. In other 9 companies, the results are found to be statistically insignificant. SIL has recorded the highest positive growth rate (60.6%), whereas TIIL has recorded the lowest growth rate (-29.9%) in Loan and advances. There are declines in the growth rates in as many as 14 companies. The declines are statistically significant for 8 companies.

So far as trend break in loan and advances is concerned, we find significant results in 9 companies out of 20 selected companies. In rest of the companies, there is no significant difference in growth rates of loan and advances between the two sub periods as the results are found to be statistically insignificant.

On the whole, it may be stated that majority of the companies have shown significant positive growth rates during the whole period as well as in the two sub-periods. The results of kinked exponential trend equation reveal that for 9 companies, there is significant change in growth rate in loan and advances between the two sub-periods, thereby leading to the rejection of the first hypothesis of the study. Out of these 9 companies (i.e., registering change in growth rate), 8 companies have recorded negative change in growth rate and the remaining 1 company has recorded positive growth rate between the two sub periods. In rest of the cases, the results are found to be insignificant. This indicates that financial recession has significant negative impact on the growth rate in loan and advances between the two sub-periods.

Total Current Assets

Analysis of total current assets reveals significant positive growth rates for all the sample companies selected for the study which are statistically significant either at 1% or 5% level .The growth rate (48.8%) in total current assets is found to be the highest for RIL, while TIIL has registered the lowest growth rate (6.0%) in total current assets during the entire study period.

In terms of sub-period performances, the first sub-period shows significant positive growth rate in total current assets for 19 companies out of 20 companies. The growth rate (118.6%) in total current assets is found to be highest for RIL and lowest in case of BSIL (8.20%).

In the second sub-period, 15 companies of the 20 selected companies have recorded significant growth rate in total current assets. In rest of the companies, the results are found to be statistically insignificant. JSW has recorded highest positive growth rate (30.4%), whereas SAL has recorded lowest growth rate (-8.50%) in total current assets.

So far as trend break in total current assets is concerned, we find significant result in 10 companies out of 20 selected companies. For other companies, there is no significant difference in growth rates of total current assets between the two sub periods as the results are found to be statistically insignificant.

In general, it may be inferred that majority of the companies selected in the study have shown significant positive growth rates during the whole period as well as in the two sub-periods. The results of kinked exponential trend equation reveal that for 10 companies, there is significant change in growth rate in total current assets between the two sub-periods under study. This leads to the rejection of the first hypothesis of the study. All these companies have recorded fall in growth rates between the two sub periods. For other companies, the results are found to be insignificant. This indicates that financial recession has significant adverse impact on the growth rate in total current assets between the two sub-periods.

Sundry Creditors

Analysis of sundry creditors reveals significant positive growth rate for 18 companies out of 20 companies selected in the study, the growth rates being statistically significant either

at 1% or 5% level. The growth rate (54.6%) in sundry creditors is found to be the highest for WCL, and the lowest for KSL (8.4%) in during the entire study period.

In terms of sub-period performances, the first sub-period shows significant positive growth rate in sundry creditors for 11 companies out of 20 companies. The growth rate (62.2%) in sundry creditors is found to be the highest for WCL and the lowest in case of MUSCO (10.4%).

In the second sub-period, 14 companies of the 20 selected companies have recorded significant growth rate in net working capital. In rest of the cases, the results are found to be statistically insignificant. WCL has recorded the highest positive growth rate (46.0%) and ML has recorded the lowest growth rate (-10.1%) in sundry creditors.

In terms of trend break in sundry creditors, we find significant result in 6 companies out of 20 selected companies. In rest of the companies, there is no significant difference in growth rates of sundry creditors between the two sub periods as the results are found to be statistically insignificant.

Therefore, it may be stated that majority of the companies have shown significant positive growth rates during the whole period as well as in the two sub-periods. The results of kinked exponential trend equation reveal that for 6 companies, there is significant change in growth rate in sundry creditors between the two sub-periods, thereby leading to the rejection of the first hypothesis of the study. Out of these 6 companies (i.e., registering change in growth rate), 3 companies have recorded negative change in growth rate and the remaining three companies recorded positive growth rate between the two sub periods. In rest of the cases, the results are found to be insignificant. This indicates that financial recession has significant negative impact on the growth rate in sundry creditors between the two sub-periods.

Provisions

A look into the analysis of provisions reveals significant positive growth rate for 12 companies out of 20 companies selected in the study which are statistically significant either at 1% or 5% level of significance .The growth rate (725%) in provisions is found to be the highest for JSW, while SAIL and TSL have registered a lowest growth rate (5.4%) in Provisions during the entire study period.

In terms of sub-period performances, the 1st sub-period shows significant positive growth rate in provisions for 14 companies and significant negative growth rate for 1 company out of 20 companies selected in the study. The growth rate (133%) in provisions is found to be the highest for JSW and the lowest for TSL (-18.5%). For rest of the 5 companies the results are found to be statistically insignificant.

In the second sub-period, 8 companies of the 20 selected companies recorded significant growth rate in provisions. In rest of the cases, the results are found to be statistically insignificant. WCL has recorded highest positive growth rate (29.7%) and TIIL the lowest growth rate (-28.1%) in provisions.

So far as trend break in provisions is concerned, we found significant negative result in 14 companies out of 20 selected companies. In rest of the companies, there is no significant difference in growth rates of provisions between the two sub periods as the results are found to be statistically insignificant.

From the above analysis, it may be stated that majority of the companies have shown significant positive growth rates during the whole period as well as in the 1st sub-period. The results of kinked exponential trend equation reveal that for 14 companies, there is significant negative change in growth rate in provisions between the two sub-periods under study. This leads to the rejection of the first hypothesis of the study. In rest of the cases, the results are found to be insignificant. This indicates that financial recession has significant negative impact on the growth rate in provisions between the two sub-periods.

Total Current Liabilities

All the 20 companies have experienced significant positive growth rates in total current liabilities which are statistically significant either at 1% or 5% level .The growth rates varied between 55.4% (for RIL) and 8.3% (for TIIL and SAL).

In terms of sub-period performances, the first sub-period shows significant positive growth rate in total current liabilities for 17 companies out of 20 companies with RIL registering the highest growth rate of 129% and ML the lowest growth rate of 8.1%.

In the second sub-period, 12 companies of the 20 selected companies have recorded significant growth rate in total current liabilities. The results are found to be statistically

insignificant in rest of the cases. JSW has recorded the highest positive growth rate (35.2%) and ML the lowest growth rate (-12.1%) in total current liabilities.

So far as trend break in total current liabilities is concerned, we found significant negative result in 7 companies out of 20 selected companies. No significant difference in growth rates of total current liabilities between the two sub periods is observed for the remaining companies.

These results therefore indicate that majority of the companies have experienced significant positive growth rates during the whole period as well as in the two sub-periods. The results of kinked exponential trend equation reveal that for 7 companies, there is significant negative change in growth rate in total current liabilities between the two sub-periods, thereby leading to the rejection of the first hypothesis of the study. This indicates that financial recession has significant negative impact on the growth rate in total current liabilities between the two sub-periods.

Net Working Capital

As far as net working capital is concerned, significant positive growth rates are observed for 12 companies out of 20 companies selected in the study which are statistically significant either at 1% or 5% level .The growth rate (30.6%) in net working capital is found to be the highest for MIL, while BSIL has registered the lowest growth rate (3.1%) in net working capital during the entire study period.

In terms of sub-period performances, the first sub-period shows significant positive growth rate in net working capital for 11 companies out of 20 companies. The growth rate (49.4%) in net working capital is found to be highest for MSL and lowest in case of ML (10.1%).

In the second sub-period, 9 companies of the 20 selected companies have recorded significant growth rate in net working capital. In rest of the cases, the results are found to be statistically insignificant. BSL has recorded highest positive growth rate (29.2%), whereas ML has recorded lowest growth rate (-44.3%) in net working capital.

So far as trend break in net working capital is concerned, we find significant result in 7 companies out of 20 selected companies. In rest of the companies, there is no significant difference in growth rates of net working capital between the two sub periods as the results are found to be statistically insignificant.

From the above analysis, it may be stated that majority of the companies have shown significant positive growth rates during the whole period as well as in the 1st sub-period. The results of kinked exponential trend equation reveal that for 7 companies, there is significant change in growth rate in net working capital between the two sub-periods. This leads to the rejection of the first hypothesis of the study. Out of these 7 companies (i.e., registering change in growth rate), 6 companies have recorded negative change in growth rate and the remaining 1 company has recorded positive growth rate between the two sub periods. In rest of the cases, the results are found to be insignificant. This indicates that financial recession has significant negative impact on the growth rate in net working capital between the two sub-period performances.

Table: 5.1 Trend Growth Analysis of Components of Working Capital												
Components/ Companies	**Inventory**				**Sundry Debtors**				**Cash and Bank**			
	Whole Period	**1st half Period**	**2nd half Period**	**Trend Break**	**Whole Period**	**1st half Period**	**2nd half Period**	**Trend Break**	**Whole Period**	**1st half Period**	**2nd half Period**	**Trend Break**
BSL	.287***	.265***	.308***	.043[i]	.121***	.116*	.125**	.009[i]	.257***	.295[i]	.220[i]	-.075[i]
BSIL	.097***	.020[Ii]	.174***	.154**	.183***	2.131[i]	6.959***	4.828[i]	.276***	.321***	.231**	-.090[i]
ECL	.178***	.241***	.115***	-.126**	.099***	.174***	.023[i]	-.151**	.468***	.710**	.224[i]	-.486[i]
S A I L	.125***	.078[i]	.172***	.094[i]	.110***	.064***	.156***	.092**	.346***	.655***	.036[i]	-.619***
TSL	.152***	.172***	.132***	-.040[i]	-.062**	-.166***	.040[i]	.206**	.304***	.260[i]	.347[i]	.087[i]
ES	.219***	.238***	.199***	-.038[i]	.020[i]	.007[i]	.033[i]	.026[i]	.290***	.440***	.139[i]	-.301[i]
NSAIL	.168**	.297***	.039[i]	-.258***	.170***	.228***	.113***	-0.115	.085***	.138**	.030[i]	-.108[i]
WCL	.399***	0.608***	.190[i]	-.418**	.281***	.376***	.184**	-.192[i]	.393***	.644***	.142[i]	-.502**
UGSL	.217***	.281***	.153**	-.128[i]	.270***	.218***	.322***	.104[i]	.361***	.763***	-.042[i]	-.805**
ML	.154***	.141***	.166***	.025[i]	.100***	.090***	.110***	.020[i]	.196**	.411**	-.019[i]	-.430[i]
TIIL	.144***	.124***	.165***	.041[i]	.051***	0.011[i]	0.079[i]	.090***	-.048[i]	-.09[i]	-.007[i]	.083[i]
RIL	.177[i]	.649***	-.347**	-.996***	.324***	.506***	.082[i]	-.424**	.340[i]	1.083***	-.404[i]	-1.487**
MSL	.273***	.361***	.185***	-.176***	.247***	.381***	.112**	-.269***	.302[i]	1.065***	-.462[i]	-1.528**
SAL	.111***	.273***	-.050[i]	-.323***	.026[i]	-.046[i]	.098[i]	.144[i]	-.128[i]	.309**	-.558***	-.868***
MIL	.343***	.533***	.152***	-.381[i]	.260***	.446***	.074[i]	-.372***	.423***	.584***	.254[i]	-.330[i]
SISCL	.172***	.192***	-.040[i]	.232***	.065**	-.087**	.217***	.304***	.191***	.177***	.202***	.025[i]
SIL	.252***	.394***	.110***	-.284***	.235***	.281***	.189***	-.092[i]	.152[i]	.457***	-.153[i]	-.61**
MUSCO	.134***	.197***	.071***	-.126***	.179***	.239***	.119***	-.120**	-.011[i]	.067[i]	-.090[i]	-.157[i]
KSL	.239***	.385***	.094[i]	-.291**	.061**	.008[i]	.113**	.105[i]	.095[i]	.001[i]	.189[i]	.188[i]
JSW	.318***	.323***	.312***	-.011[i]	.115***	-.050[i]	.281***	-.331***	.426***	.392***	.451***	.059[i]

*** marked values indicates significant at 1 % level (2- tailed), ** marked values indicates significant at 5 % level (2- tailed), i marked values indicates insignificants results, Whole Period: 2000-2001 to 2011-2012; 1st half Period: 2000-2001 to 2006- 2007; 2nd half Period: 2007- 2008 to 2011-12

Table: 5.1 (cont.) Trend Growth Analysis of Components of Working Capital												
Components/ Companies	**Loans and Advances**				**Total Current Assets**				**Sundry Creditors**			
	Whole Period	**1st half Period**	**2nd half Period**	**Trend Break**	**Whole Period**	**1st half Period**	**2nd half Period**	**Trend Break**	**Whole Period**	**1st half Period**	**2nd half Period**	**Trend Break**
BSL	.324***	.474***	.167**	-.307**	.239***	.233***	.244***	.011[i]	.252***	.382***	.117**	-.265***
BSIL	.054**	.032[i]	.075[i]	.043[i]	.112***	.082**	.142***	.060[i]	.349***	.398***	.292**	-.106[i]
ECL	.220***	.288***	.148[i]	-.140[i]	.162***	.244***	.079**	-.165***	.249***	.099[i]	.393**	.294***
S A I L	.110***	.060[i]	.157***	.097[i]	.172***	.210***	.135**	-.075[i]	.112***	.073[i]	.149***	.076[i]
TSL	.213**	.362[i]	.061[i]	-.301[i]	.179***	.255**	.104[i]	-.151[i]	.124***	.118***	.127***	.009[i]
ES	.124***	.012[i]	.231***	.219***	.158***	.125***	.190***	.065[i]	.130***	0.037[i]	.218***	.181[i]
NSAIL	.164***	.298***	.027[i]	-.271[i]	.160***	.260***	.060***	-.200***	.176***	.277***	.072***	-.205***
WCL	.355***	.454***	.246***	-.208[i]	.348***	.514***	.187**	-.326***	.546***	.622***	.460***	-.162[i]
UGSL	0.261***	.465***	.053[i]	-.412***	.243***	.352***	.134***	-.218***	.182**	.230[i]	.134[i]	-.096[i]
ML	-.030[i]	.035[i]	-.094**	-.129[I]	.092***	.095***	.089***	-.006[i]	.105***	.016[i]	.190***	.174**
TIIL	-.070[i]	.164***	-.299***	-.463***	.060***	.070[i]	.049**	-.021[i]	.130***	.121***	.136***	.015[i]
RIL	.542***	.933***	.149[i]	-.784**	.488**	1.186***	-.210[i]	-1.396**	.217**	.384[i]	.049[i]	-.335[i]
MSL	.209***	.109[i]	.303**	.194[i]	.260***	.425***	.095[i]	-.330***	.192***	.179**	.199**	.022[i]
SAL	.067[i]	.381***	-.248***	-.629***	.065**	.215***	-.085***	-.300**	-.005[i]	.130[i]	-.135[i]	-.265[i]
MIL	.345***	.522***	.161[i]	.361[i]	.320***	.518***	.121[i]	-.397***	.329***	.603***	.04[i]	-.563[i]
SISCL	.179*	.334***	.019[i]	-.315***	.142***	.138***	.146***	.008[i]	.035[i]	.035[i]	.034[i]	-.001[i]
SIL	.441***	.261[i]	.606***	.345[i]	.257***	.354***	.159***	-.195**	.205***	.315***	.093[i]	-.222[i]
MUSCO	.081[i]	.151[i]	.009[i]	-.142***	.148***	.215***	.082***	-.133***	0.096***	.104***	.087***	-.017[i]
KSL	.061[i]	.358***	-.237***	-.595***	.096***	.184***	.007[i]	-0.177	.084**	.274***	-.108**	-.382***
JSW	.289***	.331**	.241**	-.090[i]	.289***	.331**	.241**	-.090[i]	.213***	.031[i]	.387***	.356***

*** marked values indicates significant at 1 % level (2- tailed), ** marked values indicates significant at 5 % level (2- tailed), i marked values indicates insignificants results, Whole Period: 2000-2001 to 2011-2012; 1st half Period: 2000-2001 to 2006- 2007; 2nd half Period: 2007- 2008 to 2011-12

Table: 5.1 (cont.) Trend Growth Analysis of Components of Working Capital												
Components/ Companies	**Provisions**				**Total Current Liabilities**				**Net working Capital**			
	Whole Period	**1st half Period**	**2nd half Period**	**Trend Break**	**Whole Period**	**1st half Period**	**2nd half Period**	**Trend Break**	**Whole Period**	**1st half Period**	**2nd half Period**	**Trend Break**
BSL	.232***	.159**	.297***	.138[i]	.271***	.365***	.166***	-.199**	.219***	.145***	.292***	.147**
BSIL	.004[i]	.008***	-.007**	-.015***	.266***	.314***	.228***	-.086[i]	.031**	.004[i]	.059[i]	.055[i]
ECL	.237***	.184**	.282***	.098[i]	.174***	.196***	.152***	-.044[i]	.155***	.262***	.047[i]	-.215**
S A I L	.054***	.281***	-.171**	-.452***	.085***	.120***	051[i]	-.069[i]	.440[i]	.424[i]	.455[i]	.031[i]
TSL	.054***	.185***	-.078[i]	-.263***	.128***	.143***	.113***	-.030[i]	.231[i]	.204[i]	.259[i]	.055[i]
ES	.479***	.160[i]	-.271**	-.431**	.116***	.023[i]	.209**	.186[i]	.303[i]	.558[i]	.049[i]	-.509[i]
NSAIL	.143***	.520***	-.234[i]	-.754**	.174***	.282***	.067***	-.215***	.143***	.235***	.050**	-.186***
WCL	.587***	.932***	.232***	-.700***	.396***	.626***	.166[i]	-.460**	.281***	.363***	.200**	-.163[i]
UGSL	.038[i]	.098[i]	-.124[i]	-.222[i]	.252***	.331***	.174***	-.157***	.141[i]	.385**	-.104[i]	-.489[i]
ML	-.094[i]	.183[i]	-.369[i]	-.552[i]	.101***	.081***	.122***	.041[i]	.086***	.101***	.070***	-.031[i]
TIIL	.071[i]	.145[i]	-.281**	-.426**	.083***	.122***	.044[i]	-.078[i]	.024[i]	-.002[i]	.049[i]	.051[i]
RIL	.387***	.023***	-.004[i]	-.027**	.554**	1.296***	-.189[i]	-1.485**	-.106[i]	.705[i]	-.917[i]	-1.622[i]
MSL	.156***	.209**	.098[i]	-.111[i]	.196***	.236***	.156**	-.080[i]	.287***	.494***	.080[i]	-.414***
SAL	.043[i]	.248**	-.159[i]	-.407**	.083**	.161[i]	.004[i]	-.157[i]	-.087[i]	.270[i]	-.443**	-.713**
MIL	.219[i]	.696***	-.259[i]	-.955**	.313***	.602***	.023[i]	-.579**	.306***	.422***	.190**	-.232[i]
SISCL	.183***	.427***	-.063[i]	-.490***	.102***	.122[i]	.081[i]	-.042[i]	.166***	.151***	.181***	.030[i]
SIL	.332***	.468***	.189***	-.279**	.213***	.326***	.100[i]	-.226[i]	.276***	.365***	.187***	-.178***
MUSCO	.003[i]	.185[i]	-.183[i]	-.368[i]	.148***	.171***	.125***	-.046[i]	.145***	.268***	.021[i]	-.247***
KSL	.187[i]	.678***	-.308[i]	-.986***	.093**	.307***	-.121***	-.428***	.094***	.067[i]	.122**	.055[i]
JSW	7.250***	1.330***	-.039[i]	-1.369***	.274***	.195***	.352***	.157[i]	-.094[i]	-.122[i]	-.066[i]	.056[i]

*** marked values indicates significant at 1 % level (2- tailed), ** marked values indicates significant at 5 % level (2- tailed), i marked values indicates insignificants results, Whole Period: 2000-2001 to 2011-2012; 1st half Period: 2000-2001 to 2006- 2007; 2nd half Period: 2007- 2008 to 2011-12

Table: 5.2 Trend Growth Analysis of Inventories for the entire Study Period (2000-01 to 2011-12)					
Company	a	b	R^2	F	AGR (%)
BSL	6.567*** (135.264)	.287*** (20.372)	.976	415.038***	28.7
BSIL	3.977*** (67.044)	.097*** (5.633)	.760	31.727***	9.7
ECL	5.451*** (114.963)	.178*** (12.996)	.944	168.890***	17.8
SAIL	8.735*** (148.554)	.125*** (7.317)	.843	53.538***	12.5
TSL	7.643*** (280.315)	.152*** (19.238)	.974	370.108***	15.2
ES	7.279*** (109.646)	.219*** (11.376)	.928	129.414***	21.9
NSAIL	5.556*** (68.822)	.168** (7.178)	.837	51.527***	16.8
WCL	5.919*** (35.445)	.399*** (8.245)	.872	67.976***	39.9
UGSL	5.999*** (71.318)	.217*** (8.892)	.888	79.068***	21.7
ML	6.098*** (177.091)	.154*** (15.408)	.960	237.415***	15.4
TIIL	5.198*** (137.465)	.144*** (13.130)	.945	172.399***	14.4
RIL	4.611*** (13.263)	.177[i] (1.761)	.237	3.100[i]	17.7
MSL	5.259*** (81.487)	.273*** (14.612)	.955	213.504***	27.3
SAL	4.880*** (47.338)	.111*** (3.726)	.581	13.880***	11.1
MIL	4.405*** (23.413)	.343*** (6.292)	.798	39.591***	34.3
SISCL	4.966*** (113.672)	.172*** (13.630)	.949	185.768***	17.2
SIL	4.471*** (51.739)	.252*** (10.072)	.910	101.453***	25.2
MUSCO	4.572*** (97.823)	.134*** (9.928)	.908	98.564***	13.4
KSL	4.191*** (36.167)	.239*** (7.128)	.836	50.809***	23.9
JSW	6.832 (140.737)	.318*** (22.588)	.981	510.203***	31.8

*** marked values indicate significant at 1 % level (2- tailed),** marked values indicate significant at 5 % level (2- tailed), i marked values indicate insignificants results,
AGR= Annual Growth rate (Beta coefficient has been multiplied by 100 to arrive at AGR)

Table: 5.3 Trend Growth Analysis of Sundry Debtors for the entire Study Period (2000-01 to 2011-12)					
	a	b	R^2	F	AGR (%)
BSL	6.120*** (101.849)	.121*** (6.949)	.828	48.248***	12.1
BSIL	2.996*** (25.362)	.183*** (5.351)	.741	28.362	18.3
ECL	5.928*** (100.349)	.099*** (5.782)	.770	33.432***	9.9
SAIL	7.772*** (217.372)	.110*** (10.623)	.919	112.850***	11.0
TSL	6.523*** (79.174)	-.062** (-2.616)	.406	6.846**	-6.2
ES	6.108*** (88.553)	.020[i] (.999)	.091	.999[i]	2.0
NSAIL	5.062*** (101.189)	.170*** (11.741)	.932	137.862***	17.0
WCL	5.724*** (56.252)	.281*** (9.523)	.901	90.696***	28.1
UGSL	5.043*** (52.874)	.270*** (9.769)	.905	95.435***	27.0
ML	6.242*** (328.462)	.100*** (18.255)	.971	333.246***	10.0
TIIL	5.615*** (137.431)	.051*** (4.290)	.648	18.400***	5.1
RIL	5.149*** (24.773)	.324*** (5.386)	.744	29.010***	32.4
MSL	4.796*** (52.239)	.247*** (9.270)	.896	85.939***	24.7
SAL	4.312*** (41.592)	.026[i] (.878)	.072	.771[i]	2.6
MIL	4.815*** (32.348)	.260*** (6.027)	.784	36.320***	26.0
SISCL	4.363*** (47.612)	.065** (2.455)	.376	6.027**	6.5
SIL	4.681*** (62.605)	.235*** (10.847)	.922	117.655***	23.5
MUSCO	4.837*** (106.134)	.179*** (13.587)	.949	184.618***	17.9
KSL	5.027*** (75.060)	.061** (3.132)	.495	9.812**	6.1
JSW	5.953*** (58.338)	.115*** (3.898)	.603	15.193***	11.5

*** marked values indicate significant at 1 % level (2- tailed),** marked values indicate significant at 5 % level (2- tailed), i marked values indicate insignificants results,
AGR= Annual Growth rate (Beta coefficient has been multiplied by 100 to arrive at AGR)

Table: 5.4 Trend Growth Analysis of Cash & Bank for the entire Study Period (2000-01 to 2011-12)					
Company	a	b	R^2	F	AGR (%)
BSL	3.682*** (17.310)	.257*** (4.177)	.636	17.443***	25.7
BSIL	.898*** (8.093)	.276*** (8.589)	.881	73.772***	27.6
ECL	3.537*** (12.604)	.468*** (5.752)	.768	33.084***	46.8
SAIL	8.409*** (37.286)	.346*** (5.293)	.737	28.021***	34.6
TSL	6.719*** (27.046)	.304*** (4.218)	.640	17.788***	30.4
ES	5.664*** (32.460)	.290*** (5.739)	.767	32.938***	29.0
NSAIL	3.583*** (42.414)	.085*** (3.455)	.544	11.934***	8.5
WCL	5.100*** (24.591)	.393*** (6.537)	.810	42.731***	39.3
UGSL	3.618*** (11.609)	.361*** (3.996)	.615	15.966***	9.98
ML	2.663*** (11.944)	.196** (3.034)	.479	9.204**	7.36
TIIL	3.248*** (15.088)	-.048[i] (-.775)	.057	0.600[i]	-1.48
RIL	1.873*** (3.411)	.340[i] (2.135)	.313	4.557[i]	18.15
MSL	2.733*** (4.818)	.302[i] (1.836)	.252	3.371[i]	11.05
SAL	2.757*** (11.083)	-.128[i] (1.763)	.237	3.107[i]	-4.64
MIL	3.618*** (13.530)	.423*** (5.394)	.744	29.097***	11.69
SISCL	2.750*** (104.909)	.191*** (24.898)	.984	619.907***	6.95
SIL	2.405*** (9.643)	.152[i] (2.083)	.303	4.338[i]	6.32
MUSCO	-1.341** (-2.815)	-.011[i] (-.063)	.001	.007[i]	0.67
KSL	2.057*** (12.969)	.095[i] (2.037)	.293	4.149[i]	4.62
JSW	5.201*** (40.892)	.426*** (11.432)	.929	130.680***	8.19

*** marked values indicate significant at 1 % level (2- tailed),** marked values indicate significant at 5 % level (2- tailed), i marked values indicate insignificants results,
AGR= Annual Growth rate (Beta coefficient has been multiplied by 100 to arrive at AGR)

Table: 5.5 Trend Growth Analysis of Loan and Advances for the entire Study Period (2000-01 to 2011-12)					
	a	b	R^2	F	AGR (%)
BSL	5.404*** (45.323)	.324*** (9.276)	.896	86.053***	32.4
BSIL	2.614*** (32.349)	.054** (2.298)	.346	5.281**	5.4
ECL	4.772*** (29.483)	.220*** (4.639)	.683	21.521***	22.0
SAIL	7.671*** (134.496)	.110*** (6.599)	.813	43.550***	11.0
TSL	7.756*** (29.442)	.213** (2.764)	.433	7.639**	21.3
ES	7.200*** (91.624)	.124*** (5.366)	.742	28.791***	12.4
NSAIL	3.478*** (25.003)	.164*** (4.030)	.619	16.238***	16.4
WCL	4.985*** (33.471)	.355*** (8.125)	.868	66.022	35.5
UGSL	5.373*** (41.758)	.261*** (6.911)	.827	47.761***	26.1
ML	5.773 (89.886)	-.030[i] (-1.588)	.205	2.582[i]	-3.0
TIIL	4.706*** (35.345)	-.070[i] (-1.785)	.242	3.186[i]	-7.0
RIL	2.844*** (8.248)	.542*** (5.363)	.742	28.762***	54.2
MSL	3.854*** (25.648)	.209*** (4.745)	.692	22.512***	20.9
SAL	4.415 (23.249)	.067[i] (1.200)	.126	1.439[i]	6.7
MIL	4.208*** (19.208)	.345*** (5.338)	.740	28.497***	34.5
SISCL	4.223*** (30.673)	.179** (4.426)	.662	19.585***	17.9
SIL	2.736*** (7.768)	.441*** (4.270)	.646	18.232***	44.1
MUSCO	3.142*** (25.163)	.081[i] (2.215)	.329	4.908***	8.1
KSL	4.493*** (21.781)	.061[i] (1.009)	.092	1.036[i]	6.1
JSW	6.623*** (57.839)	.289*** (8.619)	.881	74.263***	28.9

*** marked values indicate significant at 1 % level (2- tailed),** marked values indicate significant at 5 % level (2- tailed), i marked values indicate insignificants results,
AGR= Annual Growth rate (Beta coefficient has been multiplied by 100 to arrive at AGR)

Table: 5. 6 Trend Growth Analysis of Total Current Assets for the entire Study Period (2000-01 to 2011-12)					
Company	a	b	R^2	F	AGR (%)
BSL	7.328*** (297.511)	.239*** (33.431)	.991	1117.664***	23.9
BSIL	4.547*** (111.844)	.112*** (9.484)	.900	89.941***	11.2
ECL	6.714*** (110.173)	.162*** (9.153)	.893	83.785***	16.2
SAIL	9.746*** (137.290)	.172*** (8.348)	.875	68.692***	17.2
TSL	8.887*** (58.093)	.179*** (3.911)	.605	15.293***	17.9
ES	8.228*** (144.638)	.158*** (9.585)	.902	91.863***	15.8
NSAIL	6.198*** (102.826)	.160*** (9.167)	.894	84.033***	16.0
WCL	6.948*** (52.077)	.348*** (9.017)	.880	81.298***	34.8
UGSL	6.762*** (103.317)	.243*** (12.817)	.943	164.271***	24.3
ML	7.239*** (370.885)	.092*** (16.239)	.963	263.712***	9.2
TIIL	6.442*** (208.789)	.060*** (6.676)	.817	44.570***	6.0
RIL	5.335*** (9.207)	.488** (2.908)	.458	8.457**	48.8
MSL	6.047*** (54.371)	.260*** (8.041)	.866	64.666***	26.0
SAL	5.788*** (66.861)	.065** (2.600)	.403	6.758**	6.5
MIL	5.836*** (41.584)	.320*** (7.862)	.861	61.185***	32.0
SISCL	5.769*** (128.447)	.142*** (10.928)	.923	119.422**	14.2
SIL	5.492*** (74.702)	.257*** (12.050)	.936	145.201***	25.7
MUSCO	5.559*** (116.167)	.148*** (10.691)	.920	114.290***	14.8
KSL	5.826*** (75.991)	.096*** (4.309)	.650	18.568***	9.6
JSW	7.796*** (149.677)	.275*** (18.215)	.971	331.785***	27.5

*** marked values indicate significant at 1 % level (2- tailed),** marked values indicate significant at 5 % level (2- tailed), i marked values indicate insignificants results,
AGR= Annual Growth rate (Beta coefficient has been multiplied by 100 to arrive at AGR)

Table: 5.7 Trend Growth Analysis of Sundry Creditors for the entire Study Period (2000-01 to 2011-12)					
Company	a	b	R^2	F	AGR (%)
BSL	6.265*** (66.112)	.252*** (9.075)	.892	82.351***	25.2
BSIL	2.644*** (18.847)	.349*** (8.480)	.878	71.903***	34.9
ECL	5.034*** (24.630)	.249*** (4.166)	.634	17.353***	24.9
SAIL	7.929*** (143.954)	.112*** (6.968)	.829	48.555***	11.2
TSL	7.921*** (475.862)	.124*** (25.498)	.985	650.163***	12.4
ES	7.035*** (69.619)	.130*** (4.382)	.658	19.200***	13.0
NSAIL	5.525*** (84.430)	.176*** (9.182)	.894	84.304***	17.6
WCL	4.961*** (37.378)	.546*** (14.037)	.952	197.031***	54.6
UGSL	4.989*** (23.224)	.182** (2.893)	.456	8.369**	18.2
ML	5.632*** (75.350)	.105*** (4.795)	.697	22.994***	10.5
TIIL	5.398*** (110.108)	.130*** (9.022)	.891	81.394***	13.0
RIL	3.850*** (12.284)	.217** (2.363)	.358	5.583**	21.7
MSL	3.879*** (34.834)	.192*** (5.886)	.776	34.834***	19.2
SAL	4.738*** (36.027)	-.005[i] (-.120)	.001	.014[i]	-0.5
MIL	4.759*** (18.603)	.329*** (4.394)	.659	19.311***	32.9
SISCL	3.253*** (17.464)	.035[i] (.648)	.04	.419[i]	3.5
SIL	4.277*** (34.628)	.205*** (5.677)	.763	32.223***	20.5
MUSCO	4.410*** (165.648)	.096*** (12.317)	.938	151.716**	9.6
KSL	4.626*** (38.124)	.084** (2.355)	.357	5.547**	8.4
JSW	6.836*** (62.136)	.213*** (6.593)	.813	43.470***	21.3

*** marked values indicate significant at 1 % level (2- tailed),** marked values indicate significant at 5 % level (2- tailed), i marked values indicate insignificants results, AGR= Annual Growth rate (Beta coefficient has been multiplied by 100 to arrive at AGR)

Table: 5.8 Trend Growth Analysis of Provision for the entire Study Period (2000-01 to 2011-12)					
Company	a	b	R^2	F	AGR (%)
BSL	2.702*** (34.134)	.232*** (9.995)	.909	99.908***	23.2
BSIL	1.760*** (40.113)	.004[i] (0.281)	.009	.092[i]	4.0
ECL	3.742*** (42.126)	.237*** (9.096)	.892	82.746***	23.7
SAIL	8.334*** (56.715)	.054*** (1.262)	.137	1.594[i]	5.4
TSL	7.744*** (86.228)	.054*** (2.040)	.294	4.161[i]	5.4
ES	3.736*** (21.744)	.479*** (9.512)	.900	90.472***	47.9
NSAIL	1.478*** (4.932)	.143*** (1.633)	.211	2.668***	14.3
WCL	2.789*** (13.011)	.587*** (9.358)	.898	87.573***	58.7
UGSL	2.686*** (13.127)	.038[i] (.637)	.039	.405[i]	3.8
ML	5.212*** (14.800)	-.094[i] (-.914)	.077	.836[i]	-9.4
TIIL	4.263*** (23.998)	-.071[i] (-1.358)	.156	1.846[i]	-7.1
RIL	.541[i] (1.389)	.387*** (3.392)	.535	11.508**	38.7
MSL	3.804*** (29.590)	.156*** (4.143)	.632	17.162***	15.6
SAL	.781*** (4.953)	.043[i] (.939)	.081	.881[i]	4.3
MIL	4.528*** (11.723)	.219i (1.938)	.293	3.757[i]	21.9
SISCL	3.784*** (22.647)	.183*** (3.749)	.584	14.052***	18.3
SIL	1.439*** (13.085)	.332*** (10.289)	.914	105.860***	33.2
MUSCO	4.208*** (22.412)	.003[i] (-.005)	.005	.004[i]	0.3
KSL	2.691*** (7.931)	.187[i] (1.885)	.262	3.554[i]	18.7
JSW	3.516*** (7.250)	7.250*** (4.577)	.677	20.946***	725

*** marked values indicate significant at 1 % level (2- tailed),** marked values indicate significant at 5 % level (2- tailed), i marked values indicate insignificants results, AGR= Annual Growth rate (Beta coefficient has been multiplied by 100 to arrive at AGR)

Table: 5.9 Trend Growth Analysis of Total Current Liabilities for the entire Study Period (2000-01 to 2011-12)					
Company	a	b	R^2	F	AGR (%)
BSL	3.383*** (41.286)	.271*** (11.429)	.929	130.619***	27.1
BSIL	6.379*** (77.759)	.266*** (11.175)	.926	124.871***	26.6
ECL	5.387*** (116.855)	.174*** (13.023)	.944	169.586***	17.4
SAIL	9.300*** (235.735)	.085*** (7.466)	.848	55.735***	8.5
TSL	8.701*** (313.983)	.128*** (15.985)	.962	255.570***	12.8
ES	7.871*** (66.015)	.116*** (3.348)	.529	11.212***	11.6
NSAIL	5.805*** (86.878)	.174*** (9.332)	.897	87.081***	17.4
WCL	6.432*** (35.209)	.396*** (7.480)	.848	55.950***	39.6
UGSL	6.579*** (96.532)	.252*** (12.775)	.942	163.200***	25.2
ML	6.250*** (171.111)	.101*** (9.580)	.902	91.770***	10.1
TIIL	5.993*** (127.807)	.083*** (6.100)	.788	37.211***	8.3
RIL	4.400*** (6.670)	.554** (2.897)	.456	8.391**	55.4
MSL	4.573*** (60.786)	.196*** (8.979)	.890	80.617***	19.6
SAL	5.804*** (42.857)	.083** (2.409)	.367	5.804**	8.3
MIL	5.078*** (22.722)	.313*** (4.827)	.700	23.299***	31.3
SISCL	4.796 (58.219)	.102*** (4.253)	.644	18.104***	10.2
SIL	4.357*** (35.963)	.213*** (6.069)	.786	36.832***	21.3
MUSCO	4.984*** (164.175)	.148*** (16.869)	.966	284.552***	14.8
KSL	5.099*** (37.219)	.093** (2.344)	.353	5.493**	9.3
JSW	7.909*** (105.234)	.274*** (12.576)	.941	158.164***	27.4

*** marked values indicate significant at 1 % level (2- tailed),** marked values indicate significant at 5 % level (2- tailed), i marked values indicate insignificants results,
AGR= Annual Growth rate (Beta coefficient has been multiplied by 100 to arrive at AGR)

Table: 5.10 Trend Growth Analysis of Net Working Capital for the entire Study Period (2000-01 to 2011-12)					
Company	a	b	R^2	F	AGR (%)
BSL	6.799*** (109.865)	.219*** (12.190)	.937	148.589***	21.9
BSIL	4.049*** (93.993)	.031** (2.516)	.388	6.329**	3.1
ECL	6.391*** (75.604)	.155*** (6.315)	.799	39.875***	15.5
SAIL	8.054*** (11.489)	.440[i] (2.164)	.319	4.684[i]	44.0
TSL	7.238*** (11.906)	.231[i] (1.314)	.147	1.726[i]	23.1
ES	7.197*** (14.897)	.303[i] (2.168)	.320	4.701[i]	30.3
NSAIL	5.389*** (91.827)	.143*** (8.384)	.875	70.289***	14.3
WCL	5.905*** (50.297)	.281*** (8.272)	.872	68.422***	28.1
UGSL	4.655*** (18.198)	.141[i] (1.897)	.265	3.598[i]	14.1
ML	6.768*** (219.687)	.086*** (9.595)	.902	92.056***	8.6
TIIL	5.396*** (124.952)	.024[i] (1.885)	.262	3.553[i]	2.4
RIL	4.802*** (6.235)	-.106[i] (-.475)	.022	.226[i]	-10.6
MSL	5.754*** (42.462)	.287*** (7.304)	.842	53.355***	28.7
SAL	5.201*** (16.189)	-.087[i] (-.932)	.080	.869[i]	-8.7
MIL	5.067*** (36.380)	.306*** (7.589)	.852	57.589***	30.6
SISCL	5.273*** (138.004)	.166*** (15.007)	.957	225.202***	16.6
SIL	5.083*** (82.387)	.276*** (15.439)	.960	238.353***	27.6
MUSCO	4.715*** (54.817)	.145*** (5.811)	.772	33.772***	14.5
KSL	5.106*** (65.989)	.094*** (4.215)	.640	17.768***	9.4
JSW	7.567*** (24.069)	-.094[i] (-1.030)	.096	1.061[i]	-9.4

*** marked values indicate significant at 1 % level (2- tailed),** marked values indicate significant at 5 % level (2- tailed), i marked values indicate insignificants results, AGR= Annual Growth rate (Beta coefficient has been multiplied by 100 to arrive at AGR)

Table: 5.2A Kinked Exponential Trend Break of Inventories						
Company	**a**	**D_1**	**D_2**	**D_2'**	**R^2**	**F**
BSL	6.501***	.265***	.308***	.043[i]	.978	199.488***
	(64.914)	(8.187)	(9.515)	(.741)		
BSIL	3.746***	.020[i]	.174***	.154**	.874	31.256***
	(40.767)	(.671)	(5.855)	(2.892)		
ECL	5.639***	.241***	.115***	-.126**	.973	162.800***
	(80.512)	(10.663)	(5.101)	(-3.108)		
SAIL	8.611***	.078[i]	.172***	.094[i]	.870	30.132***
	(75.406)	(2.133)	(4.656)	(1.418)		
TSL	7.704***	.172***	.132***	-.040[i]	.977	191.230***
	(141.595)	(9.785)	(7.523)	(-1.262)		
ES	7.336***	.238***	.199***	-.039[i]	.929	59.269***
	(52.334)	(5.244)	(4.403)	(-.469)		
NSAIL	5.942***	.297***	.039[i]	-.258***	.960	107.441***
	(69.463)	(10.748)	(1.403)	(-5.213)		
WCL	6.547***	.608***	.190[i]	-.418**	.931	60.326***
	(25.013)	(7.187)	(2.242)	(-2.759)		
UGSL	6.191***	.281***	.153**	-.128[i]	.906	43.477***
	(37.801)	(5.302)	(2.881)	(1.351)		
ML	6.061***	.141***	.166***	.025[i]	.962	112.522***
	(84.722)	(6.104)	(7.191)	(.606)		
TIIL	5.135***	.124***	.165***	.041[i]	.951	87.505***
	(67.207)	(5.022)	(6.682)	(.926)		
RIL	6.161***	.649***	-.347**	-.996***	.780	15.975***
	(17.280)	(5.630)	(3.015)	(-4.823)		
MSL	5.523***	.361***	.185***	-.176***	.980	216.494***
	(59.488)	(12.046)	(6.179)	(-3.273)		
SAL	5.366***	.273***	-.050[i]	-.323***	.878	32.439***
	(45.283)	(7.116)	(-1.319)	(-4.705)		
MIL	4.974***	.533***	.152***	-.381[i]	.858	27.296***
	(14.807)	(4.911)	(1.404)	(-1.956)		
SISCL	5.025***	.192***	-.040[i]	-.232***	.951	88.265***
	(55.408)	(6.562)	(-.759)	(5.202)		
SIL	4.897***	.394***	.110***	-.284***	.982	239.113***
	(58.864)	(14.604)	(4.078)	(-5.872)		
MUSCO	4.762***	.197***	.071***	-.126***	.958	103.198***
	(71.107)	(9.121)	(3.289)	(-3.253)		
KSL	4.628***	.385***	.094[i]	-.291**	.909	45.169
	(25.215)	(6.493)	(1.578)	(-2.742)		
JSW	6.847***	.323***	.312***	-.011[i]	.981	229.995***
	(66.306)	(9.665)	(9.355)	(-.173)		

*** marked values indicates significant at 1 % level (2- tailed); ** marked values indicates significant at 5 % level (2- tailed), i marked values indicates insignificants results; D_1 indicates growth rate of 1st half period; D_2 indicates growth rate of 2nd half period; D_2' indicates trend break

Table: 5.3A Kinked Exponential Trend Break of Sundry Debtors						
Company	**a**	**D_1**	**D_2**	**D_2'**	**R^2**	**F**
BSL	6.106***	.116*	.125**	.009[i]	.829	21.833***
	(47.970)	(2.819)	(3.041)	(.124)		
BSIL	18.818***	2.131[i]	6.959***	4.828[i]	.755	13.868***
	(3.022)	(1.059)	(3.458)	(1.339)		
ECL	6.155***	.174***	.023[i]	-.151**	.881	33.179***
	(67.978)	(5.958)	(.801)	(-2.877)		
SAIL	7.633***	.064***	.156***	.092**	.957	99.934***
	(137.980)	(3.554)	(8.720)	(2.882)		
TSL	6.213***	-.166***	.040[i]	.206**	.679	9.519***
	(48.172)	(-3.971)	(.972)	(2.757)		
ES	6.069***	.007[i]	.033[i]	.026[i]	.099	.495[i]
	(41.214)	(.152)	(.689)	(.229)		
NSAIL	5.235***	.228***	.113***	-.115**	.959	103.959***
	(62.577)	(8.446)	(4.166)	(-2.388)		
WCL	6.013***	.376***	.184**	-.192[i]	.927	57.116***
	(32.368)	(6.275)	(3.071)	(-1.787)		
UGSL	4.888***	.218***	.322***	.104[i]	.914	47.626***
	(25.169)	(3.480)	(5.317)	(.925)		
ML	6.211***	.090***	.110***	.020[i]	.973	162.275***
	(159.609)	(7.167)	(8.790)	(.095)		
TIIL	5.498***	-0.011[i]	0.079[i]	.090***	.681	12.750***
	(13.630)	(4.60)	(1.817)	(3.718)		
RIL	5.867***	.506***	.082[i]	-.424**	.895	38.280***
	(23.578)	(6.289)	(.335)	(-2.940)		
MSL	5.199***	.381***	.112**	-.269***	.961	112.102***
	(43.712)	(9.905)	(2.916)	(-3.899)		
SAL	4.096***	-.046[i]	.098[i]	.144[i]	.202	1.140[i]
	(20.101)	(-.703)	(1.489)	(1.223)		
MIL	5.373***	.446***	.074[i]	-.372***	.883	33.916***
	(22.978)	(5.906)	(.980)	(-2.748)		
SISCL	3.907***	-.087**	.217***	.304***	.870	30.115***
	(43.723)	(-3.072)	(7.513)	(5.871)		
SIL	4.818***	.281***	.189***	-.092[i]	.930	60.024***
	(32.056)	(5.780)	(3.892)	(-1.053)		
MUSCO	5.016***	.239***	.119***	-.120**	.975	178.998***
	(74.916)	(11.049)	(5.505)	(-3.093)		
KSL	4.869[i]	.008[i]	.113**	.105[i]	.589	6.453**
	(37.844)	(.201)	(2.729)	(1.410)		
JSW	5.455***	-.050[i]	.281***	-.331***	.908	44.277***
	(52.006)	(-1.481)	(8.255)	(5.448)		

*** marked values indicates significant at 1 % level (2- tailed); ** marked values indicates significant at 5 % level (2- tailed); i marked values indicates insignificants results; D_1 indicates growth rate of 1st half period; D_2 indicates growth rate of 2nd half period; D_2' indicates trend break

Table: 5.4A Kinked Exponential Trend Break of Cash & Bank						
Company	**a**	**D_1**	**D_2**	**D_2'**	**R^2**	**F**
BSL	3.794*** (8.397)	.295[i] (2.018)	.220[i] (1.509)	-.075[i] (-.284)	.639	7.948
BSIL	1.033*** (4.470)	.321*** (4.298)	.231** (3.091)	-.090[i] (-.673)	.886	34.938***
ECL	4.266*** (8.089)	.710** (4.165)	.224[i] (1.317)	-.486[i] (-1.589)	.819	20.367***
SAIL	9.338*** 28.894	.655*** (6.271)	.036[i] (.345)	-.619*** (-3.306)	.881	33.291***
TSL	6.589*** (12.529)	.260[i] (1.530)	.347[i] (2.042)	.087[i] (.286)	.644	8.152***
ES	6.115*** (18.621)	.440*** (4.146)	.139[i] (1.312)	-.301[i] (-1.581)	.818	20.192***
NSAIL	3.746*** (22.285)	.138** (2.549)	.030[i] (.560)	-.108[i] (-1.130)	.600	6.762**
WCL	5.852*** (17.584)	.644*** (5.983)	.142[i] (1.324)	-.502** (-2.599)	.892	37.319***
UGSL	4.827*** (10.131)	.763*** (4.956)	-.042[i] (-.270)	-.805** (-2.915)	.802	18.210***
ML	3.308*** (8.177)	.411** (3.142)	-.019[i] (-.147)	-.430[i] (-1.835)	.621	7.384***
TIIL	3.125*** (6.850)	-.09[i] (-.610)	-.007[i] (-.045)	.083[i] (.315)	.067	.323[i]
RIL	4.104*** (5.144)	1.083*** (4.199)	-.404[i] (-1.567)	-1.487** (-3.216)	.680	9.576***
MSL	5.024*** (6.066)	1.065*** (3.980)	-.462[i] (-1.728)	-1.527** (-3.184)	.648**	8.292***
SAL	4.054*** (22.049)	.309** (5.205)	-.558*** -(9.392)	-.868*** (-8.143)	.908	44.300
MIL	4.122*** (7.733)	.584*** (3.389)	.254[i] (1.476)	-.330[i] (-1.067)	.776	15.616***
SISCL	2.717*** (49.118)	.177*** (9.888)	.202*** (11.296)	.025[i] (.785)	.984	285.610***
SIL	3.324*** (8.411)	.457*** (3.574)	-.153[i] (-1.195)	-.610** -2.660	.613	7.139***
MUSCO	-1.104[i] (-1.093)	.067[i] (.206)	-.090[i] (.275)	-.157[i] (-.268)	.009	.039[i]
KSL	1.778*** (5.558)	.001[i] (.003)	.189[i] (1.824)	.188[i] (1.016)	.370	2.639[i]
JSW	5.124*** (19.101)	.392*** (4.517)	.451*** (5.199)	.059[i] (.380)	.930	60.084[i]

*** marked values indicates significant at 1 % level (2- tailed); ** marked values indicates significant at 5 % level (2- tailed); i marked values indicates insignificants results; D_1 indicates growth rate of 1st half period; D_2 indicates growth rate of 2nd half period; D_2' indicates trend break

Table: 5.5A Kinked Exponential Trend Break of Loan and Advances						
Company	**a**	**D_1**	**D_2**	**D_2'**	**R^2**	**F**
BSL	5.871*** (32.534)	.474*** (8.127)	.167** (2.867)	-.307** (-2.934)	.947	81.138***
BSIL	2.552*** (15.016)	.032[i] (.581)	.075[i] (1.366)	.043[i] (.264)	.358	2.505[i]
ECL	4.988*** (14.887)	.288*** (.026)	.148[i] (1.364)	-.140[i] (-.772)	.701	10.5439***
SAIL	7.528*** (68.048)	.060[i] (1.669)	.157*** (4.401)	.097[i] (.162)	.845	24.585***
TSL	8.214*** (15.358)	.362[i] (.066)	.061[i] (.352)	-.301[i] (-.972)	.487	4.276**
ES	6.875*** (60.771)	.012[i] (.330)	.231*** (6.312)	.219*** (3.337)	.882	33.612***
NSAIL	3.887*** (15.445)	.298*** (3.660)	.027[i] (.331)	-.271[i] (-1.857)	.725	11.846***
WCL	5.307*** (17.881)	.454*** (4.738)	.246*** (2.563)	-.208[i] (-1.213)	.885	34.628***
UGSL	6.000*** (46.801)	.465*** (11.220)	.053[i] (1.272)	-.463*** (-5.549)	.962	114.596***
ML	5.965*** (51.831)	.035[i] (.941)	-.094** (-2.517)	-.129[I] (-1.926)	.433	3.441[i]
TIIL	5.398*** (52.725)	.164*** (4.951)	-.299*** (-9.025)	-.463*** (7.796)	.901	40.939***
RIL	4.034*** (7.315)	.933*** (5.237)	.149[i] (.835)	-.784** (-2.456)	.855	26.453***
MSL	3.569*** (11.813)	.109[i] (1.121)	.303** (3.102)	.194[i] (1.105)	.726	11.951***
SAL	5.360*** (29.948)	.381*** (6.558)	-.248*** (-4.280)	-.629*** (6.603)	.829	21.763***
MIL	4.760** (11.292)	.522*** (3.833)	.161[i] (1.179)	.361[i] (-1.480)	.791	17.062***
SISCL	4.699*** (20.371)	.334*** (4.479)	.019[i] (.254)	-.315*** (-2.357)	.791	17.015***
SIL	2.230** (3.053)	.261[i] (1.107)	.606*** (2.566)	.345[i] (.814)	.664	8.907***
MUSCO	3.355*** (13.155)	.151[i] (1.826)	.009[i] (.109)	-.142*** (.958)	.387	2.839[i]
KSL	5.386*** (19.507)	.358*** (4.015)	-.237*** (-2.651)	-.595*** (-3.719)	.643	8.097***
JSW	6.763*** (28.004)	.331** (4.235)	.241** (3.087)	-.090[i] (-.640)	.884	34.292***

*** marked values indicates significant at 1 % level (2- tailed); ** marked values indicates significant at 5 % level (2- tailed); i marked values indicates insignificants results; D_1 indicates growth rate of 1st half period; D_2 indicates growth rate of 2nd half period; D_2' indicates trend break

Table: 5.6A Kinked Exponential Trend Break of Total Current Assets						
Company	**a**	**D_1**	**D_2**	**D_2'**	**R^2**	**F**
BSL	7.311***	.233***	.244***	.011[i]	.991	511.547***
	(140.472)	(13.822)	(14.532)	(.391)		
BSIL	4.458***	.082**	.142***	.060[i]	.916	49.089***
	(56.020)	(3.185)	(5.526)	(1.306)		
ECL	6.962***	.244***	.079**	-.165***	.951	86.894***
	(78.909)	(8.570)	(2.763)	(-3.239)		
SAIL	9.861***	.210***	.135**	-.075[i]	.890	36.322***
	(69.384)	(4.576)	(2.939)	(-.913)		
TSL	9.114***	.255**	.104[i]	-.151[i]	.632	7.715**
	(27.963)	(2.423)	(.988)	(-.801)		
ES	8.130***	.125***	.190***	.065[i]	.911	46.054***
	(70.472)	(3.364)	(5.104)	(.970)		
NSAIL	6.498***	.260***	.060***	-.200***	.979	205.715***
	(114.293)	(14.156)	(3.271)	(-6.072)		
WCL	7.440***	.513***	.187**	-.326***	.941	71.195***
	(35.447)	(7.560)	(2.752)	(-2.682)		
UGSL	7.089***	.352***	.134***	-.218***	.989	409.664***
	(116.828)	(17.954)	(6.827)	(-6.207)		
ML	7.248***	.095***	.089***	-.006[i]	.964	119.530***
	(174.895)	(7.080)	(6.631)	(.251)		
TIIL	6.473***	.070[i]	.049**	-.021[i]	.823	20.878***
	(99.955)	(3.356)	(2.353)	(-.560)		
RIL	7.429***	1.186***	-.210[i]	-1.396***	.687	9.982***
	(7.920)	(3.912)	(-.692)	(-2.568)		
MSL	6.542***	.425***	.095[i]	-.330***	.951	88.280***
	(45.843)	(9.190)	(2.053)	(-3.981)		
SAL	6.239***	.215***	-.085***	-.300**	.927	57.366***
	(96.879)	(10.349)	(-4.085)	(-8.052)		
MIL	6.432***	.518***	.121[i]	-.397***	.942	73.142***
	(33.339)	(8.311)	(1.942)	(-3.553)		
SISCL	5.757***	.138***	.146***	.008[i]	.923	53.855***
	(60.229)	(4.482)	(4.721)	(.133)		
SIL	5.784***	.354***	.159***	-.195**	.986	137.899***
	(52.721)	(9.979)	(4.497)	(-3.058)		
MUSCO	5.758***	.215***	.082***	-.133***	.965	122.752***
	(85.183)	(9.820)	(3.747)	(-3.388)		
KSL	6.092***	.184***	.007[i]	-.177**	.786	16.529***
	(47.693)	(4.462)	(.174)	(-2.392)		
JSW	7.705***	.245***	.307***	.062[i]	.973	162.559***
	(72.128)	(7.087)	(8.880)	(1.000)		

*** marked values indicates significant at 1 % level (2- tailed); ** marked values indicates significant at 5 % level (2- tailed); i marked values indicates insignificants results; D_1 indicates growth rate of 1st half period; D_2 indicates growth rate of 2nd half period; D_2' indicates trend break

Table: 5.7A Kinked Exponential Trend Break of Sundry Creditors						
Company	**a**	**D_1**	**D_2**	**D_2'**	**R^2**	**F**
BSL	6.668*** (51.172)	.382*** (9.069)	.117** (2.773)	-.265*** (-3.512)	.955	95.312***
BSIL	2.811*** (9.635)	.398*** (4.219)	.292** (3.099)	-.106[i] (-.625)	.884	34.242***
ECL	4.598*** (11.416)	.099[i] (.763)	.393** (3.021)	.294*** (1.259)	.687	9.895***
SAIL	7.818*** (70.220)	0.073[i] (2.021)	.149*** (4.134)	.076[i] (2.021)	.846	24.775***
TSL	7.910*** (207.499)	.118*** (9.572)	.127*** (10.344)	.009[i] (.430)	.982	252.239***
ES	6.765*** (35.492)	0.037[i] (.593)	.218*** (3.546)	.181[i] (1.647)	.731	12.247***
NSAIL	5.834*** (88.339)	.277*** (12.973)	.072*** (3.376)	-.205*** (-5.354)	.976	184.259***
WCL	5.219*** (20.694)	.622*** (7.636)	.460*** (5.643)	-.162[i] (1.112)	.962	112.723***
UGSL	5.139*** (11.396)	.230[i] (1.576)	.134[i] (.920)	-.096[i] (-.366)	.472	4.028[i]
ML	5.373 (42.814)	.016[i] (.384)	.190*** (4.689)	.174** (2.402)	.810	19.245***
TIIL	5.379*** (52.535)	.121*** (3.163)	.136*** (4.095)	.015[i] (.245)	.895	38.291***
RIL	4.357*** (6.861)	.384[i] (1.872)	.049[i] (.240)	-.335[i] (-.514)	.911	45.910***
MSL	3.853*** (15.943)	.179** (2.290)	.199** (2.554)	.020[i] (.910)	.419	3.250***
SAL	5.135*** (21.899)	.130[i] (1.710)	-.135[i] (1.783)	-.265[i] (-1.949)	.297	1.903[i]
MIL	5.600*** (12.767)	.603*** (4.256)	.04[i] (.348)	-.563[i] (-2.180)	.779	15.854***
SISCL	3.256*** (8.193)	.035[i] (.274)	.034[i] (.264)	-.001[i] (-.006)	.039	.184[i]
SIL	4.616*** (20.224)	.315*** (4.269)	.093[i] (1.258)	-.222[i] (-1.679)	.822	20.832***
MUSCO	4.436*** (80.566)	.104*** (5.822)	.087*** (4.903)	-.017[i] (-.512)	.942	73.255***
KSL	5.202*** (38.770)	.274*** (6.315)	-.108** (-2.501)	-.382*** (-4.918)	.826	21.343***
JSW	6.305*** (50.683)	.031[i] (.761)	.387*** (9.637)	.356*** (4.952)	.947	80.991***

*** marked values indicates significant at 1 % level (2- tailed); ** marked values indicates significant at 5 % level (2- tailed); i marked values indicates insignificants results; D_1 indicates growth rate of 1st half period; D_2 indicates growth rate of 2nd half period; D_2' indicates trend break

Table: 5.8A Kinked Exponential Trend Break of Provision						
Company	**a**	**D_1**	**D_2**	**D_2'**	**R^2**	**F**
BSL	2.501***	.159**	.297***	.138[i]	.920	51.602***
	(15.801)	(3.108)	(5.802)	(1.503)		
BSIL	3.952***	.008***	-.007**	-.015***	.508	6.205***
	(525.994)	(3.346)	(-2.906)	(-3.488)		
ECL	3.601***	.184**	.282***	.098[i]	.898	39.665***
	(19.615)	(3.100)	(4.755)	(.923)		
SAIL	9.014***	.281***	-.171**	-.452***	.735	12.487***
	(51.854)	(4.997)	(-3.048)	(-4.492)		
TSL	8.141***	.185***	-.078[i]	-.263***	.741	12.869***
	(70.215)	(4.997)	(-2.080)	(-3.916)		
ES	4.966***	.160[i]	-.271**	-.431**	.519	4.862**
	(18.447)	(1.839)	(-3.118)	(-2.765)		
NSAIL	2.613***	.520***	-.234[i]	-.754**	.578	6.159**
	(5.598)	(3.444)	(-1.553)	(-2.788)		
WCL	3.852***	.932***	.232***	-.70***	.983	258.307***
	(20.658)	(15.472)	(3.847)	(-6.485)		
UGSL	5.920***	.098[i]	-.124[i]	-.222[i]	.125	.640[i]
	(17.039)	(.869)	(-1.103)	(-1.100)		
ML	6.039***	.183[i]	-.369[i]	-.552[i]	.242	1.434[i]
	(8.879)	(.834)	(-1.678)	(-1.401)		
TIIL	4.900***	.145[i]	-.281**	-.426**	.500	4.504**
	(16.798)	(1.539)	(-2.982)	(-2.522)		
RIL	4.020***	.023***	-.004[i]	-.027**	.774	15.408***
	(272.619)	(-4.875)	(-.847)	(-3.192)		
MSL	3.974***	.209**	.098[i]	-.111[i]	.646	8.205***
	(14.776)	(2.408)	(1.128)	(-.714)		
SAL	1.393***	.248**	-.159[i]	-.407**	.534	5.155**
	(5.286)	(3.208)	(-2.061)	(-2.939)		
MIL	5.968***	.696***	-.259[i]	-.955**	.602	6.800**
	(9.804)	(3.538)	(-1.319)	(-2.709)		
SISCL	4.523***	.427***	-.063[i]	-.490***	.849	25.238***
	(21.058)	(6.148)	(-.901)	(-3.932)		
SIL	1.866***	.468***	.189***	-.279**	.956	98.946***
	(11.211)	(8.701)	(3.507)	(-2.898)		
MUSCO	4.758***	.185[i]	-.183[i]	-.368[i]	.279	1.742[i]
	(14.001)	(1.681)	(-1.665)	(-1.866)		
KSL	4.177***	.678***	-.308[i]	-.986***	.720	11.547***
	(9.363)	(4.717)	(-2.133)	(3.822)		
JSW	5.586***	1.330***	-.039[i]	-1.369***	.870	30.007***
	(8.509)	(6.268)	(-.183)	(-3.599)		

*** marked values indicates significant at 1 % level (2- tailed); ** marked values indicates significant at 5 % level (2- tailed); i marked values indicates insignificants results; D_1 indicates growth rate of 1st half period; D_2 indicates growth rate of 2nd half period; D_2' indicates trend break

Table: 5.9A Kinked Exponential Trend Break of Total Current Liabilities						
Company	**a**	**D_1**	**D_2**	**D_2'**	**R^2**	**F**
BSL	6.678***	.365***	.166***	-.199**	.958	102.046***
	(50.621)	(8.566)	(3.891)	(-2.608)		
BSIL	3.511***	.314***	.228***	-.086[i]	.935	64.245***
	(20.963)	(5.802)	(4.221)	(-.882)		
ECL	5.453***	.196***	.152***	-.044[i]	.948	82.129***
	(57.483)	(6.393)	(6.393)	(-.805)		
SAIL	9.404***	.120***	051[i]	-.069[i]	.882	33.730***
	(127.18)	(5.024)	(2.116)	(-1.622)		
TSL	8.746***	.143***	.113***	-.030[i]	.966	126.280***
	(154.978)	(7.862)	(6.208)	(-.923)		
ES	7.592***	.023[i]	.209**	.186[i]	.612	7.100**
	(32.946)	(.305)	(2.800)	(1.392)		
NSAIL	5.928***	.282***	.067***	-.215***	.981	230.193***
	(99.960)	(14.721)	(3.476)	(-6.273)		
WCL	7.122***	.626***	.166[i]	-.460**	.919	50.725***
	(24.961)	(6.787)	(1.798)	(-2.783)		
UGSL	6.814***	.331***	.174***	-.157***	.965	122.613***
	(59.930)	(8.999)	(4.727)	(-2.383)		
ML	6.187***	.081***	.122***	.041[i]	.911	46.039***
	(83.526)	(3.368)	(5.099)	(.965)		
TIIL	6.111***	.122***	.044[i]	-.078[i]	.831	22.189***
	(68.552)	(4.237)	(1.515)	(-1.562)		
RIL	6.628***	1.296***	-.189[i]	-1.485**	.3657	8.626***
	(5.938)	(3.593)	(-.524)	(-2.2966)		
MSL	4.693***	.236***	.156**	-.080[i]	.899	39.969***
	(30.577)	(4.753)	(3.135)	(-.903)		
SAL	5.320***	.161[i]	.004[i]	-.157[i]	.448	3.652[i]
	(22.531)	(2.114)	(.056)	(-1.148)		
MIL	5.947***	.602***	.023[i]	-.579**	.847	24.871***
	(17.485)	(5.478)	(.208)	(-2.940)		
SISCL	4.858***	.122[i]	.081[i]	-.041[i]	.651	8.388***
	(27.944)	(2.178)	(1.436)	(-.409)		
SIL	4.696***	.326***	.100[i]	-.226[i]	.841	23.744***
	(21.061)	(4.524)	(1.387)	(.114)		
MUSCO	5.053***	.171***	.125***	-.046[i]	.972	154.979***
	(85.695)	(8.996)	(6.572)	(-1.352)		
KSL	5.740***	.307***	-.121***	-.428***	.812	19.462***
	(36.455)	(6.026)	(-2.370)	(-4.683)		
JSW	7.673***	.195***	.352***	.157[i]	.959	106.457***
	(58.026)	(4.570)	(8.242)	(2.048)		

*** marked values indicates significant at 1 % level (2- tailed); ** marked values indicates significant at 5 % level (2- tailed); i marked values indicates insignificants results; D_1 indicates growth rate of 1st half period; D_2 indicates growth rate of 2nd half period; D_2' indicates trend break

Table: 5.10 A Kinked Exponential Trend Break of Net Working Capital						
Company	**a**	**D_1**	**D_2**	**D_2'**	**R^2**	**F**
BSL	6.578*** (64.956)	.145*** (4.434)	.292*** (8.917)	.147** (2.501)	.963	116.454***
BSIL	3.966*** (46.074)	.004[i] (.133)	.059[i] (2.124)	.055[i] (1.110)	.461	3.855[i]
ECL	6.713*** (51.169)	.262*** (6.177)	.047[i] (1.118)	-.215** (-2.822)	.849	37.804***
SAIL	8.009*** (5.632)	.424[i] (.879)	.455[i] (.942)	.031[i] (.035)	.319	2.109[i]
TSL	7.156*** (5.526)	.204[i] (.488)	.259[i] (.618)	.055[i] (.073)	.148	.780[i]
ES	7.960*** (8.065)	.558[i] (1.748)	.049[i] (.155)	-.509[i] (.889)	.375	2.696[i]
NSAIL	5.667*** (87.206)	.235*** (11.205)	.050** (2.360)	-.185*** (-4.931)	.966	129.245***
WCL	6.150*** (26.532)	.363*** (4.846)	.200** (2.664)	-.163[i] (-1.217)	.890	36.595***
UGSL	5.388** (11.538)	.385** (2.549)	-.104[i] (-.687)	-.489[i] (-1.805)	.460	3.835[i]
ML	6.814*** (107.912)	.101*** (4.958)	.070*** (3.419)	-.031[i] (-.851)	.909	45.177***
TIIL	5.318*** (61.064)	-.002[i] (-.078)	.049[i] (1.022)	.051[i] (1.022)	.339	2.306[i]
RIL	7.235*** (5.357)	.705[i] (1.615)	-.917[i] (-2.101)	-1.622[i] (-2.073)	.338	2.299[i]
MSL	6.376*** (39.091)	.494*** (9.368)	.080[i] (1.512)	-.414*** (4.383)	.950	84.857***
SAL	6.270*** (11.440)	.270[i] (1.522)	-.443** (-2.501)	-.713** (-2.244)	.410	3.128[i]
MIL	5.414*** (20.422)	.422*** (4.925)	.190** (2.221)	-.232[i] (-1.508)	.882	33.605***
SISCL	5.229*** (65.654)	.151*** (5.884)	.181*** (7.022)	.030[i] (.635)	.959	106.085
SIL	5.349*** (64.711)	.365*** (7.003)	.187*** (13.652)	-.178*** (-3.709)	.984	278.095***
MUSCO	5.086*** (44.046)	.268*** (7.194)	.021[i] (.566)	-.247*** (-3.697)	..909	45.118***
KSL	5.024*** (31.040)	.067[i] (1.287)	.122** (2.325)	.055[i] (.579)	.653	8.462***
JSW	7.482*** (11.183)	-.122[i] (-.564)	-.066[i] (-.303)	.056[i] (.146)	.098	.489[i]

*** marked values indicates significant at 1 % level (2- tailed); ** marked values indicates significant at 5 % level (2- tailed); i marked values indicates insignificants results; D_1 indicates growth rate of 1st half period; D_2 indicates growth rate of 2nd half period; D_2' indicates trend break

CHAPTER – 6

LIQUIDITY AND PROFITABILITY PERFORMANCE: A COMPANY-WISE ANALYSIS

Chapter Outline:

6.1 Results of Mean and Standard Deviation Difference

6.2 Analysis of Variance- One Way ANOVA

CHAPTER-6

LIQUIDITY AND PROFITABILITY PERFORMANCE: A COMPANY- WISE ANALYSIS

In this chapter, we make a liquidity and profitability analysis of the twenty companies under study during the two sub-periods- 2000-01 to 2006-07 and 2007-08 to 2011-12. The first sub-period refers to the pre- financial melt-down period, while the second sub-period refers to the post- financial melt-down period. We want to examine three things in this regard- (i) whether there has been statistically change (rise or fall) (in statistical sense) in the means of liquidity ratio represented by Current Ratio (CR), Quick Ratio (QR), Total Current Assets to Total Assets (TCA/ TA), Total Current Liabilities to Total Assets (TCL/ TA), Debtors' Turnover Ratio (DTR), Inventory Turnover (ITR), Cash Turnover Ratio (CTR) and Net Working Capital (NWC) and in the mean profitability ratio represented by Return on Total assets (ROA), Return on Capital Employed (ROCE) and Return on Equity (ROE), (ii) whether there has been any significant difference in the variance of the profitability between these two sub-periods. The measures of variance, i.e., variability in the profitability ratios will indicate whether the companies under study have adjusted themselves to the financial turmoil that rocked most of the economies- both developed and developing, and whether the stability could be achieved in relation to the post- financial break- down period, (iii) Our third objective in this chapter is to examine whether the populations of the liquidity and profitability measures for all the 20 companies are statistically significantly different from one another. The difference in the population is tested by statistically testing the population means. As there are 20 companies which constitute our samples and as many as eight liquidity measures and three mostly used profitability measures, we propose to test the means of each of these measures- both liquidity and profitability, i.e, to test the hypothesis, $H_0 = \mu_{1i} = \mu_{2i} = \mu_{3i} = \ldots\ldots = \mu_{20i}$ *against the alternative hypothesis,* $H_1 = H_0$ *is not true, where 1,2,…,20,stand for 20 different companies and i for (i= 1,2,…11) stands for* i^{th} *measure or the variable.*

To fulfill this objective, we have considered the above mentioned measures of liquidity and profitability, and for each of these measures we have calculated mean and standard deviation (square root of variance) for the two sub-periods and statistically tested the mean differences as well as the differences between the standard deviations pertaining to these two sub-periods for each of these measures of liquidity and profitability for each of the companies under study.

The methodology to test the mean difference and the differences in the standard deviations are given in Chapter- 3. On the basis of these results, we have examined how many companies have recorded better or worse performances or no change in respect of liquidity and profitability in the second sub-period in relation to the first sub-period.

6.1 RESULTS OF MEAN AND STANDARD DEVIATION DIFFERENCE

6.1.1 Profitability Analysis in terms of Return on Capital Employed (ROCE) [Table 6.1]

BSL: The result of t- test reveals that there is a significant difference at 95% confidence level in the mean value of ROCE between the two sub-periods under study. This implies that ROCE on the average is better in the first sub-period (11.68) than that of the second sub-period (9.98).

In terms of variability in ROCE between the two sub-periods, we find insignificant difference between them at 5% level of significance.

BSIL: Analysis of ROCE reveals that there is no significant difference at 5% level of significance in the mean value of ROCE between the two sub-periods under study. Hence, it can be stated that the performance levels of the company in terms of mean value of ROCE between the two sub-periods are the same.

So far as the consistency in the ROCE between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in the ROCE of the company.

ECL: Statistically significant result is observed in the mean value of ROCE between the two sub-periods at 5% level. Therefore, it can be concluded that ROCE as a measure of profitability performance of the company on the average is better in the first sub-period (15.85) than that of the second sub-period (9.61).

In terms of variability in the ROCE between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in ROCE of the company.

SAIL: An insignificant result in terms of mean value of ROCE is observed between the two sub-periods. Thus, it can be concluded that performance levels of the company in terms of mean value of ROCE between the two sub-periods are the same.

In terms of variability in ROCE between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in ROCE of the company.

TSL: The result of t- test reveals that there is a significant difference at 95% confidence level in the mean value of ROCE between the two sub-periods. This implies that ROCE on the average is better in the first sub-period (34.15) than that of the second sub-period (16.95).

So far as the consistency in ROCE between the two sub-periods is concerned, we find significant result at 5% level. In the 1^{st} sub-period SD is observed to be 19.02, whereas in the 2^{nd} sub-period the same is observed to be 25.813. This implies that variation in ROCE performance is better in the 2^{nd} sub period in relation to 1^{st} sub-period.

ES: An insignificant result in terms of mean value of ROCE is observed between the two sub-periods under study.

Also, an insignificant result in terms of variability in the ROCE is observed between the two sub-periods. This indicates that the financial break down has no significant impact on the variability in ROCE of the company.

NSAIL: Analysis of ROCE reveals that there is no significant difference at 5% level of significance in the mean value of ROCE between the two sub-periods. Hence, it can be stated that performance levels of the company in terms of mean value of ROCE between the two sub-periods are the same.

So far as the consistency in ROCE between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This implies that the financial break down has no significant impact on the variability in ROCE of the company.

WCL: Statistically insignificant result is observed in the mean value of ROCE between the two sub-periods under study at 5% level of significance.

In terms of consistency in ROCE between the two sub-periods, we find insignificant difference between them at 5% level of significance. This shows that the financial break down has no significant impact on the variability in ROCE of the company.

UGSL: Analysis of ROCE reveals that there is no significant difference at 5% level in the mean value of ROCE between the two sub-periods. Thus, performance levels of the company in terms of mean value of ROCE between the two sub-periods are the same.

The result of the standard deviation test i.e., the F-test reveals that there is a significant difference at 95% confidence level in the variability of ROCE between the two sub-periods. In the 1^{st} sub-period, SD is recorded as 8.91 whereas in the 2^{nd} sub-period the same is registered as 2.11. This indicates that consistency in ROCE performance is better in the 2^{nd} sub-period in relation to the 1^{st} sub-period.

ML: Analysis of ROCE reveals that there is no significant difference at 5% level of significance in its mean value between the two sub-periods under study. This implies that performance levels of the company in terms of mean value of ROCE between the two sub-periods are the same.

In terms of consistency in ROCE between the two sub-periods, we find insignificant difference between them at 5% level of significance. This shows that the financial break down has no significant impact on the variability in ROCE of the company.

TIIL: Mean difference test of ROCE reveals insignificant result between the two sub-periods under study. In other words, it can be concluded that performance level of the company in terms of mean value of ROCE between the two sub-periods are the same.

So far as the variability in ROCE between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This is indicative of the

fact that the financial break down has no significant impact on the variability in ROCE of the company.

RIL: Significant result is observed in the mean value of ROCE between the two sub-periods at 5% level of significance. Therefore, it can be concluded that ROCE as a measure of profitability performance of the company on the average is better in the first sub-period (16.86) than that of the second sub-period (2.92).

So far as the variability in ROCE between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in ROCE of the company.

MSL: The result of t- test reveals that there is a significant difference at 95% confidence level in the mean value of ROCE between the two sub-periods. This implies that ROCE on the average is better in the first sub-period (34.37) than that of the second sub-period (26.77).

In terms of consistency in ROCE between the two sub-periods, we find insignificant difference between them at 5% level of significance. This shows that the financial break down has no significant impact on the variability in ROCE of the company.

SAL: Analysis of mean difference test reveals significant result in the mean value of ROCE between the two sub-periods at 5% level of significance. Thus, ROCE as a measure of profitability performance of the company on the average is better in the first sub-period (18.73) than that of the second sub-period (-13.29).

So far as the variability in ROCE between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance.

MIL: A look into the mean difference t-test reveals that there is no significant difference at 5% level of significance in the mean value of ROCE between the two sub-periods.

The result of f- test reveals that there is a significant difference at 95% confidence level in the variability of ROCE between the two sub-periods is. In the 1^{st} sub-period SD is recorded as 13.33 whereas in the 2^{nd} sub-period the same is registered as 4.74.This implies that 2^{nd} sub-period achieved better stability in ROCE performance than that of the 1^{st} sub-period.

SISCL: An insignificant result in terms of mean value of ROCE is observed between the two sub-periods under study. In other words, it can be concluded that performance levels of the company in terms of mean value of ROCE between the two sub-periods are same.

We find insignificant results in terms of variability in ROCE between the two sub-periods at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in ROCE of the company.

SIL: Statistically significant result is observed in the mean value of ROCE between the two sub-periods at 5% level. Therefore, it can be concluded that the ROCE as a measure of profitability performance of the company on the average is better in the first sub-period (14.33) than that of the second sub-period (9.27).

In terms of variability in ROCE between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in ROCE of the company.

MUSCO: Analysis of ROCE reveals that there is no significant difference at 5% level of significance in the mean value of ROCE between the two sub-periods. Hence, it can be stated that performance levels of the company in terms of mean value of ROCE between the two sub-periods are same.

In terms of variability, it is observed that there is a significant difference at 95% confidence level between the two sub-periods under study. The 1^{st} period has recorded variability in ROCE as 23.06, while the same is recorded as 5.80 in the 2^{nd} sub-period. This implies that the 2^{nd} sub-period is better in comparison to the 1^{st} sub-period.

KSL: Mean difference t-test between the two sub-periods reveals insignificant results at 5% level of significance. In other words, it can be concluded that performance levels of the company in terms of mean value of ROCE between the two sub-periods are the same.

In terms of consistency in ROCE between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance.

JSW: Analysis of ROCE reveals that there is no significant difference at 5% level of significance in the mean value of ROCE between the two sub-periods.

In terms of consistency in ROCE between the two sub-periods, we find insignificant difference between them at 5% level of significance.

From the above analysis, it is observed that 7 companies (i.e., BSL, ECL, TSL, RIL, MSL, SAL and SIL) out of 20 companies have recorded significant difference in the mean value of ROCE between the two sub-periods under study. In these cases, all the 7 companies on the average have shown better ROCE performance in the 1st sub-period as compared to that of the 2nd sub-period. This is indicative of the fact that financial recession has significant negative impact on the profitability performance in terms of ROCE for the above stated 7 companies under study.

So far the variability is concerned, we find significant difference in four companies (i.e, TSL, UGSL, MIL and MUSCO) out of 20 companies. In rest of the cases, the results are found to be insignificant. This implies that in majority of the cases, financial recession has no significant impact on the variability of performance as represented by ROCE.

6.1.2 Profitability Analysis in terms of Return on Total Assets (ROA) [Table 6.2]

BSL: The result of t-test reveals that there is an insignificant difference at 95% confidence level in the mean value of ROA between the two sub-periods under study. This implies that ROA as a measure of profitability on the average is same in both the sub-periods.

We find insignificant difference between the two sub-periods at 5% level of significance so far as the variability in the ROA is concerned.

BSIL: Analysis of ROA reveals that there is no significant difference at 5% level of significance in the mean value of ROA between the two sub-periods, which implies that performance levels of the company in terms of mean value of ROA between the two sub-periods are the same.

So far as consistency in ROA between the two sub-periods is concerned, we find insignificant difference between them at 5% level. This indicates that the financial break down has no significant impact on the variability in ROA of the company.

ECL: Statistically significant result is observed in the mean value of ROA between the two sub-periods at 5% level of significance. Thus, on the average ROA as a measure of profitability performance of the company on the average is better in the first sub-period (8.71) than that of the second sub-period (4.20).

So far as variability in ROA between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance.

SAIL: An insignificant result in terms of mean value of ROA is observed between the two sub-periods under study. In other words, it can be concluded that performance levels of the company in terms of mean value of ROA between the two sub-periods are the same.

In terms of variability in ROA between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in ROA of the company.

TSL: The result of t-test reveals that there is a significant difference at 95% confidence level in the mean value of ROA between the two sub-periods. This implies that ROA on the average is better in the first sub-period (17.14) than that of the second sub-period (4.20).

In terms of variability in ROA between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that financial break down has no significant impact on the variability in ROA of the company.

ES: An insignificant result in terms of mean value of ROA is observed between the two sub-periods under study.

We find significant results in terms of variability in the ROA between the two sub-periods at 5% level of significance. In the 1st sub-period SD is recorded as 11.87, whereas in the 2nd sub-period the same is registered as 3.65. This implies that variation in ROA performance is better in the 1st sub period in relation to 2nd sub-period.

NSAIL: Analysis of ROA reveals that there is no significant difference at 5% level of significance in the mean value of ROA between the two sub-periods. Hence, it can be said that performance levels of the company in terms of mean value of ROA between the two sub-periods are the same.

So far as consistency in ROA between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that financial break down has no significant impact on the variability in ROA of the company.

WCL: Statistically insignificant result is observed in the mean value of ROA between the two sub-periods under study at 5% level of significance.

In terms of consistency in ROA between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in ROA of the company.

UGSL: Analysis of ROA reveals that there is no significant difference at 5% level of significance in the mean value of ROA between the two sub-periods under study. Thus, performance levels of the company in terms of mean value of ROA between the two sub-periods are the same.

We find significant results in terms of variability in ROA between the two sub-periods at 5% level of significance. In the 1st sub-period SD is recorded as 6.73, whereas in the 2nd sub-period the same is registered as 2.07. The 2nd sub-period is better than the 1st sub-period so far as consistency in ROA performance of the company is concerned.

ML: Analysis of ROA reveals that there is no significant difference at 5% level of significance in the mean value of ROA between the two sub-periods.

In terms of consistency in ROA between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that financial break down has no significant impact on the variability in ROA of the company.

TIIL: Mean difference test of ROA reveals significant results between the two sub-periods under study. In other words, it can be concluded that performance level of the company in terms of mean value of ROA shows significant difference between the two sub-periods. In the 1st sub-period it is recorded as 7.71, whereas in the 2nd sub-period it is registered as 2.00. This shows that on the average, ROA performance of the company is better in the 1st sub-period than that of the 2nd sub-period.

In terms of variability in ROA between the two sub-periods, we find significant difference between them at 5% level of significance. This indicates that the financial break down has significant impact on the variability in ROA of the company.

RIL: Significant result is observed in the mean value of ROA between the two sub-periods at 5% level. Thus, ROA as a measure of profitability performance of the

company on the average is better in the first sub-period (4.29) than that of the second sub-period (-5.80).

So far as the variability in ROA between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. Standard deviation as a measure of variability is 4.15 in the 1st sub-period, whereas in the 2nd sub-period the same is registered as 10.26. This indicates that the financial break down has no significant impact on the variability in ROA of the company.

MSL: The result of t- test reveals that there is a significant difference at 95% confidence level in the mean value of ROA between the two sub-periods under study. This implies that ROA on the average is better in the first sub-period (20.00) than that of the second sub-period (3.60).

In terms of consistency in ROA between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that financial break down has no significant impact on the variability in ROA of the company.

SAL: Analysis of mean difference test reveals significant result in the mean value of ROA between the two sub-periods at 5% level of significance. Therefore, it can be concluded that ROA of the company on the average is better in the first sub-period (7.86) than that of the second sub-period (-17.20).

In terms of variability in ROA between the two sub-periods, we find insignificant difference between them at 5% level of significance.

MIL: A look into the t-test for mean difference reveals that there is insignificant difference at 5% level of significance in the mean value of ROA between the two sub-periods under study.

Test for difference in standard deviation reveals that there is a significant difference at 95% confidence level between the two sub-periods under study. It is measured as 9.20 in the 1st sub-period whereas in the 2nd sub-period the same is registered as 3.36. This implies that variation in ROA performance of the company is better in the 1st sub-period in relation to the 2nd sub-period.

SISCL: An insignificant result in terms of mean value of ROA is observed between the two sub-periods under study. In other words, it can be concluded that performance levels

of the company in terms of mean value of ROA between the two sub-periods are the same.

We find insignificant results in terms of variability in ROA between the two sub-periods at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in ROA of the company.

SIL: Statistically insignificant result is observed in the mean value of ROA between the two sub-periods at 5% level. Therefore, it can be stated that ROA on the average is same for the company under study.

So far as the variability in the ROA between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This shows that the financial break down has no significant impact on variability in ROA of the company during the two sub-periods under study.

MUSCO: Analysis of ROA reveals that there is no significant difference at 5% level of significance in the mean value of ROA between the two sub-periods. Thus, performance levels of the company in terms of mean value of ROA between the two sub-periods are the same.

Test of standard deviation reveals that there is a significant difference at 95% confidence level in the mean value of ROA between the two sub-periods. It is recorded as 17.39 in the 1^{st} sub-period, whereas in the 2^{nd} sub-period the same is recorded as 4.39. Thus, consistency of ROA is better in the 2^{nd} sub-period than that of the 1^{st} sub-period.

KSL: Mean difference t-test between the two sub-periods reveals insignificant results under study at 5% level of significance. In other words, it can be concluded that performance levels of the company in terms of mean value of ROA between the two sub-periods are the same.

In terms of consistency in ROA between the two sub-periods, we find significant difference between them at 5% level of significance. This indicates that financial break down has no significant impact on variability in ROA of the company under study.

JSW: Analysis of ROA reveals that there is no significant difference at 5% level of significance in the mean value of ROA between the two sub-periods. Hence, it can be

said that performance levels of the company in terms of mean value of ROA between the two sub-periods are the same.

Test result of standard deviation difference reveals that there is a significant difference at 95% confidence level in the standard deviation of ROA between the two sub-periods. It is measured as 6.68 in the 1st sub-period, whereas in the 2nd sub-period the same is registered as 1.92. This indicates that 1st sub-period is better than that of the 2nd sub-period in terms of variation in ROA

From the above analysis, it is evident that 6 companies (i.e., ECL, TSL, TIIL, RIL, MSL, and SAL) out of 20 companies have recorded significant difference in the mean value of ROA between the two sub-periods. In these cases, all the 6 companies on the average have shown better ROA performance in the 1st sub-period as compared to that of 2nd sub-period. This is indicative of the fact that the financial recession has significant negative impact on the profitability performance in terms of ROA for the aforesaid 6 companies.

So far as the variability in ROA performance is concerned, we find significant difference in six companies (i.e., ES, UGSL, TIIL, MIL, MUSCO, and JSW) out of 20 companies. In the remaining companies, the results are found to be insignificant. This implies that in majority of the cases, financial recession has no significant impact on the variability of performance as indicated by ROA.

6.1.3 Profitability Analysis in terms of Return on Equity (ROE) [Table 6.33]

BSL: An insignificant result in terms of mean value of ROA is observed between the two sub-periods. In other words, it can be stated that performance levels of the company in terms of mean value of ROA between the two sub-periods are the same.

In terms of variability in ROE between the two sub-periods, we find insignificant difference between them at 5% level of significance.

BSIL: Analysis of ROE reveals that there is no significant difference at 5% level of significance in the mean value of ROE between the two sub-periods under study. Thus, performance levels of the company in terms of mean value of ROE between the two sub-periods are the same.

So far as the consistency in ROE between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance.

ECL: Statistically significant result is observed in the mean value of ROE between the two sub-periods at 5% level of significance. Therefore, it can be stated that ROE as a measure of profitability performance of the company on the average is better in the first sub-period (16.05) than that of the second sub-period (8.63).

So far as the variability in ROE between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that financial break down has no significant impact on the variability in ROE of the company.

SAIL: An insignificant result in terms of mean value of ROE is observed between the two sub-periods under study.

In terms of variability in ROE between the two sub-periods, we find significant difference between them at 5% level of significance. It is recorded as 54.32 in the first sub-period, whereas in the second sub-period it is recorded as 10.79. This implies that 1st sub-period is better than that of the 2nd sub-period in terms of variability in ROE.

TSL: The result of t- test reveals that there is a significant difference at 95% confidence level in the mean value of ROE between the two sub-periods under study. This implies that ROE on the average is better in the first sub-period (34.87) than that of the second sub-period (18.38).

In terms of variability in ROE between the two sub-periods, we find significant difference between them at 5% level of significance. It is recorded as 17.23 in the first sub-period, while in the second sub-period it is recorded as 5.37. This implies that variation in ROE is better in the 1st sub-period in relation to the 2nd sub-period.

ES: An insignificant result in terms of mean value of ROE is observed between the two sub-periods. In other words, it can be concluded that performance levels of the company in terms of mean value of ROE between the two sub-periods are the same.

We find insignificant results in terms of variability in the ROE between the two sub-periods at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in ROE of the company.

NSAIL: Analysis of ROE reveals that there is no significant difference at 5% level of significance in the mean value of ROE between the two sub-periods under study.

So far as the consistency in ROE between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in ROE of the company.

WCL: Statistically insignificant result is observed in the mean value of ROE between the two sub-periods at 5% level. Thus, it can be stated that performance levels of the company in terms of mean value of ROE between the two sub-periods are the same.

In terms of consistency in ROE between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in ROE of the company.

UGSL: Analysis of ROE reveals that there is no significant difference at 5% level of significance in the mean value of ROE between the two sub-periods.

In terms of variability in ROE between the two sub-periods, we find significant difference between them at 5% level. It is measured as 26.37 in the first sub-period, while in the second sub-period it is recorded as 4.77. This indicates that variation in ROE is better in the 1^{st} sub-period in relation to that of the 2^{nd} sub-period..

ML: Analysis of ROE reveals that there is insignificant difference at 5% level of significance in the mean value of ROE between the two sub-periods under study. Hence, it can be said that performance levels of the company in terms of mean value of ROE between the two sub-periods are the same.

In terms of consistency in ROE between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in ROE of the company.

TIIL: Mean difference test of ROE reveals insignificant results between the two sub-periods.

In terms of variability in ROE between the two sub-periods, we find insignificant difference between them at 5% level of significance.

RIL: Insignificant result is observed in the mean value of ROE between the two sub-periods at 5% level of significance. Thus, performance level of the company in terms of mean value of ROE between the two sub-periods are the same.

So far as the variability in ROE between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that financial break down has no significant impact on the variability in ROE of the company.

MSL: The result of t- test reveals that there is a significant difference at 95% confidence level in the mean value of ROE between the two sub-periods. This implies that ROE on the average is better in the first sub-period (33.68) than that of the second sub-period (18.92).

In terms of consistency in ROE between the two sub-periods, we find insignificant difference between them at 5% level of significance. This implies that the financial break down has no significant impact on the variability in ROE of the company.

SAL: Analysis of mean difference test reveals significant result in the mean value of ROE between the two sub-periods at 5% level of significance. Therefore, it can be concluded that ROE of the company on the average is better in the first sub-period (24.51) than that of the second sub-period (90.01).

So far as the variability in ROE between the two sub-periods is concerned, the result is found to be insignificant.

MIL: A look into the mean difference t-test reveals that there is insignificant difference at 5% level of significance in the mean value of ROE between the two sub-periods under study. Hence, it can be stated that performance levels of the company in terms of mean value of ROE between the two sub-periods are the same.

The F-test result reveals that there is a significant difference at 5% level of significance in terms of variability in ROE between the two sub-periods. It is recorded as 19.86 in the first sub-period, while in the second sub-period it is recorded as 3.30. This shows that variability in ROE is better in the 1^{st} sub-period in relation to that of the 2^{nd} sub-period.

SISCL: An insignificant result in terms of mean value of ROE is observed between the two sub-periods under study. In other words, it can be said that performance levels of the company in terms of mean value of ROE between the two sub-periods are the same.

We find insignificant results in terms of variability in ROE between the two sub-periods at 5% level of significance. This implies that the financial break down has no significant impact on the variability in ROE of the company.

SIL: Statistically insignificant result is observed in the mean value of ROE between the two sub-periods at 5% level. Thus, ROE as a measure of profitability performance of the company between the two sub-periods is same.

So far as the variability in ROE between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in ROE of the company.

MUSCO: Analysis of ROE reveals that there is no significant difference at 5% level of significance in the mean value of ROE between the two sub-periods. This implies that performance levels of the company in terms of mean value of ROE between the two sub-periods are the same.

A significant difference is observed in the result of standard deviation difference test of ROE between the two sub-periods at 5% level. Standard deviation difference is measured as 44.24 in the first sub-period, while in the second sub-period it is recorded as 11.96. This indicates that variation in ROE performance is better in the 1st sub-period in relation to the 2nd sub-period.

KSL: Mean difference t-test between the two sub-periods reveals insignificant results under study at 5% level of significance.

In terms of consistency in ROE between the two sub-periods, we find insignificant difference between them at 5% level of significance.

JSW: Analysis of ROE reveals that there is no significant difference at 5% level in the mean value of ROE between the two sub-periods.

In terms of consistency in ROE between the two sub-periods, we find insignificant results difference between them at 5% level of significance.

On the whole, it can be inferred that 4 companies (i.e., ECL, TSL, MSL, and SAL) out of 20 companies have recorded significant difference in the mean value of ROE between the two sub-periods under study. In these cases, 3 companies (ECL, TSL and MSL) on the average have shown better ROE performance in the 1st sub-period as compared to that of

2nd sub-period, whereas in case of SAL, the reverse situation is observed. Hence, it can be inferred that financial recession has significant negative impact on the profitability performance in terms of ROE for the above stated 3 companies (i.e., ECL, TSL and MSL)

So far as the variability in performance of the company as measured by ROE is concerned, we find significant difference in five companies (i.e., SAIL, TSL, UGSL, MIL, and MUSCO) out of 20 companies. In rest of the cases, the results are found to be insignificant. This implies that in majority of the cases, financial recession has no significant impact on the variability of performance as indicated by ROE.

6.1.4 Liquidity Analysis in terms of Current Ratio (CR) [Table 6.4]

BSL: Analysis of CR reveals that there is no significant difference at 5% level of significance in the mean value of CR between the two sub-periods. Thus, it can be said that the performance levels of the company in terms of mean value of ROE between the two sub-periods are the same.

In terms of variability in CR between the two sub-periods, we find insignificant difference between them at 5% level of significance.

BSIL: The result of t-test reveals that there is a significant difference at 95% confidence level in the mean value of CR between the two sub-periods. This implies that CR on the average is better in the first sub-period (5.19) than that of the second sub-period (1.92).

So far as the consistency in CR between the two sub-periods is concerned, we find significant result at 5% level of significance. Standard deviation as measured in the first sub-period (2.32) is greater than that of second sub-period (0.42), thereby indicating better performance in the 2nd sub-period than that of the 1st sub-period in terms of consistency in CR of the company.

ECL: Statistically insignificant result is observed in the mean value of CR between the two sub-periods at 5% level.

So far as the variability in CR between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance.

SAIL: Significant result in terms of mean value of CR is observed between the two sub-periods under study. 2nd sub-period (2.18) outperformed the 1st sub-period (1.27) in terms of mean value of CR.

In terms of variability in CR between the two sub-periods, we find insignificant results difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in CR of the company.

TSL: An insignificant result is observed in the mean value of CR between the two sub-periods at 5% level. Therefore, it can be stated that CR as a measure of liquidity performance of the company on the average is same in both the sub-periods.

In terms of variability in CR between the two sub-periods, we find insignificant difference between them at 5% level of significance.

ES: A statistically insignificant result in terms of mean value of CR is observed between the two sub-periods. In other words, it can be stated that performance level of the company in terms of mean value of CR between the two sub-periods is same.

We find insignificant result in terms of variability in CR between the two sub-periods at 5% level. This indicates that the financial break down has no significant impact on the variability in CR of the company.

NSAIL: The result of t-test reveals that there is a significant difference at 5% level of significance in the mean value of CR between the two sub-periods under study. This implies that CR on the average is better in the first sub-period (1.88) than that of the second sub-period (1.72).

So far as the consistency in CR between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance.

WCL: Statistically insignificant result is observed in the mean value of CR between the two sub-periods at 5% level.

In terms of consistency in CR between the two sub-periods, we find insignificant difference between them at 5% level.

UGSL: Analysis of CR reveals that there is insignificant difference at 5% level of significance in the mean value of CR between the two sub-periods under study. Hence, it

can be said that performance level of the company in terms of mean value of CR between the two sub-periods is same.

We find insignificant results in terms of variability in CR between the two sub-periods at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in CR of the company.

ML: The result of t-test reveals that there is a significant difference at 5% level of significance in the mean value of CR between the two sub-periods. This implies that CR on the average is better in the first sub-period (2.84) than that of the second sub-period (2.52).

In terms of consistency in CR between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in CR of the company.

TIIL: Mean difference test of CR reveals insignificant results between the two sub-periods.

In terms of variability in CR between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in CR of the company.

RIL: An insignificant result is observed in the mean value of CR between the two sub-periods under study at 5% level of significance. Thus, it can be concluded that CR as a measure of liquidity performance of the company on the average is same in both sub-periods.

So far as the variability in CR between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in CR of the company.

MSL: An insignificant result is observed in the mean value of CR between the two sub-periods at 5% level.

So far as the consistency in CR between the two sub-periods is concerned, we find significant results at 5% level of significance. Standard deviation is recorded the first sub-period as 2.62, while the same is recorded as 0.44 in the second sub-period. This

indicates that variation in CR is better in 1st sub-period in relation to that of the 2nd sub-period.

SAL: An insignificant result is observed in the mean value of CR between the two sub-periods under study at 5% level of significance. Therefore, it can be stated that CR on the average as a measure of liquidity performance of the company is same in both the sub-periods.

So far as the variability in CR between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in CR of the company.

MIL: A look into the mean difference t-test reveals that there is insignificant difference at 5% level of significance in the mean value of CR between the two sub-periods under study.

So far as the variability in CR between the two sub-periods is concerned, we find insignificant difference between them at 5% level. This indicates that the financial break down has no significant impact on the variability in CR of the company.

SISCL: Mean difference test result reveals that there is a significant difference at 5% level of significance in the mean value of CR between the two sub-periods under study. This implies that CR on the average is better in the second sub-period (3.80) than that of the first sub-period (2.37).

We find insignificant results in terms of variability in CR between the two sub-periods at 5% level. This indicates that the financial break down has no significant impact on the variability in CR of the company.

SIL: Statistically significant result is observed in the mean value of CR between the two sub-periods at 5% level of significance. Thus, CR on the average as a measure of liquidity performance of the company is better in the second sub-period (3.80) than that of the first sub-period (2.81).

So far as the variability in CR between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in CR of the company.

MUSCO: Analysis of CR reveals that there is insignificant difference at 5% level of significance in the mean value of CR between the two sub-periods. Hence, it can be said that performance levels of the company in terms of mean value of CR between the two sub-periods are the same.

So far as the variability in CR between the two sub-periods is concerned, we find insignificant difference between them at 5% level. This indicates that the financial break down has no significant impact on the variability in CR of the company.

KSL: Mean difference t-test between the two sub-periods reveals insignificant results at 5% level of significance. In other words, it can be stated that performance levels of company in terms of mean value of CR between the two sub-periods are the same.

In terms of consistency in CR between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in CR of the company.

JSW: Analysis of CR reveals that there is no significant difference at 5% level of significance in the mean value of CR between the two sub-periods under study.

In terms of consistency in CR between the two sub-periods, we find insignificant difference between them at 5% level of significance.

From the above analysis it can be stated that 6 companies (i.e., BSIL, SAIL, NSAIL, ML, SISCL, and SIL) out of 20 companies have recorded significant difference in the mean value of ROE between the two sub-periods under study. In these cases, 3 companies (BSIL, NSAIL, and ML) on the average have shown better CR performance in the 1st sub-period as compared to that of 2nd sub-period, while in the other three companies, namely, SAIL, SISCL, and SIL have recorded the reverse situation. Hence it can be stated that financial recession has significant impact on the liquidity performance in terms of CR in all these 6 companies.

So far as the variability in performance of the company as measured by CR is concerned, we find significant difference only in two companies (i.e., BSIL and MSL) out of 20 companies. In rest of the cases, the results are found to be insignificant. This implies that in majority of the cases, financial recession has no significant impact in the variability of performance as indicated by CR.

6.1.5 Liquidity Analysis in terms of Quick Ratio (QR) [Table 6.5]

BSL: The result of t- test reveals that there is a significant difference at 95% confidence level in the mean value of QR between the two sub-periods under study. This implies that QR on the average is better in the first sub-period (1.72) than that of the second sub-period (1.05).

In terms of variability in QR between the two sub-periods, we find significant difference between them at 5% level of significance. The S.D of the first sub-period is recorded as 0.58, whereas in the 2nd sub-period the same is recorded as 0.23 showing greater degree of variability in the 1st sub-period in relation to the 2nd sub-period. This indicates that the financial break down has significant positive impact on the variability in QR of the company.

BSIL: Significant difference is observed at 5% level of significance in the mean value of QR between the two sub-periods. This implies that QR on the average is better in the first sub-period (0.82) than that of the second sub-period (1.05).

In terms of variability in QR between the two sub-periods, we find significant difference between them at 5% level of significance. The S.D of the first sub-period is recorded as 0.71, whereas in the 2nd sub-period the same is recorded as 0.11 showing greater degree of consistency in the 2nd sub-period as compared to the 1st sub-period. This shows that financial break down has significant positive impact on the variability in QR of the company.

ECL: An insignificant result in terms of mean value of QR is observed between the two sub-periods. In other words, it can be said that performance levels of the company in terms of mean value of QR between the two sub-periods are the same.

So far as the variability in QR between the two sub-periods is concrned, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in QR of the company.

SAIL: The result of t-test reveals that there is a significant difference at 95% confidence level in the mean value of QR between the two sub-periods. This implies that QR on the average is better in the first sub-period (1.72) than that of the second sub-period (1.05).

In terms of variability in QR between the two sub-periods, we find insignificant difference between them at 5% level of significance.

TSL: An insignificant result in terms of mean value of QR is observed between the two sub-periods under study.

So far as the variability in QR between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in QR of the company.

ES: An insignificant result in terms of mean value of QR is observed between the two sub-periods. In other words, it can be stated that performance level of the company in terms of mean value of QR between the two sub-periods is same.

We find insignificant result in terms of variability in QR between the two sub-periods at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in QR of the company.

NSAIL: Analysis of QR reveals that there is insignificant difference at 5% level of significance in the mean value of QR between the two sub-periods under study. Hence, it can be said that the performance levels of the company in terms of mean value of QR between the two sub-periods are the same.

So far as the consistency in QR between the two sub-periods is concerned, we find significant results at 5% level of significance. The SD of 1^{st} sub-period is observed to be 0.15, whereas for the 2^{nd} sub-period, the same is recorded as 0.05. Hence, it shows lesser degree of variability in the second sub-period. This indicates that the financial break down has significant positive impact on the variability in QR of the company.

WCL: Statistically insignificant result is observed in the mean value of QR between the two sub-periods at 5% level. In other words, it can be stated that performance levels of the company in terms of mean value of QR between the two sub-periods are the same.

In terms of consistency in QR between the two sub-periods, we find insignificant difference between them at 5% level of significance.

UGSL: Analysis of QR reveals that there is insignificant difference at 5% level of significance in the mean value of QR between the two sub-periods. Hence, it can be said

that performance levels of the company in terms of mean value of QR between the two sub-periods are the same.

So far as the variability in QR between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This implies that the financial break down has no significant impact on the variability in QR of the company.

ML: Significant difference is observed at 5% level of significance in the mean value of QR between the two sub-periods under study. This indicates that QR on the average is better in the first sub-period (0.65) than that of the second sub-period (0.63).

In terms of consistency in QR between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in QR of the company.

TIIL: Mean difference test of QR reveals significant results between the two sub-periods under study. This shows that QR on the average is better in the first sub-period (1.83) than that of the second sub-period (0.97).

In terms of variability in QR between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in QR of the company.

RIL: An insignificant result is observed in the mean value of QR between the two sub-periods at 5% level. Hence, it can be stated that performance levels of the company in terms of mean value of QR between the two sub-periods are the same.

So far as the variability in QR between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance.

MSL: Mean difference test of QR reveals insignificant result between the two sub-periods at 5% level in the mean value of QR.

So far as the consistency in QR between the two sub-periods is concerned, we find significant result at 5% level. The SD of the 1^{st} sub-period is observed to be 2.67, whereas for the 2^{nd} sub-period, the same is recorded as 0.88. Hence, it shows lesser degree of variability in the second sub-period. This indicates that the financial break down has significant positive impact on the variability in QR of the company.

SAL: Analysis of mean difference test reveals insignificant result in the mean value of QR between the two sub-periods at 5% level of significance. Hence, it can be inferred that performance levels of the company in terms of mean value of QR between the two sub-periods are the same.

So far as the variability in QR between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in QR of the company.

MIL: A look into the mean difference t-test reveals that there is no significant difference at 5% level in the mean value of QR between the two sub-periods.

In terms of variability in QR between the two sub-periods, we find insignificant difference between them at 5% level. This indicates that the financial break down has no significant impact on the variability in QR of the company.

SISCL: Mean difference test of QR reveals significant result between the two sub-periods. This implies that QR on the average is better in the 2^{nd} sub-period (1.83) than that of the 1^{st} sub-period (0.97).

We find insignificant result in terms of variability in QR between the two sub-periods at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in QR of the company.

SIL: Statistically significant result is observed in the mean value of QR between the two sub-periods under study at 5% level of significance. Therefore, it can be stated that QR on the average is better in the 2^{nd} sub-period (2.80) than that of the 1^{st} sub-period (1.74).

So far as the variability in QR between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in QR of the company.

MUSCO: Analysis of QR reveals that there is no significant difference at 5% level of significance in the mean value of QR between the two sub-periods under study.

In terms of variability in QR between the two sub-periods3, we find insignificant difference between them at 5% level of significance.

KSL: Mean difference t-test between the two sub-periods reveals insignificant results under study at 5% level of significance.

In terms of consistency in QR between the two sub-periods, we find insignificant difference between them at 5% level of significance.

JSW: Analysis of QR reveals that there is a significant difference at 5% level of significance in the mean value of QR between the two sub-periods. Therefore, it can be said that QR on the average is better in the 1st sub-period (0.68) than that of the 2nd sub-period (0.47).

In terms of consistency in QR between the two sub-periods, we find insignificant difference between them at 5% level of significance.

From the above analysis of the selected sample companies in terms of QR, it is observed that 8 companies (i.e., BSL, BSIL, SAIL, ML, TIIL, SISCL, SIL, and JSW) out of 20 companies have recorded significant difference in the mean value of CR between the two sub-periods under study. In these cases, 5 companies (i.e., BSL, BSIL, ML, TIIL, and JSW) on the average have shown better QR performance in the 1st sub-period as compared to that of 2nd sub-period, whereas in case of other three companies namely, SAIL, SISCL, and SIL, the reverse situation is observed. Hence, it can be inferred that financial recession has significant impact on the liquidity performance in terms of QR for the above stated 8 companies.

So far as the variability in performance of the company as measured by QR is concerned, we find significant difference in 4 companies (i.e., BSL, BSIL, NSAIL, and MSL) out of 20 companies. In rest of the cases, the results are found to be insignificant. This implies that in majority of the cases, financial recession has no significant impact on the variability of performance as indicated by QR.

6.1.6 Liquidity Analysis in terms of Total Current Assets to Total Assets (TCA/TA) [Table 6.6]

BSL: The result of t- test reveals that there is a significant difference at 5% level of significance in the mean value of TCA/TA between the two sub-periods. This shows that TCA/TA on the average is better in the first sub-period (0.38) than that of the second sub-period (0.21). This indicates that the financial recession has significant negative impact on the performance of the company in terms of TCA/TA.

In terms of variability in TCA/TA between the two sub-periods, we find insignificant difference between them at 5% level of significance.

BSIL: Analysis of TCA/TA of BSIL reveals that there is insignificant difference at 5% level of significance between the two sub-periods.

So far as the consistency in TCA/TA between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in TCA/TA of the company.

ECL: Statistically insignificant result is observed in the mean value of TCA/TA between the two sub-periods at 5% level of significance.

So far as the variability in TCA/TA between the two sub-periods is concerned, we find insignificant results difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in TCA/TA of the company.

SAIL: An insignificant result in terms of mean value of TCA/TA is observed between the two sub-periods under study. In other words, it can be stated that performance level of the company in terms of mean value of TCA/TA between the two sub-periods is same.

In terms of variability in TCA/TA between the two sub-periods, we find insignificant difference between them at 5% level of significance.

TSL: The result of t-test reveals that there is an insignificant difference at 95% confidence level in the mean value of TCA/TA between the two sub-periods. This implies that TCA/TA on the average remains same in both the sub-periods.

So far as the consistency in TCA/TA between the two sub-periods is concerned, we find insignificant difference between them at 5% level. This implies that the financial break down has an insignificant impact on the variability in TCA/TA of the company.

ES: An insignificant result in terms of mean value of TCA/TA is observed between the two sub-periods under study.

We find insignificant results in terms of variability in TCA/TA between the two sub-periods at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in TCA/TA of the company.

NSAIL: We find no significant difference at 5% level of significance in the mean value of TCA/TA between the two sub-periods under study. Hence, it can be said that the performance levels of the company in terms of mean value of TCA/TA between the two sub-periods are the same.

In terms of consistency in TCA/TA between the two sub-periods, significant difference is observed between them at 5% level. The S.D of the first sub-period is recorded as 0.07, whereas in the 2^{nd} sub-period, the same is recorded as 0.03, thereby showing greater degree of variability in the 1^{st} sub-period as compared to that of the 2^{nd} sub-period. This indicates that the financial break down has significant positive impact on the variability in TCA/TA of the company.

WCL: Statistically insignificant result is observed in the mean value of TCA/TA between the two sub-periods under study at 5% level of significance. In other words, it can be stated that performance level of the company in terms of mean value of TCA/TA between the two sub-periods is same.

In terms of consistency in TCA/TA between the two sub-periods, we find insignificant difference between them at 5% level. This indicates that the financial break down has no significant impact on variability in the TCA/TA of the company.

UGSL: We find no significant difference at 5% level of significance in the mean value of TCA/TA between the two sub-periods under study. Hence, it can be said that performance levels of the company in terms of mean value of TCA/TA between the two sub-periods are the same.

In terms of variability in TCA/TA between the two sub-periods, we find significant difference between them at 5% level of significance. The S.D of the first sub-period is recorded as 0.10, whereas in the 2^{nd} sub-period, the same is recorded as 0.04, showing greater degree of variability in the 1^{st} sub-period as compared to that of the 2^{nd} sub-period. This indicates that the financial break down has significant positive impact on the variability in TCA/TA of the company.

ML: Analysis of TCA/TA reveals that there is insignificant difference at 5% level of significance in the mean value of TCA/TA between the two sub-periods under study.

In terms of consistency in TCA/TA between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in TCA/TA of the company.

TIIL: Mean difference test of TCA/TA for TIIL reveals significant result between the two sub-periods under study. It is observed that the 1st sub-period (0.55) outperformed the 2nd sub-period (0.37) in terms of mean value of TCA/TA.

In terms of variability in TCA/TA between the two sub-periods, we find insignificant result at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in TCA/TA of the company.

RIL: Significant result is observed in the mean value of TCA/TA between the two sub-periods at 5% level. Therefore, it can be stated that TCA/TA as a measure of liquidity performance of the company on the average is better in the first sub-period (0.74) than that of the second sub-period (0.37).

So far as the variability in TCA/TA between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance.

MSL: The result of t-test reveals that there is insignificant difference at 95% confidence level in the mean value of TCA/TA between the two sub-periods. Therefore, it can be inferred that performance levels of the company in terms of mean value of TCA/TA between the two sub-periods are same.

In terms of consistency in TCA/TA between the two sub-periods, we find insignificant difference between them at 5% level of significance.

SAL: Analysis of mean difference test reveals significant result in the mean value of TCA/TA between the two sub-periods at 5% level. Thus, TCA/TA as a measure of liquidity performance of the company on the average is better in the first sub-period (0.61) than that of the second sub-period (0.39).

So far as the variability in TCA/TA between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in TCA/TA of the company.

MIL: A look into the mean difference t-test reveals that there is significant difference at 5% level in the mean value of TCA/TA between the two sub-periods. Hence, it can be said that performance level of the company in terms of mean value of TCA/TA is better in the 2nd sub-period (0.65) than that of 1st sub-period (0.53).

So far as the variability in TCA/TA between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance.

SISCL: Significant result in terms of mean value of TCA/TA is observed between the two sub-periods under study. Therefore, it can be stated that TCA/TA on the average is better in the 2nd sub-period (0.53) than that of the 1st sub-period (0.44).

We find insignificant results in terms of variability in TCA/TA between the two sub-periods at 5% level. This indicates that the financial break down has no significant impact on the variability in TCA/TA of the company.

SIL: Statistically significant result is observed in the mean value of TCA/TA between the two sub-periods at 5% level. Therefore, it can be concluded that TCA/TA as a measure of liquidity performance of company on the average is better in the first sub-period (0.70) than that of the second sub-period (0.42).

So far as the variability in TCA/TA between the two sub-periods is concerned, we find insignificant difference between them at 5% level. This indicates that the financial break down has no significant impact on the variability in TCA/TA of the company.

MUSCO: Analysis of TCA/TA reveals that there is no significant difference at 5% level in the mean value of TCA/TA between the two sub-periods.

A significant difference at 95% confidence level in the standard deviation differences is observed between the two sub-periods under study. Standard deviation recorded in the 1st sub-period is 0.09, whereas in the 2nd sub-period it is registered as 0.03. This implies that variability in TCA/TA of the company is better in the 1st sub-period in relation to the 2nd sub-period.

KSL: Mean difference t-test between the two sub-periods reveals insignificant results under study at 5% level. In other words, it can be stated that performance level of the company in terms of mean value of TCA/TA between the two sub-periods is same.

In terms of consistency in TCA/TA between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in TCA/TA of the company.

JSW: Analysis of TCA/TA reveals that there is no significant difference at 5% level of significance in the mean value of TCA/TA between the two sub-periods.

In terms of consistency in TCA/TA between the two sub-periods, we find insignificant difference between them at 5% level of significance..

From the above analysis of the selected sample companies in terms of TCA/TA, it is observed that 7 companies (i.e., BSL, TIIL, RIL, SAL, MIL, SISCL, and SIL) out of 20 companies have recorded significant difference in the mean value of TCA/TA between the two sub-periods under study. In these cases, 5 companies (i.e., BSL, TIIL, RIL, SAL, and SIL) on the average have shown better TCA/TA performance in the 1^{st} sub-period as compared to that of the 2^{nd} sub-period, whereas in case of MIL and SISCL, the reverse situation is observed. Hence, it can be stated that financial recession has significant negative impact on the liquidity performance in terms of TCA/TA for the aforesaid 5 companies.

So far as the variability in performance of the company as measured by TCA/TA is concerned, we find significant difference in three companies (i.e., NSAIL, UGSL and MUSCO) out of 20 companies. In rest of the cases, the results are found to be insignificant. This implies that in majority of the cases financial recession has no significant impact on the variability of performance as represented by TCA/TA.

6.17. Liquidity Analysis in terms of Total Current Liabilities to Total Assets (TCL/TA) [Table 6.7]

BSL: The result of t-test reveals that there is a significant difference at 5% probability level in the mean value of TCL/ TA between the two sub-periods under study. This implies that TCL/ TA on the average is better in the first sub-period (0.14) than that of the second sub-period (0.04).

In terms of variability in TCL/ TA between the two sub-periods, we find insignificant difference between them at 5% level of significance.

BSIL: Analysis of TCL/ TA reveals that there is a significant difference at 5% probability level in the mean value of TCL/ TA between the two sub-periods. This is indicative of the fact that TCL/ TA on the average is better in the first sub-period (0.14) than that of the second sub-period (0.14).

So far as the consistency in TCL/ TA between the two sub-periods is concerned, we find insignificant difference between them at 5% level. This indicates that the financial break down has no significant impact on the variability in TCL/ TA of the company.

ECL: Mean difference t-test between the two sub-periods reveals insignificant results under study at 5% level. In other words, it can be stated that performance levels of company in terms of mean value of TCL/ TA between the two sub-periods are the same.

In terms of consistency in TCL/ TA between the two sub-periods, we find insignificant difference between them at 5% probability level. This indicates that the financial break down has no significant impact on the variability in the TCL/ TA of the company.

SAIL: Significant result (in statistical sense) in terms of mean differences of TCL/ TA is observed between the two sub-periods. This is indicative of the fact that TCL/ TA on the average is better in the first sub-period (0.33) than that of the second sub-period (0.10).

In terms of variability in TCL/ TA between the two sub-periods, we find significant difference between them at 5% level. The SD of the 1^{st} sub-period is recorded as 0.04, whereas the SD of the 2^{nd} sub-period is registered as 0.07. This indicates lower variability in the 1^{st} sub-period than that of the 2^{nd} sub-period.

TSL: The result of t-test reveals that there is a significant difference at 95% confidence level in the mean value of TCL/ TA between the two sub-periods. This implies that TCL/ TA on the average is better in the first sub-period (0.28) than that of the second sub-period (0.05).

In terms of variability in TCL/ TA between the two sub-periods, we find insignificant difference between them at 5% level. This indicates that the financial break down has insignificant impact on the variability in TCL/ TA of the company.

ES: An insignificant result in terms of mean difference of TCL/ TA is observed between the two sub-periods.

We find insignificant results in terms of variability in TCL/ TA between the two sub-periods at 5% level. This shows that the financial break down has no significant impact on the variability in TCL/ TA of the company.

NSAIL: The result of t-test reveals that there is a significant difference at 95% confidence level in the mean value of TCL/ TA between the two sub-periods. This implies that TCL/ TA on the average is better in the first sub-period (0.36) than that of the second sub-period (0.19).

In terms of variability in TCL/ TA between the two sub-periods, we find significant difference between them at 5% level. The SD of the 1st sub-period is recorded as 0.05, while the SD of the 2nd sub-period is registered as 0.02. This implies that variability in TCL/TA of the company is better in the 1st sub-period in relation to the 2nd sub-period.

WCL: Statistically insignificant result is observed in the mean value of TCL/ TA between the two sub-periods under study at 5% level of significance.

In terms of consistency in TCL/ TA between the two sub-periods, we find insignificant result difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in TCL/ TA of the company.

UGSL: Analysis of TCL/ TA reveals that there is no significant difference at 5% level of significance in the mean value of TCL/ TA between the two sub-periods. Hence, it can be stated that the performance levels of company in terms of mean value of TCL/ TA between the two sub-periods are the same.

We find insignificant results in terms of variability in TCL/ TA between the two sub-periods at 5% level. This implies that the financial break down has no significant impact on the variability in the TCL/ TA of the company.

ML: Significant difference at 5% level of significance in the mean value of TCL/ TA is observed between the two sub-periods under study.

In terms of consistency in the TCL/ TA between the two sub-periods, we find insignificant results difference between them at 5% level.

TIIL: Mean difference test of TCL/ TA reveals significant result between the two sub-periods. Therefore, it can be stated that the TCL/ TA as a measure of liquidity performance of the company on the average is better in the first sub-period (0.34) than that of the second sub-period (0.10).

So far as the variability in TCL/ TA between the two sub-periods is concerned, we find significant difference between them at 5% level. The SD of the 1st sub-period is recorded as 0.04, while the SD of the 2nd sub-period is observed as 0.01. This implies that variability in TCL/TA of the company is better in the 1st sub-period in relation to the 2nd sub-period.

RIL: Significant result is observed in the mean value of TCL/ TA between the two sub-periods at 5% level. The company on the average is better in the first sub-period (0.31) than that of the second sub-period (0.07).

So far as the variability in TCL/ TA between the two sub-periods is concerned, we find insignificant difference between them at 5% level. This indicates that the financial break down has no significant impact on the variability in TCL/ TA of the company.

MSL: Analysis of TCL/ TA reveals that there is no significant difference at 5% level of significance in the mean value of TCL/ TA between the two sub-periods.

In terms of consistency in the TCL/ TA between the two sub-periods is concerned, we find significant difference between them at 5% level of significance. The SD of the 1st sub-period is recorded as 0.04, while the SD of the 2nd sub-period is registered as 0.02. This implies that variability in TCL/TA of the company is better in the 1st sub-period in relation to the 2nd sub-period.

SAL: Analysis of mean difference test reveals significant result in the mean value of TCL/ TA between the two sub-periods at 5% level of significance. Hence, TCL/ TA as a measure of liquidity performance of company on the average is better in the first sub-period (0.31) than that of the second sub-period (0.08).

So far as the variability in TCL/ TA between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in TCL/ TA of the company.

MIL: A look into the mean difference t-test reveals that there is no significant difference at 5% level of significance in the mean value of TCL/ TA between the two sub-periods under study. Hence, it can be said that performance levels of company in terms of mean value of TCL/ TA between the two sub-periods are the same.

An insignificant result is recorded in terms of variability in TCL/ TA between the two sub-periods at 5% level of significance.

SISCL: An insignificant result in terms of mean value of TCL/ TA is observed between the two sub-periods under study. In other words, it can be stated that the performance levels of company in terms of mean value of TCL/ TA between the two sub-periods are the same.

We find insignificant results in terms of variability in TCL/ TA between the two sub-periods at 5% level. This indicates that the financial break down has no significant impact on the variability in TCL/ TA of the company.

SIL: Statistically significant result is observed in the mean value of TCL/ TA between the two sub-periods at 5% level of significance. Thus, it can be stated that the TCL/ TA as a measure of liquidity performance of the company on the average is better in the first sub-period (0.26) than that of the second sub-period (0.05).

So far as the variability in TCL/ TA between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance.

MUSCO: Analysis of TCL/ TA reveals that there is no significant difference at 5% level of significance in the mean value of TCL/ TA between the two sub-periods under study.

An insignificant result is recorded in terms of variability in TCL/ TA between the two sub-periods at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in TCL/ TA of the company.

KSL: Mean difference t-test between the two sub-periods reveals insignificant results at 5% level of significance.

In terms of consistency in TCL/ TA between the two sub-periods, we find insignificant difference between them at 5% level. This implies that the financial break down has no significant impact on the variability in the TCL/ TA of the company.

JSW: Analysis of TCL/ TA reveals that there is a significant difference at 5% level of significance in the mean value of TCL/ TA between the two sub-periods. Therefore , it can be stated that TCL/ TA as a measure of liquidity performance of company on the average is better in the first sub-period (0.16) than that of the second sub-period (0.10).

In terms of consistency in TCL/ TA between the two sub-periods, we find insignificant difference between them at 5% level of significance.

On the whole, it is observed that 11 companies out of 20 companies have recorded significant difference in the mean value of TCL/ TA between the two sub-periods under study. In these cases, all the 11 companies on the average have shown better TCL/ TA performance in the 1st sub-period as compared to that of the 2nd sub-period. For the remaining 9 companies, we find insignificant results. Hence, it can be inferred that financial recession has significant negative impact on the liquidity performance in terms of TCL/ TA for the aforesaid 11 companies under study.

So far as the variability in performance of the company as measured by TCL/ TA is concerned, we find significant difference in case of four companies (i.e., SAIL, NSAIL, TIIL, and MSL) out of 20 companies. In rest of the cases, the results are found to be statistically insignificant. This implies that in majority of the cases, financial recession has no significant impact on the variability of performance as indicated by TCL/ TA.

6.1.8 Liquidity Analysis in terms of Debtors' Turnover Ratio (DTR) [Table 6.8]

BSL: The result of t- test reveals that there is a significant difference at 95% confidence level in the mean value of DTR between the two sub-periods under study. This implies that DTR on the average is better in the first sub-period (6.28) in comparison to the second sub-period (9.61).

In terms of variability in DTR between the two sub-periods, we find insignificant results.

BSIL: Analysis of DTR reveals that there is a significant difference at 5% level of significance in the mean value of DTR between the two sub-periods. The mean value of DTR in the 1st sub-period is 29.36, whereas in the 2nd sub-period it is 14.82. Hence, it can be said that performance level of the company in terms of mean value of DTR between the two sub-periods varies significantly.

So far as the consistency in DTR between the two sub-periods is concerned, we find significant difference between them at 5% level of significance. The SD of the 1st sub-period is recorded as 9.90, whereas the SD of the 2nd sub-period is registered as 3.94. This implies that variability in DTR of the company is better in the 1st sub-period in relation to the 2nd sub-period.

ECL: Statistically significant result is observed in the mean value of DTR between the two sub-periods at 5% level of significance. Therefore, it can be stated that DTR of the company on the average is better in the 2nd sub-period (3.32) than that of the 1st sub-period (2.83).

So far as the variability in DTR between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that financial break down has no significant impact on the variability in DTR of the company.

SAIL: An insignificant result in terms of mean value of DTR is observed between the two sub-periods under study.

In terms of variability in DTR between the two sub-periods, we find insignificant difference between them at 5% level of significance.

TSL: The result of t-test reveals that there is a significant difference at 95% confidence level in the mean value of DTR between the two sub-periods. This implies that DTR on the average is better in the 1st sub-period (18.18) than that of the 2nd sub-period (52.83).

An insignificant difference in standard deviation is observed in DTR between the two sub-periods at 5% level of significance. This shows that the financial break down has a no significant impact on the variability in DTR of the company.

ES: Statistically significant result in terms of mean value of DTR is observed between the two sub-periods under study. Therefore, it can be said that the DTR as a measure of liquidity performance of the company on the average is better in the 2nd sub-period (28.21) in comparison to the 1st sub-period (11.02).

An insignificant difference in standard deviation is observed in DTR between the two sub-periods at 5% level. This indicates that the financial break down has a no significant impact on the variability in DTR of the company.

NSAIL: Analysis of DTR reveals that there is a significant difference at 5% level of significance in the mean value of DTR between the two sub-periods. Thus, DTR as a measure of liquidity performance of the company on the average is better in the 1st sub-period (11.03) than that of the 2nd sub-period (9.15). Hence, it can be stated that the performance levels of the company in terms of mean value of DTR between the two sub-periods varies significantly.

So far as the consistency in DTR between the two sub-periods is concerned, we find insignificant result at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in DTR of the company.

WCL: Statistically significant result is observed in the mean value of DTR between the two sub-periods at 5% level of significance. Therefore, DTR of the company on the average is better in the 2nd sub-period (5.67) than that of the 1st sub-period (8.26).

In terms of consistency in DTR between the two sub-periods, we find insignificant difference between them at 5% level of significance. This implies that the financial break down has no significant impact on the variability in terms DTR of the company.

UGSL: Analysis of DTR reveals that there is no significant difference at 5% level of significance in the mean value of DTR between the two sub-periods. Thus, DTR is same in both the sub-periods.

So far as the consistency in DTR between the two sub-periods is concerned, we find significant difference between them at 5% level of significance. The SD of the 1st sub-period is recorded as 9.53, whereas SD of the 2nd sub-period is registered as 1.96. This indicates that the financial break down has significant positive impact on the variability in the DTR of the company. This implies that variability in DTR performance of the company is better in the 1st sub-period in relation to the 2nd sub-period.

ML: Analysis of DTR reveals that there is insignificant difference at 5% level of significance in the mean value of DTR between the two sub-periods under study. Therefore, it implies that on the average DTR is same in both the sub-periods under study.

In terms of consistency in DTR between the two sub-periods, we find insignificant difference between them at 5% level of significance.

TIIL: Mean difference test of DTR reveals significant results between the two sub-periods. On the average, DTR in the 2nd sub-period (2.0) is lower than that of the 1st sub-period (8.26). In other words, it can be stated that performance levels of the company in terms of mean value of DTR between the two sub-periods varies significantly.

In terms of variability in DTR between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in DTR of the company.

RIL: Analysis of DTR reveals that there is an insignificant difference at 5% level of significance in the mean value of DTR between the two sub-periods.

In terms of variability in DTR between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in DTR of the company.

MSL: The result of mean difference t-test reveals that there is a significant difference at 95% confidence level in the mean value of DTR between the two sub-periods. This implies that DTR on the average is better in the 1st sub-period (10.46) than that of the second sub-period (7.51).

So far as the consistency in DTR between the two sub-periods is concerned, we find significant difference between them at 5% level of significance. The SD of the 1st sub-period is recorded as 1.68, whereas the SD of the 2nd sub-period is registered as 0.37. This implies that variability in DTR of the company is better in the 1st sub-period in relation to the 2nd sub-period.

SAL: Analysis of mean difference test reveals insignificant result in the mean value of DTR between the two sub-periods at 5% level of significance. Therefore, it can be concluded that DTR as a measure of liquidity performance of the company on the average are the same in both the sub-periods.

So far as the variability in DTR between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance.

MIL: A look into the mean difference t-test reveals that there is a significant difference at 5% level of significance in the mean value of DTR between the two sub-periods. This

implies that DTR on the average is better in the 1st sub-period (6.59) than that of the second sub-period (5.30).

In terms of variability in DTR between the two sub-periods, we find insignificant result at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in DTR of the company.

SISCL: An insignificant result in terms of mean value of DTR is observed between the two sub-periods under study. In other words, it can be stated that performance levels of the company in terms of mean value of DTR between the two sub-periods are the same.

So far as the consistency in DTR between the two sub-periods is concerned, we find significant difference between them at 5% level of significance. The SD of the 1st sub-period is recorded as 5.86, while SD of the 2nd sub-period is registered as 1.80. This implies that in terms of variability in DTR of the company, 1st sub-period is better in relation to the 2nd sub-period.

SIL: An insignificant result in terms of mean value of DTR is observed between the two sub-periods.

So far as the consistency in DTR between the two sub-periods is concerned, we find significant difference between them at 5% level of significance. The SD of the 1st sub-period is observed as 1.53, whereas SD of the 2nd sub-period is registered as 0.56. This implies that in terms of variability in DTR of the company, 1st sub-period is better in relation to the 2nd sub-period.

MUSCO: Analysis of DTR reveals that there is no significant difference at 5% level of significance in the mean value of DTR between the two sub-periods. This implies that DTR on the average is same in both the sub-periods under study.

In terms of variability in DTR between the two sub-periods, we find insignificant difference between them at 5% level of significance.

KSL: Mean difference t-test between the two sub-periods reveals insignificant results at 5% level of significance.

So far as the consistency in DTR between the two sub-periods is concerned, we find significant difference between them at 5% level of significance. The SD of the 1st sub-period is recorded as 2.81, whereas SD of the 2nd sub-period is registered as 0.26. This

implies that in terms of variability in DTR of the company, 1st sub-period is better in relation to the 2nd sub-period.

JSW: A look into the mean difference t-test reveals that there is a significant difference at 5% level of significance in the mean value of DTR between the two sub-periods. On the average, DTR in the 2nd sub-period (40.11) has outperformed the 1st sub-period (16.88).

So far as the consistency in DTR between the two sub-periods is concerned, we find significant difference between them at 5% level of significance. The SD of the 1st sub-period is recorded as 12.08, whereas SD of the 2nd sub-period is registered as 2.67. This implies that in terms of variability in DTR of the company, 1st sub-period is better in relation to the 2nd sub-period.

From the above analysis, it is observed that 11 companies out of 20 companies have recorded significant difference in the mean value of DTR between the two sub-periods under study. In these cases, 4 companies (BSIL, NSAIL, MSL, and MIL) on the average have shown better DTR performance in the 1st sub-period as compared to that of the 2nd sub-period, whereas the reverse situation is observed in the remaining 7 companies. Hence, it can be inferred that financial recession has significant impact on the liquidity performance in terms of DTR.

So far as the variability in the performance of the company as measured by DTR is concerned, we find significant difference in 7 companies (i.e., BSIL, UGSL, MSL, SISCL, SIL, KSL, and JSW) out of 20 companies. In rest of the cases, the results are found to be insignificant. This implies that in majority of the cases, financial recession has no significant impact on the variability of performance as indicated by DTR.

6.1.9 Liquidity Analysis in terms of Inventory Turnover Ratio (ITR) [Table 6.9]

BSL: The result of t-test reveals that there is a significant difference at 95% confidence level in the mean value of ITR between the two sub-periods. This implies that ITR on the average is better in the 1st sub-period (6.13) than that of the second sub-period (3.90).

In terms of variability in ITR between the two sub-periods, we find insignificant difference between them at 5% level of significance.

BSIL: Analysis of ITR reveals that there is no significant difference at 5% level of significance in the mean value of ITR between the two sub-periods under study.

So far as the consistency in the ITR between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance.

ECL: Statistically significant result is observed in the mean value of ITR between the two sub-periods at 5% level. Therefore, it can be said that ITR of the company on the average is better in the first sub-period (5.71) than that of the second sub-period (4.32).

So far as the variability in ITR between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in ITR of the company.

SAIL: An insignificant result in terms of mean value of ITR is observed between the two sub-periods under study. In other words, it can be stated that performance levels of the company in terms of mean value of ITR between the two sub-periods are the same.

In terms of variability in ITR between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in ITR of the company.

TSL: The result of t- test reveals that there is a significant difference at 95% confidence level in the mean value of ITR between the two sub-periods. This implies that ITR on the average is better in the first sub-period (8.93) than that of the second sub-period (8.69).

In terms of variability in ITR between the two sub-periods, we find significant difference between them at 95% confidence level. This indicates that the financial break down has a significant impact on the variability in ITR of the company.

ES: An insignificant result in terms of mean value of ITR is observed between the two sub-periods under study.

We find insignificant results in terms of variability in ITR between the two sub-periods at 5% level of significance.

NSAIL: Analysis of ITR reveals that there is insignificant difference at 5% level of significance in the mean value of ITR between the two sub-periods under study. Thus, ITR between the two sub-periods is same.

So far as the consistency in ITR between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in ITR of the company.

WCL: The result of t-test reveals that there is a significant difference at 95% confidence level in the mean value of ITR between the two sub-periods. This implies that ITR on the average is better in the first sub-period (7.12) than that of the second sub-period (4.13).

In terms of consistency in ITR between the two sub-periods, we find significant difference between them at 5% level of significance. The SD of 1st sub-period is recorded as 3.14, while in the 2nd sub-period it is registered as 0.64.This indicates that the financial break down has significant positive impact on the variability in the ITR of the company.

UGSL: Analysis of ITR reveals that there is no significant difference at 5% level of significance in the mean value of ITR between the two sub-periods under study. Hence, assertion can be made that the performance level of company in terms of mean value of ITR between the two sub-periods is same.

We find insignificant results in terms of variability in ITR between the two sub-periods at 5% level of significance. This implies that in terms of variability in ITR of the company, 1st sub-period is better in relation to the 2nd sub-period.

ML: Statistically significant result is observed in the mean value of ITR between the two sub-periods at 5% level of significance. Therefore, it can be inferred that ITR as a measure of liquidity performance of the company on the average is better in the first sub-period (4.39) than that of the second sub-period (3.25).

In terms of consistency in ITR between the two sub-periods, we find significant difference between them at 5% level of significance. The SD of 1st sub-period is recorded as 1.03, whereas in the 2nd sub-period it is registered as 0.28. This implies that so far as the variability in ITR of the company is concerned, 1st sub-period is better in relation to the 2nd sub-period.

TIIL: Mean difference test of ITR reveals statistically significant result in the mean value of ITR between the two sub-periods under study at 5% level of significance. Therefore it can be inferred that the ITR as a measure of liquidity performance of company on the average is better in the first sub-period (11.11) than that of the second sub-period (9.24).

In terms of variability in ITR between the two sub-periods, we find significant difference between them at 5% level of significance. The SD of 1st sub-period is recorded as 1.50, whereas in the 2nd sub-period it is registered as 0.28. This implies that in terms of variability in ITR of the company, 1st sub-period is better in relation to the 2nd sub-period.

RIL: Analysis of ITR reveals that there is insignificant difference at 5% level of significance in the mean value of ITR between the two sub-periods.

We find insignificant results in terms of variability in ITR between the two sub-periods at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in ITR of the company.

MSL: The result of t- test reveals that there is a significant difference at 95% confidence level in the mean value of ITR between the two sub-periods. Therefore it can be inferred that ITR of the company on the average is better in the first sub-period (7.15) than that of the second sub-period (4.50).

In terms of consistency in ITR between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in the ITR of the company.

SAL: Analysis of mean difference test reveals significant result in the mean value of ITR between the two sub-periods at 5% level. Therefore, it can be stated that ITR as a measure of liquidity performance of the company on the average is better in the first sub-period (9.10) than that of the second sub-period (4.68).

In terms of variability in ITR between the two sub-periods, we find significant difference between them at 5% level of significance. The SD of the 1st sub-period is recorded as 2.69, whereas in the 2nd sub-period it is registered as 0.69. This is indicative of the fact that variation in ITR of the company is better in the 1st sub-period in relation to the 2nd sub-period.

MIL: A look into the mean difference t-test reveals that there is a significant difference at 5% level in the mean value of ITR between the two sub-periods. Therefore, it can be stated that ITR of the company on the average is better in the first sub-period (13.14) than that of the second sub-period (5.74).

In terms of variability in ITR between the two sub-periods, we find significant difference between them at 5% level. The SD of 1st sub-period is recorded as 7.18, whereas in the 2nd sub-period it is observed as 1.30. This implies of the fact that variation in ITR of the company is better in the 1st sub-period in relation to the 2nd sub-period.

SISCL: Mean difference test reveals significant result in the mean value of ITR between the two sub-periods at 5% level. Thus, ITR of company on the average is better in the first sub-period (6.93) than that of the second sub-period (6.00).

In terms of variability in ITR between the two sub-periods, we find significant difference between them at 5% level. The SD of 1st sub-period is recorded as 0.76, while in the 2nd sub-period it is observed as 0.69. This shows that variation in ITR of the company is better in the 1st sub-period in relation to the 2nd sub-period.

SIL: Statistically significant result is observed in the mean value of ITR between the two sub-periods at 5% level of significance. Therefore, ITR of the company on the average is better in the first sub-period (7.01) than that of the second sub-period (5.80).

So far as the consistency in ITR between the two sub-periods is concerned, we find significant difference between them at 5% level of significance. The SD of 1st sub-period is recorded as 1.08, whereas in the 2nd sub-period it is registered as 0.42. This indicates that variation in ITR of the company is better in the 1st sub-period in relation to the 2nd sub-period.

MUSCO: Analysis of ITR reveals that there is insignificant difference at 5% level of significance in the mean value of ITR between the two sub-periods under study.

We find insignificant results in terms of variability in ITR between the two sub-periods at 5% level of significance.

KSL: Mean difference test reveals significant result in the mean value of ITR between the two sub-periods at 5% level. Thus, ITR of the company on the average is observed to be better in the first sub-period (15.46) than that of the second sub-period (9.03).

In terms of variability in ITR between the two sub-periods, we find significant difference between them at 5% level. The SD of 1st sub-period is recorded as 5.85, while in the 2nd sub-period it is registered as 1.45. This implies that variation in ITR of the company is better in the 1st sub-period in relation to the 2nd sub-period.

JSW: Mean difference test reveals significant result in the mean value of ITR between the two sub-periods at 5% level of significance. Thus, ITR of the company on the average is observed to be better in the first sub-period (10.33) than that of the second sub-period (8.33).

In terms of consistency in ITR between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in ITR of the company.

From the above analysis of selected sample companies in terms of ITR, it is observed that 12 companies out of 20 companies have recorded significant difference in the mean value of ITR between the two sub-periods. In these cases, all the companies on the average have shown better ITR performance in the 1^{st} sub-period as compared to that of 2^{nd} sub-period. Hence, it can be inferred that financial recession has significant negative impact on the liquidity performance in terms of ITR for these 11 companies under study.

So far as the variability in performance of the company as measured by ITR is concerned, we find significant difference in 7 companies (i.e., WCL, ML, TIIL, SAL, MIL, SIL and MUSCO) out of 20 companies. In rest of the cases, the results are found to be insignificant. This implies that in majority of the cases, financial recession has no significant impact on the variability of performance as indicated by ITR.

6.1.10 Liquidity Analysis in terms of Cash Turnover Ratio (CTR) [Table 6.10]

BSL: Analysis of CTR reveals that there is insignificant difference at 5% level of significance in the mean value of CTR between the two sub-periods under study. Hence, it can be said that the performance levels of the company in terms of mean value of CTR between the two sub-periods are the same.

In terms of variability in CTR between the two sub-periods, we find insignificant difference between them at 5% level of significance.

BSIL: Mean difference test reveals significant result in the mean value of CTR between the two sub-periods at 5% level. Therefore, it can be inferred that CTR of the company on the average is better in the first sub-period (307.07) than that of the second sub-period (84.07).

In terms of variability in CTR between the two sub-periods, we find significant difference between them at 5% level of significance. The SD of 1st sub-period is recorded as 153.57, whereas in the 2nd sub-period it is registered as 23.67. This implies that variation in CTR of the company is better in the 1st sub-period in relation to the 2nd sub-period.

ECL: Statistically significant result is observed in the mean value of CTR between the two sub-periods at 5% level of significance. Thus, CTR as a measure of liquidity performance of the company on the average is better in the first sub-period (118.34) than that of the second sub-period (84.07).

So far as the variability in CTR between the two sub-periods is concerned, we find significant difference between them at 5% level of significance. The SD of 1st sub-period is recorded as 103.06, whereas in the 2nd sub-period it is registered as 6.30. This implies that variation in CTR of the company is better in the 1st sub-period in relation to the 2nd sub-period.

SAIL: The result of t-test reveals that there is a significant difference at 95% confidence level in the mean value of CTR between the two sub-periods. Thus, CTR on the average is found to be better in the first sub-period (15.74) than that of the second sub-period (3.35).

So far as the variability in CTR between the two sub-periods is concerned, we find significant difference between them at 5% level. The SD of 1st sub-period is observed as 13.18, whereas in the 2nd sub-period it is registered as 2.20. This indicates that variation in ITR of the company is better in the 1st sub-period in relation to the 2nd sub-period.

TSL: Analysis of CTR reveals that there is insignificant difference at 5% level of significance in the mean value of CTR between the two sub-periods under study.

In terms of variability in CTR between the two sub-periods, we find significant difference between them at 95% confidence level.

ES: An insignificant result in terms of mean value of CTR is observed between the two sub-periods.

We find insignificant results in terms of variability in CTR between the two sub-periods at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in CTR of the company.

NSAIL: The result of t-test reveals that there is a significant difference at 95% confidence level in the mean value of CTR between the two sub-periods. Hence, CTR as a measure of liquidity performance of the company on the average is better in the second sub-period (33.58) than that of first sub-period (54.73).

So far as the consistency in CTR between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that financial break down has no significant impact on the variability in CTR of the company.

WCL: Statistically insignificant result is observed in the mean value of CTR between the two sub-periods at 5% level of significance.

In terms of consistency in CTR between the two sub-periods, we find insignificant difference between them at 5% level of significance.

UGSL: Analysis of CTR reveals that there is insignificant difference at 5% level of significance in the mean value of CTR between the two sub-periods

This implies that performance levels of the company in terms of mean value of CTR between the two sub-periods are the same.

An insignificant result is found in terms of variability in CTR between the two sub-periods at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in CTR of the company.

ML: Analysis of CTR reveals that there is no significant difference at 5% level of significance in the mean value of CTR between the two sub-periods under study.

So far as the variability in CTR between the two sub-periods is concerned, we find significant difference between them at 5% level of significance. The SD of 1^{st} sub-period is recorded as 20.78, whereas in the 2^{nd} sub-period it is recorded as 7.28. This implies that variation in CTR of the company is better in the 1^{st} sub-period in relation to the 2^{nd} sub-period.

TIIL: Statistically significant result is observed in the mean value of CTR between the two sub-periods at 5% level of significance. This means that CTR as a measure of liquidity performance of the company on the average is better in the second sub-period (159.7) than that of first sub-period (44.06).

In terms of variability in CTR between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in CTR of the company.

RIL: Statistically insignificant result is observed in the mean value of CTR between the two sub-periods at 5% level.

So far as the variability in CTR between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in CTR of the company.

MSL: Analysis of CTR reveals that there is no significant difference at 5% level of significance in the mean value of CTR between the two sub-periods.

In terms of consistency in CTR between the two sub-periods, we find insignificant difference between them at 5% level of significance.

SAL: Analysis of mean difference test reveals significant result in the mean value of CTR between the two sub-periods at 5% level of significance. Thus, CTR on the average is found to be better in the first sub-period (30.70) than that of the second sub-period (133.31).

So far as the variability in CTR between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance.

MIL: A look into the mean difference t-test reveals that there is significant difference at 5% level of significance in the mean value of CTR between the two sub-periods. Therefore, CTR on the average is better in the first sub-period (40.42) than that of the second sub-period (9.81).

So far as the variability in CTR between the two sub-periods is concerned, we find significant difference between them at 5% level. The SD of 1st sub-period is recorded as 32.54, while in the 2nd sub-period it is registered as 4.57. This implies that variability in CTR of the company is better in the 1st sub-period in relation to the 2nd sub-period.

SISCL: Statistically significant result is observed in the mean value of CTR between the two sub-periods at 5% level. Thus, CTR as a measure of liquidity performance of the company on the average is better in the first sub-period (54.36) than that of the second sub-period (44.06).

We find insignificant results in terms of variability in CTR between the two sub-periods at 5% level. This indicates that the financial break down has no significant impact on the variability in CTR of the company.

SIL: Statistically significant result is observed in the mean value of CTR between the two sub-periods under study at 5% level of significance. Therefore, it can be stated that the CTR as a measure of liquidity performance of the company on the average is better in the first sub-period (41.77) than that of the second sub-period (233.19).

So far as the variability in CTR between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance.

MUSCO: A look into the mean difference t-test reveals that there is a significant difference at 5% level of significance in the mean value of CTR between the two sub-periods. Therefore, it can be inferred that CTR as a measure of liquidity performance of the company on the average is better in the first sub-period (43.04) than that of the second sub-period (305.64).

An insignificant difference at 95% confidence level in the SD values of CTR is observed between the two sub-periods. This indicates that financial break down has no significant impact on the variability in CTR of the company.

KSL: Mean difference t-test between the two sub-periods reveals insignificant results at 5% level of significance

In terms of consistency in CTR between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in CTR of the company.

JSW: Analysis of CTR reveals that there is no significant difference at 5% level of significance in the mean value of CTR between the two sub-periods under study.

In terms of consistency in CTR between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in CTR of the company.

From the above analysis of selected sample companies in terms of CTR, it is observed that 9 companies out of 20 companies have recorded significant difference in the mean value of CTR between the two sub-periods. In these cases, 5 companies (BSIL, ECL,

SAIL, MIL, and SISCL) on the average have shown better CTR performance in the 1st sub-period as compared to that of 2nd sub-period, whereas in case of remaining 4 companies, namely, NSAIL, TIIL, SAL, and SIL have shown reverse situation. Hence, it can be inferred that financial recession has significant impact on the liquidity performance in terms of CTR for these 9 companies under study.

So far as the variability in performance of the company as measured by CTR is concerned, we find significant difference in six companies (i.e., BSIL, ECL, SAIL, UGSL, ML, and MIL) out of 20 companies. In rest of the cases, the results are found to be insignificant. This shows that in majority of the cases, financial recession has no significant impact on the variability of performance as indicated by CTR.

6.1.11 Liquidity Analysis in terms of Net Working Capital (NWC) [Table 6.11]

BSL: The result of t-test reveals that there is a significant difference at 95% confidence level in the mean value of NWC between the two sub-periods. This implies that NWC on the average is better in the first sub-period (Rs. 553.71 crores) than that of the second sub-period (Rs. 2200.17 crores).

In terms of variability in NWC between the two sub-periods, we find insignificant difference between them at 5% level of significance.

BSIL: Analysis of NWC reveals that there is a significant difference at 5% level of significance in the mean value of NWC between the two sub-periods under study. NWC on the average is better in the 2nd sub-period (Rs. 65.22 crores) than that of the 1st sub-period (Rs. 53.21 crores).

So far as the consistency in NWC between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in NWC of the company.

ECL: Statistically significant result is observed in the mean value of NWC between the two sub-periods at 5% level. NWC on the average is better in the 2nd sub-period (Rs. 1041.78 crores) than that of the 1st sub-period (Rs. 456.55 crores).

So far as the variability in NWC between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance.

SAIL: Significant result in terms of average value of NWC is observed between the two sub-periods at 5% level. NWC on the average is better in the 2nd sub-period (Rs. 65.22 crores) than that of the 1st sub-period (Rs. 53.21 crores).

In terms of variability in NWC between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in NWC of the company.

TSL: An insignificant result in terms of mean value of NWC is observed between the two sub-periods. In other words, it can be stated that performance levels of the company in terms of mean value of NWC between the two sub-periods is same.

So far as the consistency in NWC between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in NWC of the company.

ES: The result of t-test reveals that there is a significant difference at 95% confidence level in the mean value of NWC between the two sub-periods. This implies that NWC on the average is better in the 2nd sub-period (Rs. 2540.20 crores) in comparison to the 1st sub-period (Rs. 604.37 crores).

We find insignificant result in terms of variability in NWC between the two sub-periods at 5% level of significance.

NSAIL: Analysis of NWC reveals that there is a significant difference at 5% level of significance in the mean value of NWC between the two sub-periods. Mean value of NWC is better in the 2nd sub-period (Rs. 343.60 crores) than that of the 1st sub-period (Rs. 177.90 crores).

So far as the consistency in NWC between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in NWC of the company.

WCL: Statistically insignificant result is observed in the mean value of NWC between the two sub-periods at 5% level. It is observed that mean value of NWC is better in the 2nd sub-period (Rs. 1112.64 crores) than that of the 1st sub-period (Rs. 222.18 crores).

In terms of consistency in NWC between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in NWC of the company.

UGSL: Analysis of NWC reveals that there is insignificant difference at 5% level in the mean value of NWC between the two sub-periods.

So far as the consistency in NWC between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance.

ML: It is observed from the analysis of NWC that there is no significant difference at 5% level in the mean value of NWC between the two sub-periods under study. Mean value of NWC is better in the 2nd sub-period (Rs. 1176.40 crores) than that of the 1st sub-period (Rs. 722.30 crores).

In terms of consistency in NWC between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in NWC of the company.

TIIL: Mean difference test of NWC reveals insignificant result between the two sub-periods under study. In other words, it can be stated that performance level of the company in terms of mean value of NWC between the two sub-periods is same.

In terms of variability in NWC between the two sub-periods, we find insignificant difference between them at 5% level. This implies that the financial break down has no significant impact on the variability in NWC of the company.

RIL: Significant result is observed in the mean value of NWC between the two sub-periods at 5% level. Therefore, it can be said that NWC as a measure of liquidity performance of the company on the average is better in the 2nd sub-period (Rs. 485.26 crores) than that of the 1st sub-period (Rs. 140.30 crores)

So far as the variability in NWC between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance. This indicates that the

financial break down has no significant impact on the variability in NWC of the company.

MSL: The result of t- test reveals that there is a significant difference at 95% confidence level in the mean value of NWC between the two sub-periods. This implies that NWC on the average is better in the 2nd sub-period (Rs. 788.44 crores) than that of the 1st sub-period (Rs. 273.22 crores).

In terms of consistency in NWC between the two sub-periods, we find insignificant difference between them at 5% level. This indicates that the financial break down has no significant impact on the variability in NWC of the company.

SAL: Mean difference test of NWC reveals insignificant result between the two sub-periods under study.

So far as the variability in NWC between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance.

MIL: Statistically significant result is observed in the mean value of NWC between the two sub-periods at 5% level. Therefore, it can be inferred that the NWC as a measure of liquidity performance of the company on the average is better in the 2nd sub-period (Rs. 496.18 crores) than that of the 1st sub-period (Rs. 120.14 crores).

So far as the consistency in NWC between the two sub-periods is concerned, we find insignificant difference between them at 5% level of significance.

SISCL The result of t-test reveals that there is a significant difference at 95% confidence level in the mean value of NWC between the two sub-periods. This implies that NWC on the average is better in the 2nd sub-period (Rs. 367.90 crores) than that of the 1st sub-period (Rs. 132.20 crores).

We find insignificant results in terms of variability in NWC between the two sub-periods at 5% level. This indicates that the financial break down has no significant impact on the variability in NWC of the company.

SIL: Statistically significant result is observed in the mean value of NWC between the two sub-periods at 5% level. Hence, NWC as a measure of liquidity performance of the company on the average is better in the 2nd sub-period (Rs. 429.89 crores) than that of the 1st sub-period (Rs. 101.78 crores).

So far as the variability in NWC between the two sub-periods is concerned, we find insignificant difference between them at 5% level. This shows that the financial break down has no significant impact on the variability in NWC of the company.

MUSCO: The result of t-test reveals that there is a significant difference at 95% confidence level in the mean value of NWC between the two sub-periods. This implies that NWC on the average is better in the 2nd sub-period (Rs. 185.91 crores) than that of the 1st sub-period (Rs. 87.91 crores).

So far as the consistency in NWC between the two sub-periods is concerned, we find insignificant difference between them at 5% level. This shows that the financial break down has no significant impact on the variability in NWC of the company.

KSL: Mean difference t-test reveals that there is a significant difference at 95% confidence level in the mean value of NWC between the two sub-periods. This indicates that NWC on the average is better in the 2nd sub-period (Rs. 248.17 crores) than that of the 1st sub-period (Rs. 54.24 crores).

In terms of consistency in NWC between the two sub-periods, we find insignificant difference between them at 5% level. This shows that the financial break down has no significant impact on the variability in NWC of the company.

JSW: The result of t- test reveals that there is a significant difference at 95% confidence level in the mean value of NWC between the two sub-periods. This implies that NWC on the average is better in the 1st sub-period (Rs. 54.24 crores) than that of the 2nd sub-period (Rs. -1207.02 crores)

In terms of consistency in NWC between the two sub-periods, we find insignificant difference between them at 5% level of significance. This indicates that the financial break down has no significant impact on the variability in NWC of the company.

From the above analysis of the selected companies in terms of NWC, it is observed that 16 companies out of 20 companies have recorded significant difference in the mean value of NWC between the two sub-periods. In these cases, 15 companies on the average have shown better NWC performance in the 2nd sub-period as compared to that of the 1st sub-period, whereas in case of one company (i.e., JSW) the reverse situation is observed. Hence, it can be inferred that financial recession has insignificant positive impact on the

liquidity performance in terms of average value of NWC for these 15 companies under study.

So far as the variability in performance of the company as measured by NWC is concerned, we find insignificant difference in all the 20 selected companies. This implies that in all the cases, financial recession has no significant impact on the variability of performance as measured by NWC.

Table: 6.1 Results of test of Mean and Standard Deviation Difference for Profitability Analysis (Represented by Return on Capital Employed)								
Company	**Means of Ist Sub Period**	**Means of 2nd Sub Period**	**t-critical**	**Mean difference test results: t- value**	**SD of Ist Sub Period**	**SD of 2nd Sub Period**	**F- critical**	**SD difference test results: F- value**
BSL	**11.68**	**9.98**	**1.81**	**2.479***	**1.25**	**1.05**	**6.16**	**1.403^{i}**
BSIL	**12.76**	**12.16**	**1.81**	**0.285^{i}**	**2.14**	**5.03**	**6.16**	**0.181^{i}**
ECL	**15.85**	**9.61**	**1.81**	**2.502***	**3.94**	**4.68**	**6.16**	**0.708^{i}**
S A I L	**25.29**	**25.86**	**1.81**	**0.025^{i}**	**28.97**	**15.65**	**6.16**	**2.94^{i}**
TSL	**34.15**	**16.95**	**1.81**	**1.968***	**19.02**	**3.81**	**6.16**	**25.813***
ES	**7.47**	**6.81**	**1.81**	**0.631^{i}**	**13.14**	**5.77**	**6.16**	**5.184^{i}**
NSAIL	**10.26**	**16.90**	**1.81**	**-1.595^{i}**	**1.51**	**11.08**	**6.16**	**0.0187^{i}**
WCL	**16.32**	**16.55**	**1.81**	**-0.045^{i}**	**9.03**	**8.21**	**6.16**	**1.204^{i}**
UGSL	**14.94**	**13.45**	**1.81**	**0.248^{i}**	**8.91**	**2.11**	**6.16**	**17.81***
ML	**7.63**	**7.40**	**1.81**	**0.053^{i}**	**7.51**	**6.81**	**6.16**	**0.735^{i}**
TIIL	**17.71**	**13.73**	**1.81**	**1.59^{i}**	**3.37**	**5.36**	**6.16**	**0.395^{i}**
RIL	**16.86**	**2.92**	**1.81**	**2.419***	**9.20**	**9.27**	**6.16**	**0.982^{i}**
MSL	**34.37**	**26.77**	**1.81**	**3.62***	**3.69**	**3.42**	**6.16**	**1.16^{i}**
SAL	**18.73**	**-13.29**	**1.81**	**6.485***	**4.20**	**7.53**	**6.16**	**0.31^{i}**
MIL	**22.63**	**16.07**	**1.81**	**1.042^{i}**	**13.33**	**4.74**	**6.16**	**8.067***
SISCL	**12.65**	**14.73**	**1.81**	**-0.805^{i}**	**3.62**	**5.36**	**6.16**	**0.46^{i}**
SIL	**14.33**	**9.27**	**1.81**	**2.137***	**4.31**	**3.59**	**6.16**	**1.437^{i}**
MUSCO	**21.06**	**7.73**	**1.81**	**1.175^{i}**	**23.06**	**5.80**	**6.16**	**15.627***
KSL	**14.18**	**10.49**	**1.81**	**0.637^{i}**	**11.61**	**6.45**	**6.16**	**3.24^{i}**
JSW	**13.03**	**16.52**	**1.81**	**-0.686^{i}**	**11.31**	**4.65**	**6.16**	**5.907^{i}**

***marked values indicate significant at 5% level of significance**
i- marked values indicate insignificant

Table: 6.2 Results of test of Mean and Standard Deviation Difference for Profitability Analysis (Represented by Return on Total Assets)

Company	Means of Ist Sub Period	Means of 2nd Sub Period	t-critical	Mean difference test results: t- value	SD of Ist Sub Period	SD of 2nd Sub Period	F- critical	SD difference test results: F- value
BSL	5.29	4.40	1.81	1.17[i]	1.38	1.14	6.16	1.47[i]
BSIL	1.00	0.40	1.81	0.29[i]	2.58	4.51	6.16	0.33[i]
ECL	8.71	4.20	1.81	2.83*	2.29	3.27	6.16	0.05[i]
S A I L	13.29	14.20	1.81	-0.09[i]	20.65	8.35	6.16	6.12[i]
TSL	17.14	4.20	1.81	2.44*	10.76	5.63	6.16	3.65[i]
ES	-1.71	-0.40	1.81	-0.24[i]	11.87	3.65	6.16	10.59*
NSAIL	4.14	0.20	1.81	0.89[i]	0.90	11.86	6.16	0.01[i]
WCL	5.14	7.00	1.81	-0.56[i]	6.77	3.54	6.16	3.66[i]
UGSL	2.57	3.60	1.81	-0.33[i]	6.73	2.07	6.16	10.53*
ML	-0.71	-0.20	1.81	-0.19[i]	5.65	2.86	6.16	3.89[i]
TIIL	7.71	2.00	1.81	6.67*	1.80	0.71	6.16	6.48*
RIL	4.29	-5.80	1.81	2.38*	4.15	10.26	6.16	0.16[i]
MSL	20.00	13.60	1.81	3.31*	3.32	3.29	6.16	1.02[i]
SAL	7.86	-17.20	1.81	7.95*	3.24	7.53	6.16	0.18[i]
MIL	9.57	5.60	1.81	0.91[i]	9.20	3.36	6.16	7.49*
SISCL	4.86	7.20	1.81	-1.13[i]	3.29	3.90	6.16	0.71[i]
SIL	3.57	1.80	1.81	1.08[i]	3.05	2.39	6.16	1.63[i]
MUSCO	7.14	-0.60	1.81	0.96[i]	17.39	4.39	6.16	15.67*
KSL	7.14	6.00	1.81	0.28[i]	8.23	4.47	6.16	3.39[i]
JSW	4.43	5.20	1.81	-0.25[i]	6.68	1.92	6.16	12.06*

***marked values indicate significant at 5% level of significance**
i- marked values indicate insignificant

Table: 6.3 Results of test of Mean and Standard Deviation Difference for Profitability Analysis (Represented by Return on Equity)								
Company	**Means of Ist Sub Period**	**Means of 2nd Sub Period**	**t-critical**	**Mean difference test results: t- value**	**SD of Ist Sub Period**	**SD of 2nd Sub Period**	**F-critical**	**SD difference test results: F- value**
BSL	**16.90**	**23.32**	**1.81**	**-1.54[i]**	**7.78**	**5.99**	**6.16**	**1.68[i]**
BSIL	**1.75**	**-0.90**	**1.81**	**0.30[i]**	**12.39**	**18.36**	**6.16**	**0.46[i]**
ECL	**16.05**	**8.63**	**1.81**	**2.56***	**5.01**	**4.89**	**6.16**	**1.05[i]**
S A I L	**18.55**	**21.31**	**1.81**	**-0.11[i]**	**54.32**	**10.79**	**6.16**	**10.86***
TSL	**34.87**	**18.38**	**1.81**	**2.04***	**17.23**	**5.37**	**6.16**	**10.31***
ES	**-30.19**	**-0.87**	**1.81**	**1.57[i]**	**127.77**	**9.51**	**6.16**	**3.45[i]**
NSAIL	**8.62**	**1.53**	**1.81**	**0.59[i]**	**3.31**	**32.35**	**6.16**	**0.49[i]**
WCL	**13.95**	**17.07**	**1.81**	**-0.39[i]**	**14.94**	**11.62**	**6.16**	**1.65[i]**
UGSL	**16.31**	**12.18**	**1.81**	**0.34[i]**	**26.37**	**4.77**	**6.16**	**30.62***
ML	**-9.58**	**-3.47**	**1.81**	**1.23[i]**	**50.29**	**16.34**	**6.16**	**0.51[i]**
TIIL	**16.91**	**12.39**	**1.81**	**1.37[i]**	**5.38**	**6.01**	**6.16**	**0.80[i]**
RIL	**17.56**	**-80.98**	**1.81**	**1.81[i]**	**13.62**	**155.54**	**6.16**	**0.74[i]**
MSL	**33.68**	**18.92**	**1.81**	**9.11***	**3.12**	**2.13**	**6.16**	**2.15[i]**
SAL	**24.51**	**90.01**	**1.81**	**3.34***	**8.35**	**255.48**	**6.16**	**0.09[i]**
MIL	**23.60**	**16.79**	**1.81**	**0.75[i]**	**19.86**	**3.30**	**6.16**	**36.19***
SISCL	**9.03**	**15.05**	**1.81**	**-1.58[i]**	**5.56**	**7.67**	**6.16**	**0.53[i]**
SIL	**17.15**	**8.98**	**1.81**	**1.21[i]**	**13.10**	**8.71**	**6.16**	**2.26[i]**
MUSCO	**15.27**	**-1.68**	**1.81**	**1.13[i]**	**44.24**	**11.96**	**6.16**	**7.26***
KSL	**9.70**	**8.98**	**1.81**	**0.11[i]**	**12.31**	**7.80**	**6.16**	**2.49[i]**
JSW	**11.49**	**17.70**	**1.81**	**-0.32[i]**	**25.72**	**6.98**	**6.16**	**5.12[i]**

***marked values indicate significant at 5% level of significance**
i- marked values indicate insignificant

Table: 6.4 Results of test of Mean and Standard Deviation Difference for Liquidity Analysis (Represented by Current Ratio)								
Company	**Means of Ist Sub Period**	**Means of 2nd Sub Period**	**t- critical**	**Mean difference test results: t- value**	**SD of Ist Sub Period**	**SD of 2nd Sub Period**	**F- critical**	**SD difference test results: F- value**
BSL	**2.84**	**2.43**	**1.81**	**1.03[i]**	**0.61**	**0.75**	**6.16**	**0.66[i]**
BSIL	**5.19**	**1.92**	**1.81**	**3.08***	**2.32**	**0.42**	**6.16**	**30.67***
ECL	**3.91**	**3.80**	**1.81**	**0.22[i]**	**0.70**	**1.10**	**6.16**	**0.41[i]**
S A I L	**1.27**	**2.18**	**1.81**	**-5.04***	**0.33**	**0.27**	**6.16**	**1.43[i]**
TSL	**1.05**	**1.95**	**1.81**	**-1.45[i]**	**0.48**	**1.57**	**6.16**	**0.09[i]**
ES	**1.44**	**1.60**	**1.81**	**-0.54[i]**	**0.56**	**0.40**	**6.16**	**1.93[i]**
NSAIL	**1.88**	**1.72**	**1.81**	**3.34***	**0.09**	**0.07**	**6.16**	**1.51[i]**
WCL	**1.91**	**1.50**	**1.81**	**1.40[i]**	**0.59**	**0.33**	**6.16**	**3.16[i]**
UGSL	**1.27**	**1.13**	**1.81**	**1.64[i]**	**0.14**	**0.17**	**6.16**	**0.67[i]**
ML	**2.84**	**2.52**	**1.81**	**1.96***	**0.30**	**0.27**	**6.16**	**1.21[i]**
TIIL	**1.64**	**1.49**	**1.81**	**1.19[i]**	**0.25**	**0.11**	**6.16**	**5.41[i]**
RIL	**3.18**	**2.47**	**1.81**	**0.67[i]**	**2.16**	**1.08**	**6.16**	**3.99[i]**
MSL	**4.58**	**4.88**	**1.81**	**-0.25[i]**	**2.62**	**0.44**	**6.16**	**36.31***
SAL	**1.96**	**2.38**	**1.81**	**-0.96[i]**	**0.21**	**1.15**	**6.16**	**0.03[i]**
MIL	**2.21**	**2.63**	**1.81**	**-0.48[i]**	**0.60**	**2.28**	**6.16**	**0.07[i]**
SISCL	**2.37**	**3.18**	**1.81**	**-2.63***	**0.37**	**0.70**	**6.16**	**0.27[i]**
SIL	**2.81**	**3.80**	**1.81**	**-2.15***	**0.60**	**1.01**	**6.16**	**0.35[i]**
MUSCO	**1.76**	**1.82**	**1.81**	**-0.44[i]**	**0.13**	**0.29**	**6.16**	**0.20[i]**
KSL	**2.04**	**2.29**	**1.81**	**-0.68[i]**	**0.52**	**0.77**	**6.16**	**0.45[i]**
JSW	**0.99**	**0.81**	**1.81**	**1.54[i]**	**0.20**	**0.18**	**6.16**	**1.33[i]**

***marked values indicate significant at 5% level of significance**
i- marked values indicate insignificant

Table: 6.5 Results of test of Mean and Standard Deviation Difference for Liquidity Analysis (Represented by Quick Ratio)								
Company	**Means of Ist Sub Period**	**Means of 2nd Sub Period**	**t- critical**	**Mean difference test results: t- value**	**SD of Ist Sub Period**	**SD of 2nd Sub Period**	**F- critical**	**SD difference test results: F- value**
BSL	**1.72**	**1.05**	**1.81**	**2.42***	**0.58**	**0.23**	**6.16**	**6.51***
BSIL	**2.14**	**0.82**	**1.81**	**4.06***	**0.71**	**0.11**	**6.16**	**42.77***
ECL	**3.34**	**4.01**	**1.81**	**-0.89^{i}**	**0.74**	**1.82**	**6.16**	**0.17^{i}**
S A I L	**1.41**	**2.50**	**1.81**	**-2.42***	**0.75**	**0.79**	**6.16**	**0.89^{i}**
TSL	**1.34**	**2.75**	**1.81**	**-1.05^{i}**	**0.88**	**3.46**	**6.16**	**0.06^{i}**
ES	**0.93**	**0.90**	**1.81**	**0.17^{i}**	**0.35**	**0.27**	**6.16**	**1.72^{i}**
NSAIL	**0.92**	**0.82**	**1.81**	**1.33^{i}**	**0.15**	**0.05**	**6.16**	**8.53***
WCL	**1.36**	**0.91**	**1.81**	**1.78^{i}**	**0.50**	**0.31**	**6.16**	**2.62^{i}**
UGSL	**0.65**	**0.63**	**1.81**	**0.11^{i}**	**0.23**	**0.17**	**6.16**	**1.81^{i}**
ML	**2.20**	**1.61**	**1.81**	**4.12***	**0.24**	**0.25**	**6.16**	**0.95^{i}**
TIIL	**1.83**	**0.97**	**1.81**	**10.51***	**0.14**	**0.14**	**6.16**	**1.14^{i}**
RIL	**1.30**	**1.79**	**1.81**	**-1.40^{i}**	**0.44**	**0.77**	**6.16**	**0.33^{i}**
MSL	**3.77**	**3.21**	**1.81**	**0.45^{i}**	**2.67**	**0.88**	**6.16**	**9.12***
SAL	**1.28**	**1.28**	**1.81**	**-0.02^{i}**	**0.28**	**0.75**	**6.16**	**0.14^{i}**
MIL	**1.79**	**2.16**	**1.81**	**-0.46^{i}**	**0.65**	**2.02**	**6.16**	**0.11^{i}**
SISCL	**2.20**	**3.76**	**1.81**	**-2.60***	**0.72**	**1.36**	**6.16**	**0.28^{i}**
SIL	**1.74**	**2.80**	**1.81**	**-3.30***	**0.31**	**0.78**	**6.16**	**0.16^{i}**
MUSCO	**1.19**	**1.24**	**1.81**	**-0.37^{i}**	**0.21**	**0.25**	**6.16**	**0.76^{i}**
KSL	**1.89**	**1.89**	**1.81**	**0.01^{i}**	**0.52**	**0.45**	**6.16**	**1.35^{i}**
JSW	**0.68**	**0.47**	**1.81**	**2.52***	**0.16**	**0.13**	**6.16**	**1.45^{i}**

***marked values indicate significant at 5% level of significance**
i- marked values indicate insignificant

Table: 6.6 Results of test of Mean and Standard Deviation Difference for Liquidity Analysis (Represented by Total Current Assets to Total Assets)								
Company	**Means of Ist Sub Period**	**Means of 2nd Sub Period**	**t- critical**	**Mean difference test results: t- value**	**SD of Ist Sub Period**	**SD of 2nd Sub Period**	**F- critical**	**SD difference test results: F- value**
BSL	**0.38**	**0.21**	**1.81**	**6.97***	**0.04**	**0.05**	**6.16**	**0.79[i]**
BSIL	**0.56**	**0.61**	**1.81**	**-1.48[i]**	**0.06**	**0.03**	**6.16**	**3.85[i]**
ECL	**0.54**	**0.47**	**1.81**	**1.14[i]**	**0.08**	**0.14**	**6.16**	**0.34[i]**
S A I L	**0.42**	**0.53**	**1.81**	**-1.77[i]**	**0.11**	**0.12**	**6.16**	**0.90[i]**
TSL	**0.27**	**0.26**	**1.81**	**-0.34[i]**	**0.07**	**0.23**	**6.16**	**0.10[i]**
ES	**0.26**	**0.24**	**1.81**	**-0.78[i]**	**0.03**	**0.04**	**6.16**	**0.58[i]**
NSAIL	**0.68**	**0.79**	**1.81**	**-0.32[i]**	**0.07**	**0.03**	**6.16**	**6.65***
WCL	**0.46**	**0.48**	**1.81**	**-0.31[i]**	**0.12**	**0.12**	**6.16**	**1.04[i]**
UGSL	**0.46**	**0.44**	**1.81**	**0.61[i]**	**0.10**	**0.04**	**6.16**	**6.50***
ML	**0.57**	**0.65**	**1.81**	**-0.41[i]**	**0.05**	**0.03**	**6.16**	**3.68[i]**
TIIL	**0.55**	**0.37**	**1.81**	**10.82***	**0.02**	**0.03**	**6.16**	**0.39[i]**
RIL	**0.74**	**0.37**	**1.81**	**2.67***	**0.27**	**0.15**	**6.16**	**3.21[i]**
MSL	**0.51**	**0.53**	**1.81**	**-0.16[i]**	**0.14**	**0.11**	**6.16**	**1.80[i]**
SAL	**0.61**	**0.39**	**1.81**	**6.81***	**0.06**	**0.05**	**6.16**	**1.16[i]**
MIL	**0.53**	**0.65**	**1.81**	**-1.89***	**0.13**	**0.08**	**6.16**	**2.72[i]**
SISCL	**0.44**	**0.53**	**1.81**	**-2.09***	**0.07**	**0.05**	**6.16**	**1.95[i]**
SIL	**0.70**	**0.42**	**1.81**	**5.60***	**0.06**	**0.11**	**6.16**	**0.32[i]**
MUSCO	**0.62**	**0.55**	**1.81**	**1.61[i]**	**0.09**	**0.03**	**6.16**	**8.65***
KSL	**0.47**	**0.53**	**1.81**	**-1.31[i]**	**0.08**	**0.06**	**6.16**	**1.59[i]**
JSW	**0.16**	**0.19**	**1.81**	**-1.18[i]**	**0.06**	**0.05**	**6.16**	**1.37[i]**

***marked values indicate significant at 5% level of significance**
i- marked values indicate insignificant

Table: 6.7 Results of test of Mean and Standard Deviation Difference for Liquidity Analysis (Represented by Total Current Liabilities to Total Assets)

Company	Means of Ist Sub Period	Means of 2nd Sub Period	t- critical	Mean difference test results: t- value	SD of Ist Sub Period	SD of 2nd Sub Period	F-critical	SD difference test results: F- value
BSL	0.14	0.04	1.81	2.00*	0.02	0.05	6.16	0.30[i]
BSIL	0.14	0.14	1.81	-3.80*	0.09	0.07	6.16	2.01[i]
ECL	0.14	0.05	1.81	1.07[i]	0.02	0.02	6.16	0.80[i]
S A I L	0.33	0.10	1.81	2.69*	0.04	0.07	6.16	8.79*
TSL	0.28	0.05	1.81	7.92*	0.04	0.02	6.16	5.70[i]
ES	0.21	0.07	1.81	1.25[i]	0.08	0.04	6.16	3.81[i]
NSAIL	0.36	0.19	1.81	-4.08*	0.05	0.02	6.16	10.30*
WCL	0.28	0.14	1.81	-0.61[i]	0.15	0.10	6.16	2.29[i]
UGSL	0.36	0.17	1.81	-1.04[i]	0.06	0.07	6.16	0.88[i]
ML	0.20	0.11	1.81	-6.10*	0.01	0.02	6.16	0.45[i]
TIIL	0.34	0.10	1.81	5.30*	0.04	0.01	6.16	8.67*
RIL	0.31	0.07	1.81	2.03*	0.15	0.07	6.16	3.90[i]
MSL	0.13	0.04	1.81	1.05[i]	0.04	0.02	6.16	7.93*
SAL	0.31	0.08	1.81	2.62*	0.04	0.11	6.16	0.11[i]
MIL	0.26	0.15	1.81	-1.17[i]	0.10	0.17	6.16	0.36[i]
SISCL	0.19	0.07	1.81	0.76[i]	0.04	0.04	6.16	1.02[i]
SIL	0.26	0.05	1.81	3.60*	0.06	0.07	6.16	0.76[i]
MUSCO	0.35	0.13	1.81	1.52[i]	0.04	0.05	6.16	0.67[i]
KSL	0.25	0.10	1.81	-0.05[i]	0.08	0.08	6.16	0.91[i]
JSW	0.16	0.10	1.81	-5.12*	0.03	0.03	6.16	1.07[i]

***marked values indicate significant at 5% level of significance**
i- marked values indicate insignificant

Table: 6.8 Results of test of Mean and Standard Deviation Difference for Liquidity Analysis (Represented by Debtors' Turnover Ratio)								
Company	**Means of Ist Sub Period**	**Means of 2nd Sub Period**	**t- critical**	**Mean difference test results: t- value**	**SD of Ist Sub Period**	**SD of 2nd Sub Period**	**F-critical**	**SD difference test results: F- value**
BSL	**6.28**	**9.61**	**1.81**	**-3.00***	**2.03**	**1.74**	**6.16**	**1.36[i]**
BSIL	**29.36**	**14.82**	**1.81**	**3.08***	**9.90**	**3.94**	**6.16**	**6.32***
ECL	**2.83**	**3.32**	**1.81**	**-2.12***	**0.29**	**0.51**	**6.16**	**0.34[i]**
S A I L	**14.53**	**14.63**	**1.81**	**-0.05[i]**	**3.91**	**1.92**	**6.16**	**4.17[i]**
TSL	**18.18**	**52.83**	**1.81**	**-4.71***	**11.66**	**13.81**	**6.16**	**0.71[i]**
ES	**11.02**	**28.21**	**1.81**	**-7.02***	**4.84**	**2.93**	**6.16**	**2.73[i]**
NSAIL	**11.03**	**9.15**	**1.81**	**2.87***	**1.26**	**0.87**	**6.16**	**2.11[i]**
WCL	**5.99**	**8.37**	**1.81**	**-2.16***	**2.12**	**1.46**	**6.16**	**2.10[i]**
UGSL	**19.69**	**12.51**	**1.81**	**1.64[i]**	**9.53**	**1.96**	**6.16**	**23.61***
ML	**3.26**	**3.48**	**1.81**	**-0.63[i]**	**0.72**	**0.31**	**6.16**	**5.49[i]**
TIIL	**5.67**	**8.26**	**1.81**	**-4.93***	**0.91**	**0.88**	**6.16**	**1.08[i]**
RIL	**5.48**	**3.81**	**1.81**	**1.30[i]**	**2.65**	**1.30**	**6.16**	**4.17[i]**
MSL	**10.46**	**7.51**	**1.81**	**3.82***	**1.68**	**0.37**	**6.16**	**20.98***
SAL	**11.72**	**12.75**	**1.81**	**-0.42[i]**	**4.31**	**4.07**	**6.16**	**1.12[i]**
MIL	**6.59**	**5.30**	**1.81**	**1.95***	**1.36**	**0.66**	**6.16**	**4.26[i]**
SISCL	**10.75**	**15.29**	**1.81**	**-1.66[i]**	**5.86**	**1.80**	**6.16**	**10.63***
SIL	**5.84**	**4.96**	**1.81**	**1.22[i]**	**1.53**	**0.56**	**6.16**	**7.55***
MUSCO	**5.75**	**5.92**	**1.81**	**-0.70[i]**	**0.48**	**0.30**	**6.16**	**2.64[i]**
KSL	**4.77**	**6.36**	**1.81**	**-1.24[i]**	**2.81**	**0.26**	**6.16**	**1117.69***
JSW	**16.88**	**40.11**	**1.81**	**-4.17***	**12.08**	**2.67**	**6.16**	**20.50***

***marked values indicate significant at 5% level of significance**
i- marked values indicate insignificant

Table: 6.9 Results of test of Mean and Standard Deviation Difference for Liquidity Analysis (Represented by Inventory Turnover Ratio)

Company	Means of Ist Sub Period	Means of 2nd Sub Period	t-critical	Mean difference test results: t- value	SD of Ist Sub Period	SD of 2nd Sub Period	F-critical	SD difference test results: F- value
BSL	6.13	3.90	1.81	5.38*	0.61	0.83	6.16	0.54[i]
BSIL	9.92	7.76	1.81	1.38[i]	3.18	1.68	6.16	3.57[i]
ECL	5.71	4.32	1.81	1.96*	1.45	0.71	6.16	4.19[i]
S A I L	5.75	5.08	1.81	0.71[i]	1.88	1.05	6.16	3.18[i]
TSL	8.93	8.69	1.81	0.57[i]	0.86	0.39	6.16	4.76[i]
ES	5.67	4.65	1.81	1.29[i]	1.51	1.07	6.16	2.01[i]
NSAIL	6.51	5.83	1.81	1.68[i]	0.85	0.37	6.16	5.15[i]
WCL	7.12	4.13	1.81	2.07*	3.14	0.64	6.16	23.80*
UGSL	5.74	5.89	1.81	-0.23[i]	0.69	1.54	6.16	0.20[i]
ML	4.39	3.25	1.81	2.37*	1.03	0.28	6.16	13.14*
TIIL	11.11	9.24	1.81	2.71*	1.50	0.28	6.16	29.23*
RIL	7.31	6.10	1.81	0.57[i]	4.27	2.32	6.16	3.40[i]
MSL	7.15	4.50	1.81	4.14*	1.14	1.03	6.16	1.23[i]
SAL	9.10	4.68	1.81	3.55*	2.69	0.69	6.16	14.97*
MIL	13.14	5.74	1.81	2.25*	7.18	1.30	6.16	30.65*
SISCL	6.93	6.00	1.81	2.19*	0.76	0.69	6.16	1.23[i]
SIL	7.01	5.80	1.81	2.34*	1.08	0.42	6.16	6.62*
MUSCO	1.18	2.79	1.81	-1.15[i]	0.17	3.77	6.16	0.00[i]
KSL	15.46	9.03	1.81	2.38*	5.85	1.45	6.16	16.29*
JSW	10.33	8.33	1.81	2.04*	2.00	0.97	6.16	4.27[i]

***marked values indicate significant at 5% level of significance**
i- marked values indicate insignificant

Table: 6.10 Results of test of Mean and Standard Deviation Difference for Liquidity Analysis (Represented by Cash Turnover Ratio)								
Company	**Means of Ist Sub Period**	**Means of 2nd Sub Period**	**t- critical**	**Mean difference test results: t- value**	**SD of Ist Sub Period**	**SD of 2nd Sub Period**	**F-critical**	**SD difference testresults: F- value**
BSL	**86.87**	**93.60**	**1.81**	**-0.19[i]**	**47.86**	**77.56**	**6.16**	**0.38[i]**
BSIL	**307.07**	**84.07**	**1.81**	**3.18***	**153.57**	**23.67**	**6.16**	**42.10***
ECL	**118.34**	**11.09**	**1.81**	**2.29***	**103.06**	**6.30**	**6.16**	**267.22***
S A I L	**15.74**	**3.35**	**1.81**	**2.06***	**13.18**	**2.20**	**6.16**	**35.98***
TSL	**34.10**	**16.20**	**1.81**	**1.74[i]**	**19.10**	**14.93**	**6.16**	**1.64[i]**
ES	**28.86**	**18.92**	**1.81**	**1.51[i]**	**12.58**	**8.86**	**6.16**	**2.02[i]**
NSAIL	**33.58**	**54.73**	**1.81**	**-3.55***	**10.24**	**10.04**	**6.16**	**1.04[i]**
WCL	**11.48**	**12.91**	**1.81**	**-0.29[i]**	**6.45**	**10.75**	**6.16**	**0.36[i]**
UGSL	**104.56**	**54.06**	**1.81**	**1.23**	**87.09**	**31.40**	**6.16**	**7.69***
ML	**29.95**	**21.79**	**1.81**	**0.83[i]**	**20.78**	**7.28**	**6.16**	**8.41***
TIIL	**44.06**	**159.71**	**1.81**	**-3.16***	**27.92**	**92.70**	**6.16**	**0.09[i]**
RIL	**60.93**	**91.82**	**1.81**	**-1.25[i]**	**25.39**	**59.01**	**6.16**	**0.19[i]**
MSL	**151.14**	**100.27**	**1.81**	**0.79[i]**	**122.87**	**85.42**	**6.16**	**2.07[i]**
SAL	**30.70**	**133.31**	**1.81**	**-2.42***	**7.76**	**114.23**	**6.16**	**0.00[i]**
MIL	**40.42**	**9.81**	**1.81**	**2.06***	**32.54**	**4.57**	**6.16**	**50.71***
SISCL	**54.36**	**44.06**	**1.81**	**2.48***	**6.41**	**8.04**	**6.16**	**0.63[i]**
SIL	**41.77**	**233.9**	**1.81**	**-1.541[i]**	**18.26**	**334.68**	**6.16**	**0.003[i]**
MUSCO	**43.04**	**305.64**	**1.81**	**-2.447***	**14.35**	**289.26**	**6.16**	**0.002[i]**
KSL	**73.29**	**126.58**	**1.81**	**-1.41[i]**	**53.25**	**95.31**	**6.16**	**0.31[i]**
JSW	**52.76**	**30.71**	**1.81**	**0.10[i]**	**14.58**	**21.29**	**6.16**	**0.47[i]**

***marked values indicate significant at 5% level of significance**
i- marked values indicate insignificant

Table: 6.11 Results of test of Mean and Standard Deviation Difference for Liquidity Analysis (Represented by Net Working Capital)								
Company	**Means of Ist Sub Period**	**Means of 2nd Sub Period**	**t- critical**	**Mean difference test results: t- value**	**SD of Ist Sub Period**	**SD of 2nd Sub Period**	**F-critical**	**SD difference test results: F- value**
BSL	**553.71**	**2200.17**	**1.81**	**-3.60***	**219.12**	**1206.69**	**6.16**	**0.033[i]**
BSIL	**53.21**	**65.22**	**1.81**	**-2.21***	**8.61**	**10.18**	**6.16**	**0.339[i]**
ECL	**456.55**	**1041.78**	**1.81**	**-4.34***	**257.02**	**183.56**	**6.16**	**1.96[i]**
S A I L	**2808.69**	**17881.35**	**1.81**	**-6.50***	**3636.71**	**4400.74**	**6.16**	**.682[i]**
TSL	**492.28**	**7708.14**	**1.81**	**-1.53[i]**	**2999.20**	**12211.73**	**6.16**	**0.060[i]**
ES	**604.37**	**2540.20**	**1.81**	**-2.56***	**848.63**	**1761.69**	**6.16**	**.232[i]**
NSAIL	**177.90**	**343.60**	**1.81**	**-3.77***	**83.53**	**60.37**	**6.16**	**1.915[i]**
WCL	**222.18**	**1112.64**	**1.81**	**-4.53***	**181.92**	**481.91**	**6.16**	**.143[i]**
UGSL	**143.72**	**180.86**	**1.81**	**-0.41[i]**	**132.10**	**186.78**	**6.16**	**.500[i]**
ML	**722.30**	**1176.40**	**1.81**	**-4.44***	**181.74**	**163.65**	**6.16**	**.439[i]**
TIIL	**208.90**	**243.74**	**1.81**	**-1.58[i]**	**21.84**	**53.13**	**6.16**	**.169[i]**
RIL	**140.30**	**485.26**	**1.81**	**-2.62***	**113.38**	**327.96**	**6.16**	**.1195[i]**
MSL	**273.22**	**788.44**	**1.81**	**-3.45***	**288.63**	**193.53**	**6.16**	**2.224[i]**
SAL	**155.08**	**180.15**	**1.81**	**-0.42[i]**	**64.11**	**140.83**	**6.16**	**0.207[i]**
MIL	**120.14**	**496.18**	**1.81**	**-2.79***	**125.42**	**329.71**	**6.16**	**0.145[i]**
SISCL	**132.20**	**367.90**	**1.81**	**-6.45***	**46.19**	**80.94**	**6.16**	**0.326[i]**
SIL	**101.78**	**429.89**	**1.81**	**-6.76***	**73.58**	**95.08**	**6.16**	**0.599[i]**
MUSCO	**87.91**	**185.91**	**1.81**	**-4.13***	**46.83**	**28.59**	**6.16**	**2.682[i]**
KSL	**129.14**	**248.17**	**1.81**	**-4.96***	**36.60**	**46.89**	**6.16**	**0.609[i]**
JSW	**54.24**	**-1207.02**	**1.81**	**2.14***	**265.04**	**1433.23**	**6.16**	**0.034[i]**

***marked values indicate significant at 5% level of significance**
i- marked values indicate insignificant

6.2 ANALYSIS OF VARIANCE- ONE WAY ANOVA

In this section, we examine whether the performances of the companies significantly differed. In other words, our objective is here to examine whether the populations of the variables- profitability measure (ROA), shareholders' earnings (ROE) and different measures of liquidity are statistically significantly different from one another. In other words, we examine whether these populations are homogeneous or heterogeneous, or whether the samples drawn from the same population or heterogeneous populations?

This homogeneity of population is here measured by hypothesizing the equality of the population means, μ_s and testing the hypothesis that the population means are different from one another. In other words, our hypothesis to be tested, known as null hypothesis, H_0 is

H_0: $\mu_{1i} = \mu_{2i} = \mu_{3i} = \ldots\ldots = \mu_{20i}$,

H_1: H_0 is not true, where i= 11 (8 for liquidity measures and 3 profitability measures)

If we accept the null hypothesis, then we may conclude there is no statistically significant difference among the populations' characteristic, mean.

One method to test such a hypothesis is to test as many as ${}^{20}C_2 = \frac{20!}{18!\,2!} = \frac{20\ X\ 19}{2} = 190$ hypotheses such as H_0: $\mu_1 = \mu_2$, $\mu_1 = \mu_3$,..... $\mu_1 = \mu_{20}$; $\mu_2 = \mu_3$,..., $\mu_2 = \mu_{20}$; $\mu_3 = \mu_4$, $\mu_3 = \mu_5$, ..., μ_3...., μ_{20};..... $\mu_{19} = \mu_{20}$ separately. This method of testing H_0: $\mu_1 = \mu_2 = \mu_3 = \ldots\ldots = \mu_{20}$, has two disadvantages. First, if we reject even one of these hypotheses, then we reject the H_0: $\mu_1 = \mu_2 = \mu_3 = \ldots\ldots = \mu_{20}$. Second, combining Type I error probabilities for 190 tests (one for each test) will give a very large Type I error probability for the test H_0: $\mu_1 = \mu_2 = \mu_3 = \ldots\ldots = \mu_{20}$. To avoid these problems we can use a procedure that can test the equality of 20 means in one test. This procedure is Analysis of Variance (ANOVA). This is called ANOVA because the test is based on the analysis of variation in the data obtained from different samples. To apply ANOVA, following assumptions are made:

1. The population from which samples are drawn are (approximately) normally distributed.
2. The populations have same variance or standard deviation.
3. The sample drawn from different populations are random and independent.

The ANOVA test is applied by calculating two variances- variance between samples, also called mean squares between samples or MSB and variance within samples, also called mean squares within samples MSW. The value of the test statistic F, for an ANOVA test is calculated as

$$F = \frac{MSB}{MSW}$$

The results of ANOVA for different variables are presented below:

Table- 6.12 ANOVA for Return on Assets (ROA)

ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.567938	19	0.029891	4.782084	2.89E-09	1.634028
Within Groups	1.375158	220	0.006251			
Total	1.943096	239				

From the above table, it is observed that there exists significant difference in the average ROA among the sample companies during the period under study since the observed value of F (4.782084) exceeds the critical value of F at 1% Level of Significance.

Table- 6.13 ANOVA for Return on Capital Employed (ROCE)

ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	8901.248	19	468.4868	4.395649	2.44E-08	1.634028
Within Groups	23447.52	220	106.5796			
Total	32348.77	239				

The above table shows that there is a significant difference in the average ROCE among the sample companies. The observed value of F (4.395649) exceeds the critical value of F at 1% Level of Significance.

Table- 6.14 ANOVA for Return on Equity (ROE)

ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	13167.73	19	693.0383	2.651429	0.000349	1.634028
Within Groups	57504.25	220	261.3829			
	70671.98	239				

From the above table, we found significant difference in the average ROE among the sample companies during the period under study since the observed value of F (2.651429) exceeds the critical value of F at 1% Level of Significance.

Table- 6.15 ANOVA for Current Ratio (CR)

ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	221.6725	19	11.66697	11.34517	1.74E-23	1.634028
Within Groups	226.2403	220	1.028365			
Total	447.9128	239				

From the above table, it is observed that there exists significant difference in the average Net Sales among the sample companies during the period under study. The observed value of F (11.88078) exceeds the critical value of F at 1% Level of Significance

Table- 6.16 ANOVA for Total Current Assets to Total Assets (TCA/TA)

ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	4.259173	19	0.224167	16.20768	4.43E-32	1.634028
Within Groups	3.0428	220	0.013831			
Total	7.301973	239				

The above table reveals that there is a significant difference in the average **TCA/TA** among the sample companies during the period under study since the observed value of F (16.20768) exceeds the critical value of F at 1% Level of Significance.

Table- 6.17 ANOVA for Total Current Liabilities to Total Assets (TCL/TA)

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	1.42375	19	0.074934	11.35693	1.65E-23	1.634028
Within Groups	1.451583	220	0.006598			
Total	2.875333	239				

From the above table, it is observed that there is a significant difference in the average **TCL/TA** among the sample companies since the observed value of F (11.35693) exceeds the critical value of F at 1% Level of Significance.

Table- 6.18 ANOVA for Debtors' Turnover Ratio (DTR)

ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	15328.28	19	806.7516	15.42307	8.68E-31	1.634028
Within Groups	11507.78	220	52.3081			
Total	26836.06	239				

From the above table, it is observed that there exists significant difference in the average **DTR** among the sample companies during the period under study because the observed value of F (15.42307) exceeds the critical value of F at 1% Level of Significance.

Table- 6.19 ANOVA for Inventory Turnover Ratio (ITR)

ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	1444.259	19	76.01363	10.98778	8.55E-23	1.634028
Within Groups	1521.963	220	6.918014			
Total	2966.222	239				

The above table reveals that there exists significant difference among the sample companies with respect to average ITR during the period under study. The observed value of F (10.98778) exceeds the critical value of F at 1% Level of Significance.

Table- 6.20 ANOVA for Cash Turnover Ratio (CTR)

ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	633795.8	19	33357.67	3.421078	5.39E-06	1.634028
Within Groups	2145139	220	9750.633			
Total	2778935	239				

From the above table we found that there exists significant difference in the average CTR among the sample companies during the period under study because the observed value of F (10.98778) exceeds the critical value of F at 1% Level of Significance.

Table- 6.21 ANOVA for Quick Ratio (QR)

ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	160.2329	19	8.43331	9.020844	8.04E-19	1.634028
Within Groups	205.6712	220	0.934869			
Total	365.9041	239				

The above table reveals that there exists significant difference in the average QR among the sample companies since the observed value of F (9.020844) exceeds the critical value of F at 1% Level of Significance

Table- 6.22 ANOVA for Net Working Capital (NWC)

ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	9.80E+08	19	51592347	6.72794	8.15E-14	1.634028
Within Groups	1.69E+09	220	7668372			
Total	2.67E+09	239				

From the above table, it is observed that there exists significant difference in the average NWC among the sample companies as the observed value of F (10.98778) exceeds the critical value of F at 1% Level of Significance.

Mean difference results for all the eleven variables (eight liquidity measure and three profitability measure variables) are presented in the summarized form in the table below (Table- 6.23)

Table- 6.23 One Way ANOVA for Mean difference of the selected performance indicators

Performance Indicators	Sources of Variation	Degree of Freedom	F-Value	Result
ROA	Between Groups	19	4.78***	Significant at 1% level
	Within Groups	220		
ROCE	Between Groups	19	4.40***	Significant at 1% level
	Within Groups	220		
ROE	Between Groups	19	2.65***	Significant at 1% level
	Within Groups	220		
CR	Between Groups	19	11.35***	Significant at 1% level
	Within Groups	220		
TCA/TA	Between Groups	19	16.21***	Significant at 1% level
	Within Groups	220		
TCL/TA	Between Groups	19	11.36***	Significant at 1% level
	Within Groups	220		
QR	Between Groups	19	4.78***	Significant at 1% level
	Within Groups	220		
DTR	Between Groups	19	15.423***	Significant at 1% level
	Within Groups	220		
ITR	Between Groups	19	10.99***	Significant at 1% level
	Within Groups	220		
CTR	Between Groups	19	3.42***	Significant at 1% level
	Within Groups	220		
NWC	Between Groups	19	6.73***	Significant at 1% level
	Within Groups	220		

The results presented in the table above show that in respect of profitability indicators represented by ROA, ROCE and ROE. There has been significant difference between the means of each of these indicators among the 20 companies. At the same time, it is observed that in respect of liquidity ratios or in other words, the working capital management variables; there has been significant difference between the means of each of these indicators among the 20 companies. This also leads to the rejection of third hypothesis (i.e., there has been no significant variation in the performance level of the companies) of the study

CHAPTER – 7

MEASUREMENT OF THE IMPACTS OF WORKING CAPITAL MANAGEMENT PRACTICES AND POLICIES ON THE PERFORMANCE OF THE COMPANIES: A PANEL DATA ANALYSIS

Chapter Outline:

7.1 Impact of Working Capital Management Policies on the Performance of the Companies

CHAPTER- 7

MEASUREMENT OF THE IMPACTS OF WORKING CAPITAL MANAGEMENT PRACTICES AND POLICIES ON THE PERFORMANCE OF THE COMPANIES: A PANEL DATA ANALYSIS

In this and the following chapter, an attempt is made to measure the effect of various management practices and policies relating to working capital management on the profitability of the companies and shareholders' wealth. Working capital management practices and policies connote several things. They mean how different measures of liquidity such as Current Ratio (CR), Quick Ratio (QR), Inventory Turnover Ratio (ITR), Cash Turnover Ratio (CTR) Debtors' Turnover Ratio (DTR), Total Current Assets to Total Assets (TCA/ TA), Total Current Liabilities to Total Assets (TCL/ TA) etc. are managed and what impact these liquidity measures have upon the performance of the companies. Performance of the company is normally measured by its profitability. Profitability is normally measured by Return on Assets (ROA), Net Profit (NP), Earnings before Interest and Taxes (EBIT) etc. However, as the shareholders' are the owners of the company, their interests need to be protected through proper working capital management procedures and practices. Ensuring higher profitability of the companies or maximizing profit is, undoubtedly, one of the objectives of the companies, but it does not necessarily increase or sustain the shareholders' interest, normally measured by the return on equity, though there is undeniably close relation between profit and shareholders' interest. So, return on equity is another important measure of performance of the companies. It measures profitability from the point of view of equity investors. It indicates how well the funds of the owners have been used by the firm. Thus, performance of a company is measured by the profitability in terms of ROA, NP, EBIT etc. on the one hand, and ROE (Return on Equity), on the other hand.

In the present study, we consider here only ROA as the principal measure of profitability and it is measured as a ratio of net profit after tax to average total assets, not in absolute term like NP and EBIT, which vary from company to company depending upon the assets

or the total capital employed and ROE as the measure of shareholders' wealth or interest, which though is considered as a measure of profitability also.

7.1 IMPACT OF WORKING CAPITAL MANAGEMENT POLICIES ON THE PERFORMANCE OF THE COMPANIES

The concept of working capital management and its effects on profitability, measured by ROA and shareholders' wealth are looked into from two different aspects in this study. The investing policy and financing policy taken together constitute one aspect of the relationship between liquidity management and profitability, while the factors like NWC (net working capital), ITR, DTR, CTR, QR, CR etc. which are the measures of liquidity constitute another aspect of the relationship between liquidity and profitability. In the former, the effects of financing policy represented by TCL/ TA and investing policy represented by TCA/ TA on the profitability (ROA) and shareholders' wealth (ROE) are measured. In the latter, the effect of the different measures of liquidity as mentioned above on the ROA and ROE are measured.

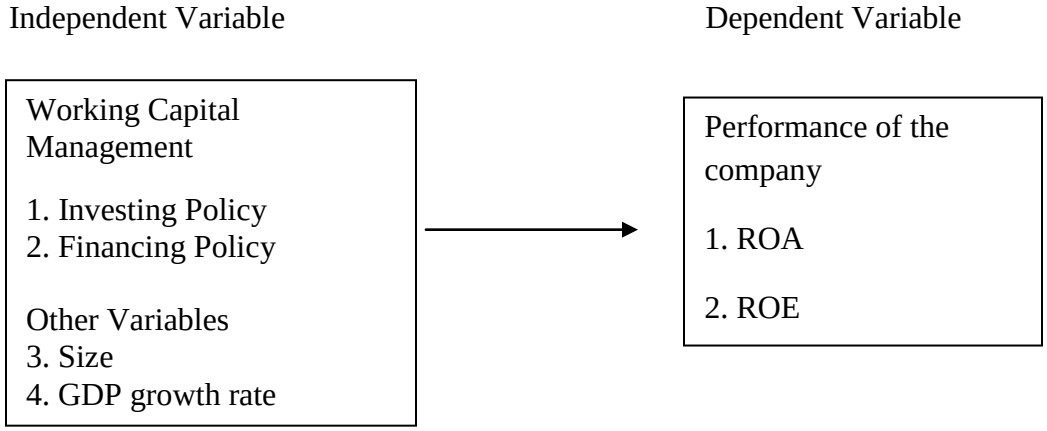
In this chapter, the effect of working capital management policies and practices, namely, investing policy and financing policy are discussed, and their effects are measured by first formulating a multiple regression model in which the ROA and ROE are the dependent variables and the working capital management policies and practices such as investing and financing policy are the explanatory variables. Along with these two explanatory or independent variables, we consider size of the company under consideration and year-to-year Gross Domestic Product (GDP) at market price as the two other explanatory variables, since these two variables are expected to have significant effect on profitability (measured by ROA) and the shareholders' wealth measured by Return on Equity (ROE).

Size as measured by logarithm of net sales of the company concerned varies from company to company. Similarly, GDP growth rate is an important variable that may have significant impact on the profitability and the shareholders' earnings of the company. Increasing year-to-year growth rates of Gross Domestic Product (GDP) will create or indicate a vibrant economy, i.e., a favourable business environment in which company's

performance is expected to be good. If, on the other hand, the year- to year growth rates of GDP fall or remain the same or constant, the economic and business environment will not be favourable for the growth of company's sale, and therefore, earnings will, in all probability, fall or remain constant. Therefore, GDP growth rate is included in our regression model as an independent or an explanatory variable.

In this model, there are two policy variables, which a company changes or may change from time to time. These are the investing policy, TCA/TA, and the financing policy, TCL/TA.

Conceptual Framework of the Model



We now rewrite the objective of this chapter, that is, to measure and statistically test the effect of working capital management policies and practices such as investing policy and financing policy.

Based on this objective the following hypotheses are formulated:

1. There is no significant relationship between investing policy and performance of the steel companies.

2. There is no significant relationship between financing policy and performance of the steel companies.

Model Formulations:

Thus, our regression models are developed to measure the effect of these working capital management policies and practices on ROA and ROE. They are:

$ROA_{it} = \alpha + \beta_1 (TCA/TA)_{it} + \beta_2(TCL/TA)_{it} + \beta_3 Size_{it} + \beta_4 GDP_{it} + e_{it}$……..(1)

$ROE_{it} = \alpha + \beta_1 (TCA/TA)_{it} + \beta_2(TCL/TA)_{it} + \beta_3 Size_{it} + \beta_4 GDP_{it} + e_{it}$ ……..(2)

ROA_{it}= Return on Assets of company *i* at time *t*

ROE_{it}= Return on Equity of company *i* at time *t*

$(TCL/TA)_{it}$ = Total Current Liabilities to Total Assets Ratio (financing policy) of company *i* at time *t*

$(TCA/TA)_{it}$= Total Current Assets to Total Assets Ratio (investing policy) of company *i* at time *t*

$Size_{it}$ = Size of the company (measured in terms of logarithm of Net sales) of company *i* at time *t*

GDP_{it} = Annual Growth rate of Gross Domestic Product at Market Price

β's = coefficients of the explanatory variables

e_{it} = composite error term β (i-companies and t-time)

The models (1) and (2) are called generalized linear regression model (GLRM). It is so called because it includes other models as special cases. The classical normal linear regression (CNLRM) is one such special case. This GLRM model is less restrictive than the CNLRM as in this model the two assumptions of the CNLRM are not made. These assumptions are:

(i) $E(\mathcal{E}_i^2) = \sigma^2$

(ii) $E(\mathcal{E}_i, \mathcal{E}_j) = 0$

For all $i \neq j$.

(i) refers to homoscedasticy, (ii) refers to non-autocorrelation

In the above models (1) and (2), there are two policy variables, namely investing policy and financing policy and two control variables- size of the company (logarithm of net sales) of company i at time t, and GDP.

The relationship between the dependent variable and the independent variables may be positive or negative. In other words, ROA and ROE may be either positively or negatively influenced by these policy variables. Similarly, for other explanatory

variables, the relationship may be either positive or negative. The random disturbance term ε_{it} is assumed to have the following characteristics:

(i) $E(\varepsilon_{it}^2) = \sigma_i^2$ (heteroscedasticy),

(ii) $E(\varepsilon_{it}\, \varepsilon_{jt}) = 0 \quad (i \neq j)$ (cross- sectional independence),

(iii) $\varepsilon_{it} = \rho_i\, \varepsilon_{i,\, t-1} + u_{it}$ (auto regression),

Where,

$u_{it} \sim N(0, \sigma_{ut}^2)$,

$\varepsilon_{it} \sim N(\sigma_{ut}^2 / 1 - \rho_i^2)$, and $E(\varepsilon_{i,\, t-1,}\, u_{jt}) = 0$ for all i, j. (ρ- autocorrelation coefficient)

Note that in this model we allow the value of the parameters ρ to vary from one cross-sectional unit to another. From these specification we deduce,

$E(\varepsilon_{it}\, \varepsilon_{js}) = \rho^{-s}\, \sigma_i^2 \quad (t >= s)$

$E(\varepsilon_{it}\, \varepsilon_{js}) = 0 \qquad (i \neq j)$

This assumption (ii) above signifies that there is no correlation among the cross-sectional units. We make this assumption before this estimation of the parameters in the models (1) and (2), since the cross- sectional units are randomly selected companies. However, the disturbance term is heteroscedastic and auto correlated, then the OLS (ordinary least squares) estimators of the regression coefficients will be unbiased and consistent, but (i) have no other desirable properties and (ii) the estimated variances of the least squares estimators are biased and, as a result, the conventionally calculated confidence intervals and tests of significance will not be valid (Kmenta, 1971).

Autocorrelation

The presence of auto correlation in our model (1) and (2) is tested by applying the Wooldridge test for correlation in the panel data. The Wooldridge's test is used to test the null hypothesis:

H_0: No first order autocorrelation against the alternative hypothesis

H_1: H_0 is not true.

Under H_0, the test statistics, F has been found to be 49.62 for 1 and 17 degrees of freedom for the numerator and the denominator respectively.

As, þ < α = .01, we reject the null hypothesis of no first order autocorrelation in our panel data at 1 percent level of significance. þ-value is the smallest level of significance at which the given null hypothesis is rejected. Therefore, our panel data suffers from autocorrelation.

Heteroscedasticity

About the presence of heteroscedasticity, it is tested by Likelihood ratio test (LR has the Chi-square distribution) with δ degrees of freedom. In our case, δ is 20 = the number of restrictions imposed, i.e., the data are homoscedastic. The likelihood test is based on the idea that if the restriction (restriction of homoscedastic) is true, the value of likelihood function maximized without the imposition of the restriction.

Thus,

LR= -2 [L ($\tilde{\beta}$, $\tilde{\sigma}^2$) – L ($\hat{\beta}$, $\hat{\sigma}^2$)] ~ χ^2

Then, asymptotically, the LR has the Chi distribution with m degree of freedom. m is the number of restrictions. L ($\tilde{\beta}$, $\tilde{\sigma}^2$) is the maximum of the log-likelihood function when the restrictions are imposed, and L ($\hat{\beta}$, $\hat{\sigma}^2$) is the maximum of log-likelihood function when the restrictions are not imposed.

The calculated value LR (chi-square) = 236.61

þ > chi-square= 0.0001.

As þ < α = .01, the chosen level of significance, the null hypothesis of homoscedasticity is rejected. In other words, our panel suffers from the problem of heteroscedasticity.

Problem of Multicollinearity

The independent variables in our models (1) and (2) may suffer from multicollinearity problem. It is true that the economic variables are interrelated in most of the cases. The interrelationship among the variables is expected, but what is important is the severity of interrelationship which is known as the problem of multicollinearity in econometric literature. It is considered as serious if the simple correlation coefficient between the pairs

of variable values is greater than or equal to 0.80, as recommended by Gujrati (2003) and Cooper & Schindler (2008). To check the presence or otherwise of multicollinearity in the model variables, we have obtained a correlation matrix. The tables for correlation matrix are presented at the end of the chapter.

The results indicate that the correlation coefficients for all variables are found to be less than 0.80. So, we infer that our data do not exhibit severe multicollinearity. Therefore, it is presumed that multicollinearity does not pose any problem in the estimation of parameters as well as in the interpretations of the estimated regression coefficients.

Further, we tested the stationary of the time series data for all variables of interest for all companies. By stationary of data it is meant that the mean and the variance of the data remain constant. If the data are not stationary, then regression analysis may yield spurious result in the sense that the relationship between the explanatory variables and the dependent variable, as determined by the estimated regression coefficient and their statistical test results will be misleading. Therefore, to avoid this problem, Dickey-Fuller (1979) test was conducted to test whether the variables under study have unit roots. The Dickey- Fuller test is given by

$$\tau^{*}_{\hat{\delta}} = \frac{\hat{\delta}-\delta}{SE\ (\hat{\delta})} = \frac{\hat{\delta}}{SE\ (\hat{\delta})}$$

Where, $\hat{\delta}$ is the LS estimator of δ where δ is given in the following equation:

$Y_t = \rho\ Y_{t-1} + u_t$…… (3)

where u_t is the white noise error term. If in the above equation ρ =1, then $Y_t = Y_{t-1} + u_t$. This means that Y_t is a random walk series given by its immediate past values plus random disturbance or white noise term. So, Y_t is non-stationary. If we write the above equation in the following way

$Y_t - Y_{t-1} = u_t$, given that ρ=1…….. (4)

then $Y_t - Y_{t-1} = \Delta Y_t$, i.e., the first difference in the Y values are stationary, because u_t is stationary with expected value = 0, and variance = σ^2, a constant.

If we write equation (3) as

$$Y_t - Y_{t-1} = \rho Y_{t-1} - Y_{t-1} + u_t$$

$$\Delta Y_t = (\rho - 1) Y_{t-1} + u_t$$

$$\Delta Y_t = \delta Y_{t-1} + u_t, \qquad \text{where } \delta = (\rho - 1)$$

Regressing ΔY_t, i.e., the first difference in Y_t, on Y_{t-1} we get an estimate of δ. Now if we test the Null hypothesis,

H_0: $\delta = 0$ against the alternative hypothesis

H_1: $\delta < 0$

If the null hypothesis is accepted, i.e., $\delta = 0$ is accepted, then $\rho = 1$ is accepted since $\delta = \rho - 1$. This means that Y_t has unit root, and it is non- stationary. If, on the other hand, H_0 is rejected, then Y_t is stationary. Thus, δ and $SE(\hat{\delta})$ obtained and therefore, D-F test statistic value, i.e., $\tau^*_{\hat{\delta}}$ is obtained. If $\left|\tau^*_{\hat{\delta}}\right|$ > the absolute value of critical τ at our chosen level of significance, we reject the null hypothesis H_0: $\delta = 0$, or $\rho = 1$. Given the result we conclude that Y_t is stationary. On the other hand, if τ^* lies to the right of the critical τ at our chosen level of significance, we accept H_0: $\delta = 0$, i.e., $\rho = 1$. In that case Y_t is non-stationary.

We carried out this test and found that all the variables are stationary. Therefore, these variables were used in levels instead of their first differences. This result permits us to regress the dependent variables on the independent variables in equations (1) and (2), to get non-spurious regression results.

Model for panel data estimation: As our panel data are short panel data (since the cross-sectional units are greater than the number of time points), Random Effects Model (REM) is appropriate than the Fixed Effect Model (FEM), which suits long panel where number of time period exceeds the number of cross sectional units. It may be further noted that our panel is a balanced one as each cross-sectional units has the same number of time points. The random effects model, which is also known in statistical literature as the Error Component Model (ECM) is treated as a generalized regression model. This model is based on the presumption of presence of specific cross-sectional and time series effects, of course, for a three- component random effects model. On the other hand, only cross-sectional effects are assumed to be present in the two-component random effect model which is widely used. According to Mundalak, in the case of an error component model, unlike the fixed effects model, which is also known as Least Squares Dummy Variables (LSDV) model, and also as covariance model 'unconditional influence is possible by virtue of the specific assumption about the distribution of the cross-sectional effects. The assumption is that the specific characteristic of a cross-sectional unit is normally distributed random variable, whereas in the fixed effects model it is a parameter.'

So, our regression models are Random Effects GLS (Generalized Least Squares) Regression (robust, cluster (co id)) models. The regression results are obtained by applying robust regression method. The method that can deal with outliers and some violation of basic assumptions of classical linear regression methods. In contrast, the classical linear regression model works well only under strict conditions and assumptions in the data set, i.e, $E(X_i \varepsilon_i) = 0$, i.e., orthogonality condition is satisfied. This robust method was first introduced in 1960s due to the works of J.W. Tukey, P.J.Huber and F.R. Hampel. The result of robust regression models (1) and (2) are presented below:

Model: 1

$$ROA_{it} = \alpha + \beta_1 (TCA/TA)_{it} + \beta_2(TCL/TA)_{it} + \beta_3 Size_{it} + \beta_4 GDP_{it} + e_{it}$$

$$ROA_{it} = -10.25^{***} + 17.26^{*}(TCA/TA)_{it} + 1.828^{i}(TCL/TA)_{it} + .106(Size)_{it} + .797^{***}(GDP)_{it}$$

Interpretation of the Results of Model 1

The Regression results indicate that the effect of the total current assets to total assets is significant at 5.6 % probability level. The coefficient of this variable is .1725604. The result of the study shows that there is a significant positive relationship between the ratio of total current assets to total assets and the performance as measured by ROA which is an important measure of profitability of the company. This implies that a unit increase in this ratio leads to an increase of 0.1726 in the ROA. Positive coefficient indicates the negative relationship between the aggressiveness in investing policy and ROA. This means that with the increase in TCA/TA ratio, aggressive in the investing policy reduces and ROA increases. This indicates that a satisfactory level of current assets has been maintained by the companies during the period under study.

However the relationship between the total current liabilities to total assets and ROA is found to be statistically insignificant.

Model: 2

$$ROE_{it} = \alpha + \beta_1 (TCA/TA)_{it} + \beta_2(TCL/TA)_{it} + \beta_3 Size_{it} + \beta_4 GDP_{it} + e_{it}$$

$$ROE_{it} = -15.6585^{**} + 10.72^{i} (TCA/TA)_{it} + 25.727^{*} (TCL/TA)_{it} + 0.5245^{i} (Size)_{it} + 2.0535^{***} (GDP)_{it}$$

Interpretation of the Results of Model 2

The result of Model 2 has shown significant relationship between the ratio of total current liabilities to total assets and ROE. Insignificant relationship was observed in case of total current assets to total assets and ROE and Size variable with ROE.

GDP growth rate, a macro- economic variable, indicator of operational efficiency in respect of productions of goods and services in the economy or the economic environment, was found to be statistically significant at less than 1% probability level indicating the influence of GDP growth rate on ROE.

Both the models have given good fit to the data sets, as the robust regression method- that has been developed in the 1960s ensures goodness of fit and take care of the violations of assumptions of classical regression methods (see the table at the end of the chapter)

Thus, we find from the regression results of Models (1) and (2) that ROA (Model-1) is positively and significantly influenced by the investing policy (TCA/TA) and GDP growth rate, at 6 percent and less than 1 percent probability levels respectively.

ROE (Model-2), on the other hand, is statistically influenced by GDP growth rate at less than 1 percent level of significance, and by financing policy (TCL/TA) at 12% probability levels respectively.

The above result lead to the acceptance of the second hypothesis for financing policy as stated in Model- 1, while the same hypothesis is accepted in terms of investing policy as specified in Model-2.

Thus, what is clear from the above results is that financing policy does not have statistically significant effect on ROA while the investing policy does not have any significant impact on the ROE. But, interestingly GDP growth rate has highly significant impact on both the ROA and ROE. Thus, irrespective of any policy regarding investing and financing, aggressive or conservative, GDP growth rate, i.e., the economic environment in the country plays a very important role in the growth of the companies in terms of both profitability and shareholders' interests. These results indicate that the profitability of the industries like steel which invest a large part of their total investment expenditure on fixed capital and long term investment, working capital and as such its management are most likely not to have significant effect on the profitability of the companies.

Table- 7.1 Results of Regression of ROA on Working Capital Management policies and Practices

Model 1: $ROA_{it} = \alpha + \beta_1 (TCA/TA)_{it} + \beta_2(TCL/TA)_{it} + \beta_3 Size_{it} + \beta_4 GDP_{it} + e_{it}$

```
. xtreg  roa  tcata tclta gdp lnnetsales, re robust cluster( coid)

Random-effects GLS regression                   Number of obs      =       240
Group variable: coid                            Number of groups   =        20

R-sq:  within  = 0.2172                         Obs per group: min =        12
       between = 0.0220                                        avg =      12.0
       overall = 0.0725                                        max =        12

                                                Wald chi2(4)       =     24.05
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0001

                                  (Std. Err. adjusted for 20 clusters in coid)
```

roa	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
tcata	17.25604	9.03882	1.91	0.056	-.4597169	34.97181
tclta	1.827602	11.28637	0.16	0.871	-20.29328	23.94848
gdp	.7971222	.2477194	3.22	0.001	.311601	1.282643
lnnetsales	.1060075	.4999411	0.21	0.832	-.8738591	1.085874
_cons	-10.24574	5.839709	-1.75	0.079	-21.69136	1.199885
sigma_u	4.2392467					
sigma_e	6.9605793					
rho	.27056573	(fraction of variance due to u_i)				

Table- 7.2 Results of Regression of ROE on Working Capital Management policies and Practices

$$ROE_{it} = \alpha + \beta_1 (TCA/TA)_{it} + \beta_2(TCL/TA)_{it} + \beta_3 Size_{it} + \beta_4 GDP_{it} + e_{it}$$

```
. xtreg   roe tcata tclta gdp   lnnetsales, re robust cluster( coid)

Random-effects GLS regression                   Number of obs      =       240
Group variable: coid                            Number of groups   =        20

R-sq:  within  = 0.2013                         Obs per group: min =        12
       between = 0.0344                                        avg =      12.0
       overall = 0.1149                                        max =        12

                                                Wald chi2(4)       =     39.11
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000

                                  (Std. Err. adjusted for 20 clusters in coid)
```

roe	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
tcata	10.72232	10.306	1.04	0.298	-9.477064	30.9217
tclta	25.72677	16.23226	1.58	0.113	-6.08787	57.54141
gdp	2.053537	.5408706	3.80	0.000	.9934502	3.113624
lnnetsales	.5245056	.8485493	0.62	0.536	-1.13862	2.187632
_cons	-15.65853	8.010888	-1.95	0.051	-31.35958	.0425252
sigma_u	5.5366979					
sigma_e	14.186571					
rho	.13218282	(fraction of variance due to u_i)				

Table- 7.3 Inter Correlation Matrix for ROA and Independent Variables, and between Independent Variables

	ROA	TCA_TA	TCL_TA	LN_NET_SALES_	GDP
ROA	1.000000	0.163228	0.068537	0.205015	0.268070
TCA_TA	0.163228	1.000000	0.501459	-0.304533	0.155543
TCL_TA	0.068537	0.501459	1.000000	0.085561	0.074373
LN_NET_SALES_	0.205015	-0.304533	0.085561	1.000000	0.284913
GDP	0.268070	0.155543	0.074373	0.284913	1.000000

Table- 7.4 Inter Correlation Matrix for ROE and Independent Variables, and between Independent Variables

	ROE	TCA_TA	TCL_TA	LN_NET_SALES_	GDP
ROE	1.000000	0.090733	0.143280	0.234224	0.324972
TCA_TA	0.090733	1.000000	0.501459	-0.304533	0.155543
TCL_TA	0.143280	0.501459	1.000000	0.085561	0.074373
LN_NET_SALES_	0.234224	-0.304533	0.085561	1.000000	0.284913
GDP	0.324972	0.155543	0.074373	0.284913	1.000000

CHAPTER – 8

MEASUREMENT OF THE IMPACTS OF LIQUIDITY ON THE COMPANIES' PROFITABILITY AND SHAREHOLDERS' WEALTH: A PANEL DATA ANALYSIS

Chapter Outline:

8.1 Impact of Liquidity on the Performance of the Companies

8.2 Joint impact of Liquidity on the Performance of the Companies

CHAPTER- 8

MEASUREMENT OF THE IMPACTS OF LIQUIDITY ON THE COMPANIES' PROFITABILITY AND SHAREHOLDERS' WEALTH: A PANEL DATA ANALYSIS

In the preceding chapter, we have measured the impacts of the working capital management practices and policies on the profitability of the companies and the companies' shareholders' wealth by developing two generalized multiple regression models (1) and (2), and estimating the regression coefficients by appropriate statistical and econometric methods and analyzing the regression results and drawing inferences about the effects of the two important working capital management policies on profitability and shareholders' wealth or interest. In the present chapter, we make an attempt to find out the relationship between the liquidity on the one hand, and profitability of the companies and the companies' shareholders' wealth directly.

8.1 IMPACT OF LIQUIDITY ON THE PERFORMANCE OF THE COMPANIES

The different measures of liquidity considered here are Net working capital (NWC), Inventory Turnover ratio (ITR), Debtors' Turnover Ratio (DTR), Cash Turnover ratio (CTR), Current Ratio (CR) and Quick ratio (QR). However, NWC is the aggregative measure which includes total current assets and total current liabilities in its definition i.e., total current assets minus total current liabilities. On the other hand, ITR, DTR, CTR, CR, and QR are the different liquidity measures based on individual components and operation of the company. Thus, NWC being an aggregative measure we have developed a regression model with Return on Assets (ROA) and other profitability measures such as Net profit (NP), and shareholders' interest measures such as Market price per share (MPS), Earnings per share- adjusted (EPS), and Return on Equity (ROE) as dependent variables. We did not formulate any model using NWC as among other the independent liquidity variables like ITR, DTR, CTR, CR and QR, as there is a risk of encountering the problem of severe multicollinearity between the NWC and other liquidity indicators. On this theoretical understanding, we have first regressed different profitability measures

ROA and ROE on NWC and then on other measures of liquidity separately. The models are simple regression models:

$(ROA)_{it} = \alpha + \beta_1 (NWC)_{it} + e_{it}$……..(1)

$(NP)_{it} = \alpha + \beta_1 (NWC)_{it} + e_{it}$……(2)

$(MPS)_{it} = \alpha + \beta_1 (NWC)_{it} + e_{it}$……...(3)

$(EPS)_{it} = \alpha + \beta_1 (NWC)_{it} + e_{it}$……(4)

$(ROE)_{it} = \alpha + \beta_1 (NWC)_{it} + e_{it}$……(5)

The unit root tests of Dickey-Fuller test (explained in chapter-3) for variables in the models (1) through (5) reveals the absence of unit root. Therefore, we conclude that all the variables are used in levels. The equation (1) was, however, found not to have good fit to our panel data as revealed from our Random Effects GLS regression results obtained by applying robust cluster (co id) method. The GLS robust cluster method is one method in the family of GLS method. All other equations have good fits (except equation 1) as revealed by the p-values, such as þ > chi-square= 0.0021 for equation (2); þ > chi-square= 0.0010 for equation (3); þ > chi-square= 0.0009 for equation (4); þ > chi-square= 0.0358 for equation (5), where chi-square is Wald Chi-square-the results of which are presented at the end of this chapter.

The regression results of other models (2) through (5) are presented in the equation form:

$$\widehat{ROA} = 4.8246^{***} + 0.00016^{i}\,(NWC)_{it}$$

$$\widehat{NP} = 281.024^{i} + 0.1879^{***}\,(NWC)_{it}$$

$$\widehat{MPS} = 89.467^{***} + 0.0121677^{***}\,(NWC)_{it}$$

$$\widehat{EPS} = 10.307^{***} + 0.0009^{***}\,(NWC)_{it}$$

$$\widehat{ROE} = 11.22247^{***} + 0.000812^{**}\,(NWC)_{it}$$

Note: *** indicate significant at 1% level (two-tailed)
** indicate significant at 5% level (two-tailed)
* indicate significant at 10% level (two-tailed)
'i' indicate insignificant

Interpretations of Regression Results:

Panel regression measuring the impact of Net Working Capital on Profitability

The result of the panel regression of profitability measure (as measured by Net profit (NP)) on NWC shows significant positive relation between the two variables. By the robust estimation, NWC is found to have significantly affected Net profit. Therefore, it can be stated that NWC is a good measure of working capital management showing its positive and significant relationship with profitability of the companies, as measured by NP. The effect of NWC on NP is statistically significant at 1% level of significance.

Panel regression measuring the impact of Net Working Capital on Market Value of the Share

The result of the panel regression of Market Value of the companies (as measured by Market Price Share) on NWC shows significant positive relations between the two variables. We find that NWC significantly affects on Market Price per Share. Therefore it can be stated that NWC as a measure of liquidity has positively affected the Market value of the sample companies during the study period. To put it in a simple way, liquidity of the companies as measured by NWC has positive significant impact on the market value of the companies under study. The level of significance is 1 percent.

Panel regression measuring the impact of Net Working Capital on Earnings per Share

The result of the panel regression of Net Working Capital and Earnings Per Share of the companies on NWC (at percent level) shows significant positive relations between the two variables. The regression result shows NWC is a significant determinants of Earnings per share.

Panel regression measuring the impact of Net Working Capital on Return on Equity

The result of the panel regression of Net Working Capital and Return on Equity of the Companies on NWC shows significant positive relations between the two variables. The

regression results show that NWC is a statistically significant determinant of Return on Equity, the level of significance being 1 percent.

8.2 JOINT IMPACT OF LIQUIDITY ON THE PERFORMANCE OF THE COMPANIES

After estimating the relationship between NP, MPS, EPS and ROE, which are considered as dependent variables on the one hand, and NWC on the other hand, for each of the company and over the study period of 12 years from 2000-01 to 2011-12, we measure the relationship between profitability represented by ROA and shareholders' wealth or interest represented by ROE on the one hand, and liquidity represented by different liquidity measures, namely, ITR, DTR, CR, QR, size of the company concerned and GDP annual growth rate (represented as GDP), on the other.

The generalized linear multiple regression models are presented below:

$$ROA_{it} = \alpha + \beta_1 (ITR)_{it} + \beta_2(DTR)_{it} + \beta_3(CR)_{it} + \beta_4 (QR)_{it} + \beta 5Size_{it} + \beta_6 GDP_{it} + e_{i....(6)}$$

$$ROE_{it} = \alpha + \beta_1 (ITR)_{it} + \beta_2(DTR)_{it} + \beta_3(CR)_{it} + \beta_4 (QR)_{it} + \beta 5Size_{it} + \beta_6 GDP_{it} + e_{i....(7)}$$

Before the regression models were run, the necessary tests, namely autocorrelation, heteroscedasticity and unit root tests have been carried out and necessary adjustments in the panel data for the presence of autocorrelation and heteroscedasticity have been made. Unit root test was applied to check the stationarity of the panel data pertaining to the variables under study. None of the variables has unit root as D-F test show. To check the possibility of multicollinearity problem in our above models, we have calculated correlation matrix showing the nature and magnitude of correlation coefficient pair-wise (For results, please see tables 8.6 and 8.7 at the end of the chapter). The results clearly show that our data set is free from multicollinearity and does not pose any problem in the estimation of parameters as well as in the interpretations of the estimated regression coefficients.

The estimation of parameters has been made by applying the robust cluster method. The estimated regression results are presented below:

$ROA_{it} = -20.72^{**} + .929^{**} (ITR)_{it} + (.017)^{i}(DTR)_{it} + 2.508^{**}(CR)_{it} + .333^{i}(QR)_{it} + 1.202^{****} (Size)_{it} + .915^{***}GDP_{it}$ ……(6')

$ROE_{it} = -27.94^{**} + 1.513^{**} (ITR)_{it} + (.028)^{i}(DTR)_{it} + .2.227^{i}(CR)_{it} + (.031)^{i}(QR)_{it} + 1.764^{i} (Size)_{it} + 2.248^{***}GDP_{it}$……(7')

Note: **** indicate significant at 11.2% level (two-tailed)
*** indicate significant at 1% level (two-tailed)
** indicate significant at 5% level (two-tailed)
* indicate significant at 10% level (two-tailed)

(Regression results are given in the Tables 8.7 and 8.8)

The model (6') gives a good fit since þ =0.000 which is greater than chi-square (see the results at the end of the chapter). This model shows that ITR, CR, Size of the company and GDP annual growth rate have significant effects on the profitability of the companies in general. The level of significance varies from 1% to 10%. The size of the companies has relatively less significant effect on the profitability of the companies as compared to the other independent variables such as ITR, CR and GDP annual growth rate as represented by GDP.

The model (7') also gives good fit to our panel data since þ =0.000 which is greater than chi-square (see the results at the end of the chapter). From the estimated regression coefficient values, it is seen that ITR has positive effects on ROE which is statistically significant at 5% probability level. The GDP growth rate has positive effect on ROE and this effect is statistically significant at 1% level.

To conclude, all the regression models in section 8.1 and 8.2 give very good fit to the data sets. Interestingly, the NWC is found to be the single liquidity measure that has highly significant (at 1 percent level of significance) effects on each of the profitability measures, except ROA (section 8.1). Likewise, in section 8.2, the regressions of ROA on all the different liquidity measures and other two variables show that ITR, CR, Size and GDP annual growth rate have significant impact upon ROA. However, GDP growth rate

is found to have highly significant impact (level of significance is 1 percent) on both ROA and ROE as compared to any other independent factor including size.

The result of regression of ROE on different liquidity measures and other two factors show that only ITR and GDP annual growth rate have significant effect on ROE. In the case of ITR, the level of significance is 5 percent while it is 1 percent in the case of GDP. At the end, it may be said that liquidity (represented by NWC, ITR and CR) has significant impact upon the profitability of the company and shareholders' wealth. This also leads to the rejection of the second hypothesis of the study. But, regression results of all the models in this chapter unequivocally show that the external factors like GDP plays much significant role than the working capital management practices in terms of investing and financing policies and in terms of different liquidity measures except NWC (Net Working Capital).

Another important finding of our study is that NWC (Net Working Capital) is the best measure of liquidity to explain the profitability of the companies as against any other liquidity measures. The NWC is found to have highly significant (at 1 percent level of significance) effect on all the measures of profitability expressed in absolute terms and the shareholders' wealth.

Table 8.1 Result of regression of ROA on NWC

$$ROA = \alpha + \beta_1 (NWC)_{it} + e_{it}$$

```
. xtreg roa nwc,re robust cluster(coid)

Random-effects GLS regression                   Number of obs      =       240
Group variable: coid                            Number of groups   =        20

R-sq:  within  = 0.0000                         Obs per group: min =        12
       between = 0.2269                                        avg =      12.0
       overall = 0.0258                                        max =        12

                                                Wald chi2(1)       =      0.45
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.5010

                                  (Std. Err. adjusted for 20 clusters in coid)
------------------------------------------------------------------------------
             |               Robust
         roa |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         nwc |   .0001657   .0002463     0.67   0.501    -.000317    .0006484
       _cons |   4.824664   1.136141     4.25   0.000     2.597868     7.05146
-------------+----------------------------------------------------------------
     sigma_u |  3.8852241
     sigma_e |  7.9240033
         rho |  .19381147   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Table 8.2 Result of regression of NP on NWC

$$NP = \alpha + \beta_1 (NWC)_{it} + e_{it}$$

```
. xtreg   np nwc,re robust cluster(coid)

Random-effects GLS regression                   Number of obs      =       240
Group variable: coid                            Number of groups   =        20

R-sq:  within  = 0.2397                         Obs per group: min =        12
       between = 0.7432                                        avg =      12.0
       overall = 0.4242                                        max =        12

                                                Wald chi2(1)       =      9.50
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0021

                                  (Std. Err. adjusted for 20 clusters in coid)
------------------------------------------------------------------------------
             |               Robust
          np |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         nwc |   .1878897   .0609609     3.08   0.002     .0684085    .3073709
       _cons |   281.0243   201.4535     1.39   0.163    -113.8173    675.8659
-------------+----------------------------------------------------------------
     sigma_u |  540.01077
     sigma_e |  803.03888
         rho |  .31139018   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Table 8.3 Result of regression of MPS on NWC

$$MPS = \alpha + \beta_1 (NWC)_{it} + e_{it}$$

```
. xtreg      mps nwc,re robust cluster(coid)

Random-effects GLS regression                   Number of obs      =       239
Group variable: coid                            Number of groups   =        20

R-sq:  within  = 0.0710                         Obs per group: min =        11
       between = 0.0110                                        avg =      11.9
       overall = 0.0407                                        max =        12

                                                Wald chi2(1)       =     10.81
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0010

                                (Std. Err. adjusted for 20 clusters in coid)
------------------------------------------------------------------------------
             |               Robust
         mps |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         nwc |   .0121677   .0037002     3.29   0.001     .0049155    .0194199
       _cons |   89.46629    24.7343     3.62   0.000     40.98795    137.9446
-------------+----------------------------------------------------------------
     sigma_u |  108.27359
     sigma_e |  126.25417
         rho |  .42378086   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Table 8.4 Result of regression of EPS on NWC

$$EPS = \alpha + \beta_1 (NWC)_{it} + e_{it}$$

```
. xtreg     eps nwc,re robust cluster(coid)

Random-effects GLS regression                   Number of obs      =       240
Group variable: coid                            Number of groups   =        20

R-sq:  within  = 0.0446                         Obs per group: min =        12
       between = 0.0276                                        avg =      12.0
       overall = 0.0360                                        max =        12

                                                Wald chi2(1)       =     11.03
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0009

                                  (Std. Err. adjusted for 20 clusters in coid)
------------------------------------------------------------------------------
             |               Robust
         eps |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         nwc |   .0008802    .000265     3.32   0.001     .0003607    .0013996
       _cons |   10.30666   2.466341     4.18   0.000     5.472724     15.1406
-------------+----------------------------------------------------------------
     sigma_u |  11.142651
     sigma_e |  11.281729
         rho |  .49379816   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Table 8.5 Result of regression of ROE on NWC

$$ROE = \alpha + \beta_1 (NWC)_{it} + e_{it}$$

```
. xtreg  roe1 nwc,re robust cluster(coid)

Random-effects GLS regression                   Number of obs      =       239
Group variable: coid                            Number of groups   =        20

R-sq:  within  = 0.0016                         Obs per group: min =        11
       between = 0.0161                                        avg =      11.9
       overall = 0.0028                                        max =        12

                                                Wald chi2(1)       =      4.40
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0358

                                    (Std. Err. adjusted for 20 clusters in coid)
------------------------------------------------------------------------------
             |               Robust
        roe1 |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         nwc |    .000812   .0003869     2.10   0.036     .0000537    .0015703
       _cons |   11.22247   3.933004     2.85   0.004     3.513926    18.93102
-------------+----------------------------------------------------------------
     sigma_u |  7.8469714
     sigma_e |  51.359364
         rho |  .02281095   (fraction of variance due to u_i)
------------------------------------------------------------------------------

.
```

Table- 8.6 Correlation Matrix for ROA and Independent Variables, and between independent Variables

	ROA	DTR	ITR	CR	QR	LN_NET_SALES	GDP
ROA	1.000000	0.104810	0.227930	0.192534	0.242560	0.205015	0.268070
DTR	0.104810	1.000000	0.134032	-0.169297	-0.111539	0.464338	0.142901
ITR	0.227930	0.134032	1.000000	-0.126382	0.008890	-0.089984	-0.085649
CR	0.192534	-0.169297	-0.126382	1.000000	0.507151	-0.364553	0.008935
QR	0.242560	-0.111539	0.008890	0.507151	1.000000	-0.085620	0.062012
LN_NET_SALES	0.205015	0.464338	-0.089984	-0.364553	-0.085620	1.000000	0.284913
GDP	0.268070	0.142901	-0.085649	0.008935	0.062012	0.284913	1.000000

Table- 8.7 Correlation Matrix for ROE and Independent Variables, and between independent Variables

	ROE	DTR	ITR	CR	QR	LN_NET_SALES	GDP
ROE	1.000000	0.117546	0.180262	0.047318	0.098425	0.234224	0.324972
DTR	0.117546	1.000000	0.134032	-0.169297	-0.111539	0.464338	0.142901
ITR	0.180262	0.134032	1.000000	-0.126382	0.008890	-0.089984	-0.085649
CR	0.047318	-0.169297	-0.126382	1.000000	0.507151	-0.364553	0.008935
QR	0.098425	-0.111539	0.008890	0.507151	1.000000	-0.085620	0.062012
LN_NET_SALES	0.234224	0.464338	-0.089984	-0.364553	-0.085620	1.000000	0.284913
GDP	0.324972	0.142901	-0.085649	0.008935	0.062012	0.284913	1.000000

Table 8.8 Result of regression of ROA on Working Capital Management Practices

$$ROA_{it} = \alpha + \beta_1 (ITR)_{it} + \beta_2(DTR)_{it} + \beta_3(CR)_{it} + \beta_4 (QR)_{it} + \beta 5Size_{it} + \beta_6 GDP_{it} + e_i$$

```
. xtreg  roa  cr dtr itr qr lnnetsales  gdp, re robust cluster( coid)

Random-effects GLS regression                   Number of obs      =       240
Group variable: coid                            Number of groups   =        20

R-sq:  within  = 0.2031                         Obs per group: min =        12
       between = 0.3480                                        avg =      12.0
       overall = 0.2442                                        max =        12

                                                Wald chi2(6)       =     45.62
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000

                                (Std. Err. adjusted for 20 clusters in coid)
```

roa	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
cr	2.50818	.9841605	2.55	0.011	.579261	4.437099
dtr	-.0171592	.103271	-0.17	0.868	-.2195666	.1852482
itr	.9288363	.3251923	2.86	0.004	.2914712	1.566201
qr	.3333489	.6336565	0.53	0.599	-.9085951	1.575293
lnnetsales	1.202901	.7574157	1.59	0.112	-.2816066	2.687408
gdp	.9159787	.2330617	3.93	0.000	.4591862	1.372771
_cons	-20.7164	7.521598	-2.75	0.006	-35.45846	-5.974337
sigma_u	2.8022836					
sigma_e	7.0645211					
rho	.13595497	(fraction of variance due to u_i)				

Table 8.9 Result of regression of ROE on Working Capital Management Practices

$$ROE_{it} = \alpha + \beta_1 (ITR)_{it} + \beta_2(DTR)_{it} + \beta_3(CR)_{it} + \beta_4 (QR)_{it} + \beta 5Size_{it} + \beta_6 GDP_{it} + e_i$$

```
. xtreg  roe itr dtr cr qr lnnetsales gdp , re robust cluster (coid)

Random-effects GLS regression                   Number of obs      =       240
Group variable: coid                            Number of groups   =        20

R-sq:  within  = 0.2083                         Obs per group: min =        12
       between = 0.1183                                        avg =      12.0
       overall = 0.1857                                        max =        12

                                                Wald chi2(6)       =     57.17
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000

                                (Std. Err. adjusted for 20 clusters in coid)
```

roe	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
itr	1.513248	.6541653	2.31	0.021	.2311077	2.795388
dtr	-.0282604	.1692314	-0.17	0.867	-.3599479	.303427
cr	2.227689	1.537944	1.45	0.147	-.7866257	5.242003
qr	-.031213	.9547997	-0.03	0.974	-1.902586	1.84016
lnnetsales	1.764284	1.496807	1.18	0.239	-1.169404	4.697972
gdp	2.248211	.4595535	4.89	0.000	1.347503	3.14892
_cons	-27.94427	12.30715	-2.27	0.023	-52.06584	-3.822688
sigma_u	4.5592335					
sigma_e	14.300212					
rho	.09226901	(fraction of variance due to u_i)				

CHAPTER – 9

SUMMARY AND CONCLUSIONS

Chapter Outline:

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CHAPTER- 9

SUMMARY AND CONCLUSIONS

This chapter makes a summary of all the chapters. Conclusions are drawn on the basis of empirical findings of the study and some suggestions are also offered in the study. Results of hypotheses testing are also stated in this chapter. Finally, limitations and scope for further research has been presented in this chapter.

9.1 SUMMARY AND CONCLUSIONS

9.1.1 Summary of Chapter 1:

i) Working capital may be described as the capital available to meet the day-to-day operations of the enterprise. In simple words, working capital refers to the management of currents assets. Management of working capital is important because it has an effect on the firm's profitability, risk and its value.

ii) The main objective of working capital management is to make a trade-off between liquidity and profitability. Therefore, both excess and inadequate working capital is not good for an enterprise. Management of working capital requires higher degree accuracy as compared to fixed assets, since the components of working capital varies every day.

iii) Working capital has two approaches namely: Balance sheet approach and Operating cycle approach.

According to the balance sheet approach, working capital can be defined on the basis of concept and on the basis of time. Based on the concept, working capital can be defined in terms of gross and net working capital. Gross working capital refers to the sum total of current assets. On the other hand, net working capital can be expressed as the excess of current assets over current liabilities. Thus, net working capital measures the firms' liquidity. Again, Net working capital may be of two types i.e., positive net working capital and negative net working capital. Based on time, working capital can be classified as permanent and temporary working capital. Permanent net working capital refers to that part of the working capital which always remains in the firm to operate at the minimum level of activity. On the other hand, temporary working capital refers to that working

capital which is required to be maintained over and above the permanent working capital. Thus, permanent as well as temporary working capital is required for smooth operation of a business unit.

According to the operating cycle approach, working capital is required to meet the day to day expenses of a firm. It is defined as the time required to convert raw materials into sales. Hence, working capital depends on the operating cycle of a firm.

iv) Components (i.e., structure) of working capital: Working capital basically comprises firms' investment in various components of current assets such as stock, sundry debtors, cash and bank balances etc. On the other hand, current liabilities include sundry creditors, bills payable, bank overdraft etc.

Thus, working capital management is the management of each component of current assets as well as each component of current liabilities.

v) Determination of working capital: An optimum level of working capital is necessary for smooth operation of a business firm. Generally, there are three methods for determining the quantum of working capital. They are percentage on sales method, operating cycle approach and regression analysis.

vi) Strategies for financing and investment policies of working capital: The strategies that are followed for financing policy of working capital are as follows:

Conservative Approach: According to this approach, the larger the percentage of working capital requirements financed by the use of long- term sources, the more conservative is the firms' working capital policy and vice-versa.

Aggressive Approach: It refers to that approach, when the firms are willing to finance a part of its permanent current assets with short-term financing.

Hedging Approach: Under this approach, fixed permanent working capital are financed by long-term sources, while fluctuating working capital are financed by short-term sources.

The strategies for investing policy of working capital are stated as follows:

Conservative Approach: As per this approach, a firm invests sufficiently in current assets. Hence, it is less risky.

Aggressive Approach: This approach is opposite to conservative approach, i.e., a firm invests fewer amounts in current assets and consequently there is a higher level of risk.

Moderate Approach: This approach is a mid way between conservative and aggressive approach. Thus, this approach maintains neither too high nor too low level of current assets.

vii) Liquidity and Profitability relationship: A risk- return trade off

There exists a trade- off between risk and return with respect to working capital. It implies that greater the amount of liquid assets a firm has, less risk the firm is likely to face. It shows a negative relationship between liquidity and risk of the firm. But if the firm wants to increase its profitability, then it has to bear the increased risk of liquidity in meeting short term liabilities. Thus, a trade- off between risk and return is required to be maintained.

viii) Factors determining working capital requirements:

Working capital requirement by the business firm is determined and influenced by a number of important factors. In practice, there are several factors that determine working capital requirements of a firm such as nature of business, size of business, business cycle, production cycle, credit policy, operating efficiency, seasonal operation etc.

ix) Indian Steel Industry: An Overview

It is one of the basic industries that have significant contribution to the economic development of the country. Before the new economic policy, steel sector in India was dominated by the public sector. After liberalization which was introduced in the year 1991, the steel sector has been opened up for the private players.

Presently, India stands third in terms of crude steel production in the country and is also the largest producer of sponge iron in the world. The sector continues to contribute 2% of the country's GDP and provides employment to more than six lakhs people. With the introduction and subsequent implementation of the new industrial policy, Government of India has taken various steps for the development of steel industry in the private sector.

The Indian steel industry is driven by technological improvement. There has been rapid development of domestic industry which leads to the review of the National Steel Policy 2025.

For proper development of the sector, the Government of India has taken several initiatives such as quality control, monitoring market conditions, research and development activities, etc.

x) Statement of the problem:

Indian Steel industry which has been selected for investigation in our study, is the basic industry which has both forward linkages and backward linkages. It is one of the important sectors which provide employment opportunities to a large number of individuals of our country. Therefore, the performance of steel industry is a strong indicator of the industrial performance in the country.

Working capital in Indian steel industry also accounts for significant portion of the total current assets. Hence, management of the same must be done in such a way as to ensure optimum level of working capital which will provide proper trade-off between liquidity and profitability. In this backdrop, the present study is an attempt on the part of the researcher to examine the management of working capital with a view to measuring the impact of financial recession on working capital in steel industry for the growth and development of the Indian economy.

xi) Objectives of the study

The main objective of the study is to examine the management of working capital by the steel companies in India in the period of pre- and post financial and economic downturn and its impact on financial performance of these companies.

To achieve this main objective, the following incidental objectives are sought to be achieved:

i) To make a trend analysis of total current assets and current liabilities and their various components of the companies under study during the whole period and to examine whether there is any break in the growth rates of the assets and liabilities and their components during the pre- and post financial meltdown periods under study.

ii) To explore the one- to- one correspondence or relation between the trends in net working capital, on one hand, and the trends in profitability, market value of the company, earnings per share and share holders' wealth on the other.

iii) To explore the impact of investing and financing policies of the company on their profitability and shareholders' wealth.

iv) To make a comparative analysis of companies' performances in respect of various performance indicators.

v) To identify the factors explaining the variations in the performance levels of the companies.

xii) Hypotheses

Keeping in mind the above objectives we have developed the following hypotheses:

i) There has been no statistically significant trend in the current assets and current liabilities during the whole period under study. There has been no statistically significant change in trend growth rate of current assets and current liabilities between the two sub- periods (2000-01 to 2006-07 and 2007-08 to 2011-12) under study.

ii) Management of working capital (including investing and financing policies) has no impact on the profitability and wealth of the organization.

iii) There has been no significant variation in the performance levels of the companies, as indicated by different profitability and liquidity measures which represent working capital management policies and practices of the companies.

xi) Chapter Planning:

To carry out the study the following is a chapter plan:

Chapter 1: Introduction

Chapter 2: Review of literature

Chapter 3: Sampling Design, Data Collection and Methodologies.

Chapter 4: A brief history of the companies under study.

Chapter 5: Analysis of Trend of the working capital components of the companies under study during the study periods.

Chapter 6: Liquidity and Profitability performance: A Company- wise Analysis

Chapter 7: Measuring impact of the working capital management practices and policies on the Performance of the companies: A Panel data Analysis

Chapter 8: Measuring impact of liquidity on the companies' profitability and shareholders' Wealth: A Panel data Analysis

Chapter 9: Summary and Conclusions

9.1.2 Summary of Chapter 2

This chapter makes a review of the available studies that have been carried out in India as well as abroad in the field of working capital and its allied area. Based on the available literatures, research gap has been identified in the study.

The studies in the area of working capital were carried out by Long et al. (1993), Sur, D, Biswas, J and Ganguly, P (2001), Shin and Soenen (1998), Ioannis, L and Dimitrios, T (2002), Pedro, J, Garcia, T and Pedro M S (2003), Deloof (2003), Ghosh and Maji (2003), Eljelly, A. (2004), Lazaridis and Tryfonidis (2006), Kesseven, P (2006), Raheman and Nasr (2007), Bhunia, A (2007), Garcia-Teruel and Martinez-Solano (2007), Falope and Ajilore (2007), Mathuva (2009), Bhunia, A (2010), Gill, A, Biger, N and Mathur, N (2010), Caballero, B. Gracia, T and Perdro, M S (2010), Sharma, A, and Sharma, S. (2011), Joshi, L. and Ghosh, S. (2012), Chist, K.F. (2012), Ching, H Y, & Gerab, F (2011), Vural. G., et.al, (2012), Chaklader, B. & Srivastava, N. (2013), Ahmed, N. Azim, P & Rehman, J (2012), Vishnani, S and Shah, B (2007), Bellouma, M (2011), Abuzayed, B. (2012), Niresh, J A. (2012), Afza, T and Nazir, M S (?), Afza, T and Nazir, M S (2007), Bhunia, A and Brahma, B (2011), Bhunia, A. & Khan I.U. (2011), Ramaratnam, M.S. & Jayaraman, R (2011), Bhunia, A. & Brahma, B. (2009), Bhunia, A. (2007), Sangmi, M. and Nazir, T. (2010), Vijayakumar. A and Venkatachalam.A. (1996), Butt B. Z., Hunjra A. I. and Rehman K. (2010), Omolade, A. and Mukolu. M.O (2013), Mohanty, S.C. (2013), Khatik, S.K. and Nag, A. (2013), Chandrabai, T and Janardhan Rao, K.V. (2011), Panda, A. (2012), Samiloglu, F. and Demirgunes, K. (2008), Erasmus, P.D. (2010), Ching, Y., Novazzi, A. and Gerab, F. (2012), Garcia , J.P.L., Martins, F.V.S., and Brandao, E.F.M. (2011), Singh, J. P. and Pandey, S. (2008), Charitou, M.S., Elfani, M. and Lois, P. (2010), Bagchi. B. and Khamrui. B. (2012), Afeef. M (2011), Sharma, T. and Rathore, U. (2013), Rakhit, D. and Chatterjee, C. (2012), Usman, M. (2012), Ali, S. (2011), Nageswari, P, Bennet, E and Selvam, M (2010), Manoj A, (2001), Siddiquee, M and Khan, S M (2009), Christopher, S. B and

Kamalavalli, A L (2009), Jeyachitra, A, Bennet, E, Nageswari, P and Parasuraman, S (2010), Zariyawati, M. A., Annuar, M. N. & Rahim, A.S. Abdul (2010), Raheman, A., Afza, T., Qayyum, A. and Bodla, M.A (2010), Ray. S (2012), Napompech, K. (2012), Thapa P.D.P (2013), Ahamadabadi, R., Mehrabi, E. and Yazdi, A.F. (2013), Lotfinia, E., Mousavi, Z and Jari, A. (2012), Varul, G., Sokmen, A.G. and Cetenak, E.H. (2012), Mousavi, Z and Jari I.A, (2012), Ebenezer, A. B. and Asiedu, M.K. (2013), Forghani, M., Shirazipour, M. and Hosseini, A (2013), Nejad, D. A., Bandarian, A. and Ghatebi, M (2013), Makori, D. M. Jagongo, A (2013), Jayarathne, T.A.N.R. (2014), Taani, K (2012), Bhatia, S. and Barwal, N. (2015), Sharma, D., Sharma, J. and Arif. Md (2015), Kaur. N and Kaur, J (2014), Suganya, J. S N (2016), Suganya, J. S N (2016),

From the above studies, it has been observed that most of the studies analyzed the working capital performance of the selected sample companies. Moreover, these studies examined the relationship between working capital and profitability only. Hence the relationship between working capital and shareholders' wealth is missing in these cases. Apart from it, we did not find any model developed by the researchers in these studies incorporating the relationship between liquidity, and profitability and shareholders' wealth. Neither of the previous studies has considered any approach incorporating various performance indicators involving liquidity, profitability and variables indicating the shareholders' value.

In this backdrop, the present study is an attempt to fill these gaps.

9.1.3 Summary of Chapter-3

Selection of Performance Indicators

The performance indicators and their measures are indicated below:

- Return on Total Assets (ROA) = Net Profit after tax÷ Average total assets*100
- Return on Equity (ROE) = ((Adj.Net Profit – Preference Dividend) / (Equity share Paid Up + Total Reserve – Revaluation Reserve + Eq. Share Warrants + Eq. Application Money)) * 100
- Return on Capital Employed (ROCE)= (Adjusted Net Profit + Tax + Interest) / (Total Shareholders' Funds + Total Debts + Other Liabilities- Miscellaneous not Written Off) * 100

- Earnings Per Share (EPS) = (Net Profit after tax - Preference dividend) ÷ Number of Equity shares
- Price- Earnings Ratio (P/ E) =Market Value per share ÷ Earnings per Share
- Net profit margin = Net Profit after tax ÷ Net Sales
- Net working Capital Turnover ratio = Net Sales ÷ Average Net Working Capital
- Current Ratio (CR) = Total Current Assets ÷ Total Current Liabilities
- Quick Ratio (QR) = (Current Assets–Inventory-Prepaid Expenses) ÷ (Current Liabilities–Bank Overdraft)
- Total Current Assets to Total Assets (TCA/TA): Total current Assets ÷ Total Assets
- Total Current Liabilities to Total Assets (TCL/TA): Total current Liabilities ÷ Total Assets
- Debtors Turnover Ratio = Net Sales ÷ Average Debtors
- Inventory Turnover Ratio = Net Sales ÷ Average inventory
- Cash Turnover Ratio = Net Sales ÷ Average Cash & Bank Balances

Selection of Variables

The working capital position has been analysed with the help of the following variables: Inventories, Sundry Debtors, Cash and Bank, Loan and Advances, Total Current Assets, Sundry Creditors, Provisions, Total Current Liabilities, Net Working Capital

Trend Growth Rate Analysis

To examine the trend growth rate of the selected performance indicators, Log Linear Trend equation has been used in the study. Furthermore, kinked exponential trend equation has been applied in order to test whether there exists significant difference in the performance level of the companies during the two different sub-periods under study.

Panel Data Analysis

To examine the effect of working capital management on profitability and share holders' wealth, panel data technique is employed in the study.

Further, if any problem of autocorrelation and heteroskedasticity exists, the same has been taken care of by Random effect GLS regression with robust and cluster (co id) since the employment of

robust and cluster in the model will produce consistent results with autocorrelation and heteroskedasticity.

Development of Econometric Models:

To assess the impact of investing and financing policies adopted by the firms on the profitability and shareholder's wealth the following models have been formulated:

$ROA_{it} = \alpha + \beta_1 (TCA/TA)_{it} + \beta_2(TCL/TA)_{it} + \beta_3 Size_{it} + \beta_4 GDP_{it} + e_{it}$……..(1)

$ROE_{it} = \alpha + \beta_1 (TCA/TA)_{it} + \beta_2(TCL/TA)_{it} + \beta_3 Size_{it} + \beta_4 GDP_{it} + e_{it}$ ……(2)

To measure the impact of liquidity on the profitability and shareholder's wealth we have developed the following models:

$ROA_{it} = \alpha + \beta_1 (ITR)_{it} + \beta_2(DTR)_{it} + \beta_3(CR)_{it} + \beta_4 (QR)_{it} + \beta 5 Size_{it} + \beta_6 GDP_{it} + e_{it}$ ……..(3)

$ROE_{it} = \alpha + \beta_1 (ITR)_{it} + \beta_2(DTR)_{it} + \beta_3(CR)_{it} + \beta_4 (QR)_{it} + \beta_5 Size_{it} + \beta_6 GDP_{it} + e_{it}$ …….(4)

Ratio Analysis

To measure working capital and profitability performance, the following ratios are selected in the study: CR, QR, ITR, DTR, CTR, TCA/TA, TCL/TA, ROA, ROE, and ROCE. Thereafter, we have computed mean, standard deviation, coefficient of and variation of the above stated ratios.

To statistically examine the behavior of the above stated ratios, we have applied the technique of independent sample test to measure mean differences between the two sub-periods and F-test to measure the difference in variability between the two sub-periods under study.

Analysis of Variance:

To analyse the variability in average performance among the sample companies, the technique of one-way ANOVA is used in the study.

9.1.4 Summary of Chapter 4:

Bhushan Steel Limited: Bhushan Steel Ltd is named after founder Brij Bhushan Singal. It started its journey in Sahibabad (Uttar Pradesh) in 1987. It is the 3rd largest Secondary Steel Producing company and is one leading prominent player in Steel Industry. The company produces wide variety of products such as Cold Rolled Closed Annealed, Galvanized Coil and Sheet, High Tensile Steel Strapping, Corrugated Sheets, Galume Sheets and Coils, Hardened & Tempered Steel Strips etc. The company is the only

producer in India of the widest width CR Sheet. The company is known for its professional and ethical values.

Bhuwalka Steel Industries Limited: The company was established in the year 1981 under the active and vibrant leadership of S.K. Bhuwalka. The company is known for the production of steel rolled products and is among the largest producers in south India. It has presence in both the leading stock exchanges of the country, i.e., Mumbai and Bangalore Stock exchanges. It has an annual turnover of over Rs 550 crores and is among the fastest growing steel companies in India.

Electrosteel Castings Limited: Electrosteel Castings Ltd. was incorporated in the year 1955 with its first cast iron factory located at Khardah in West Bengal. Later on in the year 1982, they acquired another cast iron factory at Elavur in Tamilnadu. The Company is known for its best performance in the Stainless steel industry segment and was awarded Dhatu Nayak Award. At present, it is India's leading pipeline solution provider in the country.

Essar Steel: The company is promoted by a Bombay based Essar group and controlled by famous Ruias, is a global integrated steel producer with an annual capacity of 14 million tonnes with a strong presence in intensive steel consuming markets of Asia and North America. It has commenced its business from specialised construction in the year 1976 as Essar Constructions. Finally, in the year 1995, it changed to Essar Steel. Presently, it has operations in four countries, namely, India, China, USA and Indonesia. The company manufactures wide variety of steel conforming to quality standards of international certification agencies like API, ABS, etc. It has to its credit ISO: 9001:2000, ISO 9002, ISO 14001, etc certifications. The Company has become country's first integrated steel plant to receive both ISO 9002 and TUV certifications.

National Steel & Agro Industries Limited: The leading manufacturer and exporter of central India the NSAIL is a part of renowned Ruchi Group established in the year 1995. It is co-promoted by Madhya Pradesh Audhyogik Vikas Nigam. The company is engaged in steel, agriculture, power & metal. NSAIL is an ISO 9001:2008 & 14001:2004 certified company and is mainly known for its flat steel products. The company has well

established markets in USA, EU, UAE and Africa. The company has gained the status of Star Trading House with continuous achievements in export.

Ramsarup Industries Limited: Ramsarup Industries Ltd. is one of the fastest growing companies in the Indian infrapower steel sector. The company is one of the largest manufacturers of steel wires and a leading player in TMT bars manufacturing in Eastern India. The manufacturing units of the company are located at Kalyani, Durgapur, Shyamnagar and Kharagpur with its head office being located at Kolkata. The plant at Kharagpur is an integrated steel plant which acts as a feeder for the existing wire and TMT units.

Shah Alloys Limited: Established in the year 1990 in the state of Gujarat. SAL manufactures a complete range of stainless steel, alloy & special steel, etc. It provides various products to the various industries such as infrastructure, construction, automobiles, capital goods, architecture, kitchenware etc. The company clients include L&T, Madras Cements, BHEL, Penner Industries etc.

Steel Authority of India Limited: Steel Authority of India Limited (SAIL) was incorporated on January 24, 1973. It was made responsible for managing five integrated steel plants at Bhilai, Bokaro, Durgapur, Rourkela and Burnpur. In the year 1978, SAIL was restructured as an operating company. SAIL, by virtue of their 'Maharatna' status, enjoys significant operational and financial autonomy.

SAIL manufactures and sells a broad range of steel products, including hot and cold rolled sheets and coils, galvanized sheets, electrical sheets, structural, railway products, plates, bars and rods, stainless steel etc. It is the second largest producer of iron ore and is also having the country's second largest mines network. SAIL's wide range of long and flat steel products is much in demand in the domestic as well as in the international market. Research and Development Centre for Iron and Steel (RDCIS) at Ranchi helps the company to produce quality steel and develop new technologies for the steel industry.

JSW Steel: It is India's leading private sector steel producer and among the world's most renowned steel companies. The company has plants in major six locations in the country, namely, Vijayanagar in Karnataka, Salem in Tamil Nadu, and Tarapur, Vasind, Kalmeshwar and Dolvi in Maharashtra and also has a wide presence in US, South

America and Africa. The company offers the entire range of steel products which includes, Hot Rolled, Cold Rolled, Galvanized, Galvalume, Pre-painted galvalume, TMT Rebar etc. It is the first company to use the Corex technology to produce hot metal.

Kalyani Steel Limited: Kalyani Steels is a leading manufacturer of forging and engineering quality carbon & alloy steels using the Blast Furnace route. Established in the year 1973, Kalyani Steels has been continuously upgrading its technology and infrastructure. The company operates its mines in Bellary region of Karnataka and captive coke plant of the company is established in Bellur Industrial Estate in Dharward, Karnataka. Over the years, KSL has earned the status of preferred steel supplier for engineering, automotive, seamless tube and primary aluminum industry.

Maharashtra Seamless Limited: Maharashtra Seamless Limited (MSL) is an Indian based company incorporated on 10th May 1988. It is the flagship company of DP Jindal group. The Company is engaged in the manufacture of seamless pipes (various capacities) which are used in oil exploration, boilers, pipelines, petrochemicals etc. The plant is located at Raigad, Maharashtra and is equipped with state-of-the-art machinery. The company has the ERW plant which is India's first plant capable of manufacturing ERW pipes up to 21 inches diameter. The company has diversified into power generation having well equipped wind power project at Satara, Maharashtra. It serves various sectors, including hydro carbon process and automotive.

Mukand Limited: Mukand Ltd. (previously known as Mukand Iron & Steel Works Limited) was established in the year 1937 in Mumbai. Its product includes wide range of stainless steel, alloy steel, stainless steel billets, and hot rolled bars. The company caters to the needs of automobile sector by supplying them alloy steel. It is engaged in multi-division work such as general engineering work and manufactures iron & steel products, steel castings, steel structurals, construction and various types of industrial machinery. In 2005, the steel plant in Dighe, Thane was awarded the Total Productive Maintenance (TPM) excellence award by the Japan Institute of Plant Maintenance.

Mahindra Ugine Steel Company Limited: Mahindra Ugine Steel Company Limited (MUSCO) was established in the year 1962 and started its operation in the year 1963. Tools, alloys and special steels are the major product being manufactured by the

company which is either in the form of rolled, forged, or pealed condition. The company's products are mainly used in the automobile and general engineering industries. It is the only steel company with the ISO 9002 accreditation for all its operations.

Tata Steel Limited: Established in the year 1907, Tata Steel finds its commercial presence in more than 50 countries of the world with operation spreading across in 26 countries. It is the first private sector integrated plant founded in Jamshedpur. The group companies include Tata Steel Limited (India), Tata Steel Europe Limited (formerly Corus), Tata Steel Singapore and Tata Steel Thailand. In India, operations are mainly carried out from Jamshedpur in Jharkhand with manufacturing divisions in Kharagpur (West Bengal), Joda and Bamnipal (Odisha), and Tarapur (Maharashtra). Its mines, collieries and quarries are located in the States of Jharkhand, Odisha and Karnataka. At present, the company is coming up with the two new Greenfield steel projects in the states of Jharkhand and Chhattisgarh.

Welspun Corporation Limited: It is the flagship company of Welspun Group, is today one of the largest large diameter line pipe companies in the world. It has earned the credit of manufacturing and supplying some of the most vital pipelines in the world from its plants located in India and USA. The company has supplied pipes for the world's deepest pipeline project (Independence Trail', Gulf of Mexico), highest pipeline project (Peru LNG), longest pipeline (Canada to US) and the heaviest pipeline project (Persian Gulf). The company's client base includes Transcanada, Enterprise, Kinder Morgan, Texas Gas, Hunt Oil, Saudi Aramco, Elpaso, Exxon Mobil etc.

Surana Industries Limited: The Company, formerly Surana Metals and Steels (India), was incorporated in the year 1991. Later, in the year 1994, the company was registered as a public limited company. The company is engaged in the manufacturing and trading of iron and steel products which includes tor steel, CTD bars, TMT bars, wire rod coils, carbon grade wire rod coil, plain rounds, round cooling squares and various structurals. The company also produces alloy steels which are used in various industries including automotive and engineering industries.

Sunflag Iron and Steel Company Limited: The company was incorporated in the year 1984. It is engaged in the production of rolled products, billets, sponge iron etc. The Sunflag Group was founded by Satyadev Bhardwaj in Kenya in 1937. The outputs of the company are spring steel rounds flats, carbon steel and alloy steel and to cater to the needs of automobile leaf spring manufacturers, engineering goods Manufacturers. The Company was accredited with EMS Award for being actively engaged in pollution control.

Man Industries (India) Limited: The company was established on 19th May 1988. Mr. R.C. Manshukhani, a renowned visionary is the chairman of the group. It is a leading manufacturer as well as the exporter of large diameter carbon steel line pipes for various high pressure transmission applications for gas, crude oil, petrochemical products and potable water. The company has state-of-the-art manufacturing facilities for Longitudinal Submerged Arc Welded (LSAW) and Helically Submerged Arc Welded (HSAW) Line Pipes and also for various types of Anti-Corrosion Coating Systems. Man Industries have at present recorded global presence with offices in U.K, U.S.A and India. In 2006, the company has demerged the Aluminium Extrusion into separate entity under the name of Man Aluminium Limited.

Uttam Galva Steel Limited: The company, established in the year 1985, is one of the largest producers of cold rolled closed annealed coils and galvanised steel in India. The company caters to the needs of many industries such as automobiles, white goods, general engineering, drums and barrels segments. It is located at Khopoli in the state of Maharashtra. It is in close proximity to the ports which help the company in having quick access to the imports and export of raw materials and finished goods. The company has bagged the ISO 9002 for all its plant and it is accredited with ISO 9001- 2008. The company is in a position to export 50% of its products to 132 countries across the globe and also has a huge customer base in Australia, France, Germany, Greece, UK, and USA.

Tube Investments of India Limited: The company is a part of business giant Murugappa Group which was formed in the year 1900. The company manufactures precision steel tubes and strips, car doorframes, automotive and industrial chains and bicycles. Cycles, Engineering and Metal framed products are the three main division of

the company. Since inception, continuity of financial prudence has helped the company to provide uninterrupted dividend to their worthy shareholders. The company has been able to build significant skills in engineering and metallurgy with the help of R & D facilities. Tube Investments of India Ltd. is known for its Total Quality Management (TQM) which has made it possible to live up to the expectation of their present customers, thus making them happy and satisfied.

9.1.5 Summary of Chapter 5:

Analysis of Trend of the working capital components of the companies under study

Inventory: Most of the companies have recorded significant positive growth rates during the entire period as well as in the two sub-periods. So far as trend break is concerned, 10 companies have shown significant change in growth rate in inventory between the two sub-periods. Out of these 10 companies (i.e., registering change in growth rate), 8 companies shows negative change in growth rate between the two sub-periods, implying that the inventory growth rate was lower in the second sub-period than that of the first sub-period. In rest of the cases, the results are found to be insignificant. This implies that financial recession has significant negative impact on the growth rate in inventory between the two sub-periods.

Sundry Debtors: Majority of the companies reveal significant positive growth rates during the whole period and also in the two sub-periods. In terms of trend break, it is observed that 11 companies have recorded significant change in growth rate in sundry debtors between the two sub-periods. Out of these 11 companies (i.e., registering change in growth rate), 7 companies shows negative change in growth rate and the remaining 4 companies have registered positive growth rate between the two sub periods. Rest of the cases is found to be insignificant. This is indicative of the fact that financial recession has significant negative impact on the growth rates in sundry debtors between the two sub-periods under study, negative for 7 and no significant change for as many as 9 companies. But this 'no significant change' between these two sub-periods may be interpreted as negative impact of recession since all these companies experienced statistically significant positive growth rates in the 1st sub-period. That positive trend in the first sub-period could not be maintained in the second sub-period.

Cash and Bank: It may be stated that most of the sample companies have shown significant positive growth rates during the whole period. six companies have recorded significant negative change in growth rate in cash and bank between the two sub-periods. In rest of the cases, the results are found to be insignificant. Hence it can be interpreted that financial recession has overall significant negative impact on the growth rate in cash and bank between the two sub-periods under study.

Loan and Advances: Significant positive growth rates in loan and advances are observed during the whole period as well as in the two sub-periods for majority of the sample companies under study. The results of kinked exponential trend equation reveal significant change in growth rate for 9 companies between the two sub-periods. Out of these 9 companies which registered change in growth rate, 8 companies reveal negative change in growth rate and the remaining 1 company reveal positive growth rate between the two sub periods. Rest of the cases is found to be insignificant. This indicates that financial recession has significant negative impact on the growth rate of loan and advances between the two sub-periods.

Total Current Assets:

For total current assets majority of the companies reveal significant positive growth rates during the whole period as well as in the two sub-periods. In terms of trend break, 10 companies have shown significant change in growth rate in total current assets between the two sub-periods. All these companies have recorded fall in growth rates during the second sub-period. The results are found to be insignificant for rest of the companies. This implies that financial recession has significant adverse impact on the growth rate in total current assets between the two sub-periods.

Sundry Creditors: Significant positive growth rates for majority of the companies are observed during the whole period as well as in the two sub-periods. The trend result of six companies reveals significant change of growth rate in sundry creditors between the two sub-periods. Out of these 6 companies which registered change in growth rate, 3 companies have shown negative change in growth rate, while the remaining 3 companies have shown positive growth rate between the two sub periods. In rest of the cases, the results are found to be insignificant. This is indicative of the fact that financial recession

has significant negative impact on the growth rate in sundry creditors between the two sub-periods.

Provisions: Most of the companies have recorded significant positive growth rates during the whole period and in the 1st sub-period. So far as trend break as measured by kinked exponential trend equation is concerned, 14 companies reveal significant negative change in growth rate in provisions between the two sub-periods. In rest of the cases, the results are found to be statistically insignificant. This shows that financial recession has significant negative impact on the growth rate in provisions between the two sub-periods under study.

Total Current Liabilities: For total current liabilities, majority of the companies have shown significant positive growth rates during the whole period as well as in the two sub-periods. In terms of trend break, 7 companies have shown significant negative change in growth rate in total current liabilities between the two sub-periods which indicates that financial recession has significant negative impact on the growth rate in total current liabilities.

Net Working Capital:

Majority of the companies have shown significant positive growth rates in net working capital during the whole period and in the 1st sub-period. For 7 companies, the results of kinked exponential trend equation reveal significant change in growth rate in net working capital between the two sub-periods. Out of these 7 companies (i.e., registering change in growth rate), 6 companies have registered negative change in growth rate, while the remaining 1 company recorded positive growth rate in net working capital between the two sub periods. For rest of the companies, the results are found to be insignificant. This implies that financial recession has significant negative impact on the growth rate in net working capital between the two sub-periods under study.

9.1.6 Summary of Chapter 6

Interpretations of Mean and Standard Deviation Differences

Differences in means and standard deviations of the profitability and liquidity variables are some descriptive statistics that together throw light on the performance levels of the companies. For example, suppose that the mean difference of say, ROA between

company A and the company B is significant at say 1 percent level of significance, but the difference in the standard deviations of ROA between A and B is not statistically significant from zero, i.e, they are the same in statistical sense. Given that situation we can say that the company A's performance in respect of ROA is significantly better than that of company B. Similarly, other conditions that may occur in case if different pairs of companies have been interpreted accordingly.

ROCE: In terms of mean difference in ROCE, 7 companies out of 20 companies have revealed significant difference between the two sub-periods. On the average, all these 7 companies have shown better performance in the 1st sub-period than that of 2nd sub-period. This implies that financial recession has significant negative impact on the ROCE for these 7 companies under study.

So far stability in ROCE is concerned, only 4 companies out of 20 companies have recorded significant difference between the two sub-periods under study. This shows that in majority of the cases, the consistency measured in terms of difference variance in ROCE is not affected by the financial crises of 2006-07.

ROA: Six companies out of 20 companies have recorded significant difference in the mean value of ROA between the two sub-periods. On the average all these 6 companies, have shown better performance in the 1st sub-period in relation to the 2nd sub-period. This implies that financial recession has significant negative impact on the profitability performance for these 6 companies under study.

In terms of variability in ROA, 6 out of 20 companies reveal significant difference. This is indicative of the fact that in majority of the companies financial recession has made no significant impact on the variability in the company's performance as represented by ROA.

ROE: So far as mean difference in ROE is concerned, 4 out of 20 companies have shown significant difference between the two sub-periods. Of these 4 companies, 3 companies on the average shown better performance in the 1st sub-period in relation to that in the 2nd sub-period, which implies that financial recession has significant negative impact on the ROE performance, while in the remaining 1 company have shown the reverse situation.

Performance of the company in terms of variability in ROE, significant difference is observed in 5 companies only. Hence, considering the results of other 15 companies it can be inferred in general, that consistency in ROE performance has not been affected by financial recession.

CR: So far as mean difference in CR is concerned, we find 6 companies out of the 20 companies have registered significant difference between the two sub-periods. Of these companies, 3 companies on the average have recorded better performance in the 1st sub-period than that in the 2nd sub-period, whereas the remaining three companies have recorded the reverse results. For the fourteen other companies there is no statistically significant difference of the means of CR between two sub-periods. This signifies that these 14 companies have maintained the same liquidity level throughout the period under our study. Financial break down cause panic among these companies to force them to adopt conservative liquidity policy in the post- financial crises period.

In respect of variability in CR, it is observed that only 2 companies have shown significant difference during the period under study. This is indicative of the fact that in majority of the companies financial recession did not have any significant impact on the variability in CR. That is, in these companies the variability in CR, measured by standard deviation, remained almost the same during the pre-post financial recession periods.

QR: Significant difference in the mean value of QR is observed in 8 companies out of 20 companies. Out of these 8 companies, 5 companies on the average have maintained higher QR performance in the 1st sub-period than that of the 2nd sub-period, while in the remaining 3 companies, QR in the second sub-period was maintained at higher level than in the first sub-period reverse. But in the remaining 12 companies no significant change in the level of QR, could be found. That is, the world-wide financial crises of 2006-07 did not cause any solvency problem for these 12 companies. Liquidity position of these companies remained almost constant (in statistical sense).

In terms of variability in QR, only 4 companies have recorded significant difference during the study period. Hence, in majority of the cases, financial recession has no significant impact on the variability in QR. Considering both mean and variance (a

measure of variability), it can be safely concluded that performance in the post-financial recession period in terms of QR was better than in the post- recession period.

TCA/ TA: So far as mean difference in TCA/TA is concerned, 5 companies on the average have higher value in the 1st sub-period in relation to the 2nd sub-period, while in 2 companies the reverse situation is observed. Thus, it can be stated that financial recession has significant negative impact on the TCA/TA for these 5 companies under study. For the remaining 13 companies no significant difference in the mean values of TCA/TA could be observed. These results can be interpreted as maintaining the same investing policy by 13 companies during these two sub-periods.

We find significant difference in the variability of TCA/TA for 3 companies out of 20 companies. This indicates that in majority of the cases, variability in TCA/TA has not been affected by financial recession. The variability results for as many as 17 companies indicate that there has been no significant change in their investing policy during these two sub-periods.

TCL/TA: In terms of mean difference TCL/ TA, 11 companies reveals significant difference between the two sub-periods. On the average, all the companies have recorded higher ratio values in the 1st sub-period as against that of the 2nd sub-period. In 9 other companies, the TCL/TA did not significantly change in the two sub-periods. This means that these companies did not make any significant change in their financing policies on these two sub-periods.

So far as the variability in TCL/ TA is concerned, only 4 companies have recorded significant difference between the two sub-periods. This indicates that in majority of the companies (16 in all) the financial recession has no significant impact on the variability in TCL/ TA. In other words, financing policy of these companies did not change even in the post-financial crises of 2006-07.

DTR: On the average, 11companies out of 20 companies have registered significant difference in DTR between the two sub-periods. Out of these 11 companies, 4 companies on the average have shown higher DTR values in the 1st sub-period than that in the 2nd sub-period, while in the remaining 7 companies the second sub-period experienced highest DTRs than the first sub-period. This indicates that for these 7 companies,

financial recession has significant positive impact on the liquidity performance in terms of DTR.

7 companies out of 20 companies have registered significant difference in the variability of DTR between the two sub-periods under study. This implies that in majority of the cases, financial recession has no significant impact on the variability in DTR.

ITR: In terms of mean difference in ITR, 12 companies out of 20 companies reveals significant difference between the two sub-periods. All these 12 companies on the average have recorded better performance in the 1st sub-period than that of the 2nd sub-period. Thus, it can be inferred that in majority of the cases, ITR has been negatively affected by the financial recession.

So far the variability in ITR is concerned, only 7 companies shown significant difference between the two sub-periods under study. Thus, financial recession in majority of the cases has no significant impact on the variability in ITR.

CTR: 9 companies out of 20 companies are observed to have significant difference in the mean value of CTR between the two sub-periods. Of these 9 companies, 5 companies on the maintained higher CTRs in the 1st sub-period than that of 2nd sub-period, while in the remaining 4 companies, the CTRs were on an average at higher levels in the second sub-period than in the first sub-period.

So far the variability in CTR is concerned, only 6 companies have shown significant difference between the t. This indicates that in majority of two sub-periods. Thus, the mean differences as well as the variability differences in the CTRs of the majority of the companies (14 companies) amply indicate the absence of any influence of financial meltdown on the cash turnover ratio.

NWC: In terms of mean difference in NWC, significant difference has been observed in 16 out of 20 companies between the two sub-periods under study. Out of these 16 cases, 15 companies on the average maintained higher amount of NWC in the 2nd sub-period than in the 1st sub-period, Thus, it can be stated that financial recession in majority of the companies has significant positive impact on NWC.

In terms of variability in NWC, all the 20 selected companies have recorded insignificant difference between the two sub-periods under study. This implies that financial recession

has no significant impact on the variability in NWC. This further signifies that the majority of the companies (as many as 15 companies) maintained NWC at higher level although the second sub-period.

Interpretations of Analysis of Variance- One Way ANOVA

From the analysis of variance among the sample companies, it is observed that all profitability indicators have significant difference between the means of the selected indicators. Similarly, for liquidity indicators there exist significant differences between the means of each of these selected indicators among the 20 sample companies. In economic terms these results can be interpreted as that the companies under study have been drawn from different populations.

9.1.7 Summary of Chapter - 7

The regression results of Model 1 and Model 2 reveals that ROA in case of Model 1, is positively and significantly influenced by the investing policy (TCA/TA) and GDP growth rate.

In case of Model- 2, ROE is statistically influenced by GDP growth rate and by TCL/TA (i.e., financing policy) at 12% probability levels respectively.

The above results imply that financing policy has no statistical significant influence on ROA., and similarly, investing policy is also not having statistical significant impact on ROE. However, GDP growth rate has shown significant influence on both the ROA and ROE. Thus, it can be stated that GDP growth rate in the country has played a vital role in the growth of the companies so far as profitability and shareholders' interests are concerned. This is not unexpected since the growth of steel industries depends largely on the demand for the steel products, which in turn depends on general economic environment.

9.1.8 Summary of Chapter- 8

The results of the panel regression of each of the variables, namely, net profit (NP), market price per share (MPS), earnings per share (EPS) and return on equity (ROE) on net working capital (NWC) show that the NWC has made significant effect (significant at 1 percent or less than 1 percent levels) on each of these profitability parameters or

indicators. Thus, that liquidity of a company represented by NWC has significant effect on profitability is clearly demonstrated by the panel regression results.

But when the same profitability indicators are regressed upon different liquidity measures such as ITR, DTR, CR, QR along with two other factors such as size of the company and the gross domestic product growth rate (GDP), the results show that only ITR and CR did have positive relationship between liquidity and profitability. So far as the hypothesis 1 is concerned which states that **t**here has been no statistically significant trend in the current assets and current liabilities during the whole period under study. There has been no statistically significant change in trend growth of current assets and current liabilities between the two sub- periods (2000-01 to 2006-07 and 2007-08 to 2011-12) under study. Log linear trend equation rejects the first hypothesis for majority of the sample companies. As regards trend break, kinked exponential trend equation that was fitted the data set rejects the first hypothesis for the considerable number of the sample companies.

As regard the hypothesis 2, it was found that Management of working capital (including investing and financing policies) has no impact on the profitability and wealth of the organization. Random effect GLS model (panel data) rejects the second hypothesis for investing policy in Model (1) and financing policy in Model (2).

Similarly, Random effect GLS model (panel data) rejects the second hypothesis for majority of working capital management indicators in case of Model (6), whereas the same rejects the second hypothesis for only ITR in case of Model (7)

Third Hypothesis: There has been no significant variation in the performance levels of the companies, as indicated by different profitability and liquidity measures which represent working capital management policies and practices of the companies.

To test this hypothesis, one way AVOVA, mean difference, variance difference test was applied. The results of these tests show that the hypothesis does not hold and therefore, it is rejected.

9.1.9 Conclusions

In relation to the main objectives of the study, it can be stated that components of working capital of the selected steel companies have recorded positive trend in their growth rate during the entire study period. From sub-period analysis (i.e., 2000-01 to

2006-07 and 2006-07 to 2007-08 to 2011-2012), it is observed that a considerable number of sample companies show significant change in the trend growth rate of working capital performance indicator, with majority of the sample companies reporting significant negative growth rate during the post-meltdown period. This implies that financial recession has significant negative impact on the annual growth rate of working capital performance indicators for a good number of companies under study.

In terms of mean difference test, it is observed that there has been significant impact (in statistical sense) of the financial meltdown of 2006-07 on the liquidity and profitability performance for many of the steel companies during the period under study. So far as the tests of differences in variances of the profitability and liquidity indicators, representing the performance of the companies in terms of profitability and liquidity management, are concerned it is found that the financial break down has not made any significant impact on the variations of these indicators during the post-financial meltdown period. From the Analysis of variance, we see that the performance of the companies in regard to different performance indicators in respect of profitability and liquidity have been significantly different from one another during our study period.

It can be inferred from our statistical analysis of data that liquidity as measured by NWC has significant positive effect on profitability of the steel companies as a whole. Further, it is found from the multiple regression analyses that the liquidity indicators such as DTR, QR do not have significant impact on the profitability performance of the sample companies as a whole. However, the other two measures such as ITR and CR have been found to have positive impact on the profitability of the companies in general. Thus, NWC as an aggregate indicator of liquidity, and ITR and CR (used in the multiple regression models) are found to have statistically significant effect on the liquidity of the companies under study.

In general, it can be concluded that though the impact of financial recession on working capital performance has been negative for most of the companies under study, the impact of liquidity management on profitability of the companies has been significant for the companies as a whole.

9.2 SUGGESTIONS

1. From the findings of study, it is observed that for some companies financial recession has adverse impact on the management of working capital. Hence, appropriate measures or strategies should have been taken by those companies in order to manage their working capital efficiently so as to maximize profitability
2. On the basis of the findings of our study, we find debtors' management of the sample companies has insignificant impact on profitability. Hence, debtors should be managed at an optimum level in order to have favourable effect on profitability.
3. From the regression results, it is observed that financing policy has negative impact on ROE and investing policy has negative impact on ROA. These results require that the companies should be very careful about making investing and financing policies so that these policies lead to positive change in the profitability of the companies.
4. From the result of negative effect of DTR on profitability, it can be said that debtors have not been properly managed. So, from our study it emanates that the debtors' should be managed with more cautioned.

9.3 LIMITATIONS OF THE STUDY

The study suffers from the following limitations:

1. The study is based on the secondary data which has its own usual limitations
2. The study period is limited to12 years only- 7 years preceding and 5 years only following the financial melt-down. Had the post-meltdown period bit longer, the conclusion could have been more valid, and more informative.
3. Inflation adjustment has not been incorporated in the study. However, this is not considered as a serious limitation since all the variables have been more or lee equally affected by inflation. Therefore, the impact of one variable on the other is expected tom be significantly different from what would have been obtained after adjustments for inflation.

9.4 SCOPE FOR FUTURE RESEARCH

Our study can be extended on the following lines:

1. The study may be carried out for longer time period.

2. The study may be extended to the foreign companies and a comparison can be made on the performance of these companies.
3. The present study may be carried out sector-wise i.e, public sector vis-a- vis private sector.

Appendix-I:

List of Sample Companies

1. Bhushan Steel Limited (BSL)
2. Bhuwalka Steel Industries Limited (BSIL)
3. Electrosteel Castings Limited (ECL)
4. Essar Steel (ES)
5. National Steel & Agro Industries Limited (NSAIL)
6. Ramsarup Industries Limited (RIL)
7. Shah Alloys Limited (SAL)
8. Steel Authority of India Limited (SAIL)
9. JSW Steel (JSW)
10. Kalyani Steel Limited (KSL)
11. Maharashtra Seamless Limited (MSL)
12. Mukand Limited (ML)
13. Mahindra Ugine Steel Company Limited (MUSCO).
14. Tata Steel Limited(TSL)
15. Welspun Corporation Limited (WCL)
16. Surana Industries Limited (SIL)
17. Sunflag Iron and Steel Company Limited (SISCL)
18. Man Industries (India) Limited (MIL.
19. Uttam Galva Steel Limited (UGSL)
20. Tube Investments of India Limited (TIIL)

Appendix-II:

List of Papers Published

1. Title of the Paper: *Working Capital Management and Profitability: A Review of Literature in search of a solution*

Name of the Author: *Lalit Kumar Joshi*
Name of the Journal: *International Journal of Multidisciplinary Educational Research*
Month & Year of Publication: *April, 2016*
Volume: 5
ISSN: *2277-7881*

2. Title of the Paper*:* *Inventory Trends in Indian Steel Industry: An Empirical Study*
Name of the Author: *Lalit Kumar Joshi*
Name of the Journal: *IMS Management Journal*
Month & Year of Publication: *January, 2016*
Volume: *8*
ISSN: *0975-0800*

3. Title of the Paper: *Trend Growth Rates of Debtors in Indian Steel Industry: A Study with Reference to select Companies during 2000-01 to 2011-12*

Name of the Author: *Lalit Kumar Joshi*
Name of the Journal: *International Journal of Innovative Practices and Applied Research (IJIPAR)*
Month & Year of Publication: *January- June 2016*
Volume*:* *5*
ISSN: *2349-8978*

4. Title of the Paper: *Impact of Financial Recession on Liquidity and Profitability of Tata Steel Limited: An Empirical Inquest*

Name of the Author: *Lalit Kumar Joshi*

Name of the Journal: The BESC Journal of Commerce and Management

Month & Year of Publication: July, 2016

Volume: 2

ISSN: 2395-4639

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