THE EFFECT OF WORKING CAPITAL MANAGEMENT POLICIES ON THE PERFORMANCE OF SELECTED BEVERAGE MANUFACTURING FIRMS IN ADDIS ABABA CITY ADMINISTRATION

WE STRIVE FOR WISDOM

WOLKITE UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF ACCOUNTING AND FINANCE

A Research Paper Submitted to Department Of Accounting And Finance For Partial Fulfillment of Bachelor of Arts (BA) Degree In Accounting And Finance.

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Thesis Approval Sheet

The Thesis entitled, the impact of working capital management policies on the performance of selected beverage manufacturing firms' in Addis Ababa City Administration: were carried out by Temesgen Yosef under the supervision of Mr. Demelash Getnet and this title has been approved by the concerned bodies of Jimma university for the partial Fulfillment of Bachelor of Arts (BA) Degree In Accounting And Finance.

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Statement of Declaration

Declaration

I, Temesgen Yosef, hereby declare that the thesis work entitled “The Effect of working capital management policies on the Performance of selected beverage manufacturing firms in Addis Ababa city administration” submitted by me for the award of the Bachelor Degree of Arts in Accounting and Finance of Wolkite University at, Ethiopia is my original work.

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Abstract

The objective of this study was to show the effect of working capital management policies on the performance of large taxpayer beverage manufacturing companies in Addis Ababa city Administration. To achieve these objectives, an explanatory research design with a quantitative approach was employed using appropriate secondary data from financial statements gathered from sample manufacturing companies from the year 2013 to 2018. A multiple linear regression model with balanced panel data was employed to regress the extent to which independent variables i.e. Current assets to total assets ratio, Current liabilities to total asset ratio, firm's size, Leverage (debt to asset ratio), and firms' liquidity (current ratio) affects the performance of firms measured using return on assets (ROA).

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ACRONYMS AND ABBREVIATIONS

CATAR- Current assets to total assets ratio

CLRM- Classical linear regression Model

CLTCAR- Current liabilities to total assets ratio

CR- Current Ratio

CL- current liabilities

CA- current assets

DTAR- Debt to Assets ratio

Ln – Natural logarithm

ROA- Return on Assets

GDP-Gross Domestic Product

IFC - International Finance Corporation

WC -Working Capital

WCM - Working Capital Management

NWC - Net Working Capita

Chapter one

1. Introduction

1.1. Background of the study

Ethiopia has been one of the fastest-growing economies in the world and is Africa's second most populous country (IFC, 2012). Many properties owned by the government during the previous regime have now been privatized or are in the process of privatization and the liberalization of its financial sector in the near future. Almost 50% of Ethiopia's population is under the age of 18. Even though education enrolment at primary and tertiary levels has increased significantly, job creation has not caught up with the increased output from educational institutes. The country must create hundreds of thousands of jobs every year just to keep up with population growth (The Economist, 2007).

The economy of Ethiopia is highly dependent on agriculture as the main source of employment and export earning was manifested by the fact that 80% of the total labour force employment and 71% of total export earnings comes from agriculture (Ministry of Finance and Economic Development, 2013).

Ethiopia continued to see double-digit growth in 2014, but 90 per cent of GDP is driven by agriculture and other services. The country also faces several constraints slowing down its transformation into an industrialized economy. The importance of developing a skilled labour force and improving the investment climate are among the key areas that will help support the Government of Ethiopia's plan of becoming a manufacturing powerhouse and increasing incomes by 2025, according to the World Bank's latest Ethiopia Economic Update report.

Therefore, several challenges need to be addresses in order for Ethiopia to accelerate its structural transformation and significantly expand light manufacturing, which is vital for sustaining economic growth and development. *"Ethiopia's skills gap and constraints related to access to land, infrastructure, trade logistics, and customs regulations in private investment have hindered the acceleration to structural transformation. Unlike in East Asia, where foreign direct investment was able to capitalize on a large pool of trainable labour, enabling investors to improve productivity while benefitting from low production costs,"* said Michael Geiger**,** Senior Country Economist**.**

According too many researchers such as M. Nazir and T. Afza (2008) argue that one of the reasons why firms fail to attain their objective is inefficient and ineffective working capital management or the use of inappropriate strategies or policies to manage their working capital

Working capital is considered as a part of operating capital. It is calculated as current assets minus current liabilities. Working capital management is important because of its effects on the firm's profitability and risk, and consequently its value (Smith,1987).

Working capital (WC) is considered a part of operating capital. It is calculated as current assets minus current liabilities. A company can be endowed with assets and profitability but short of liquidity, if these assets cannot readily be converted into cash. Current assets and current liabilities include three accounts: accounts receivable (current assets), inventory (current assets), and accounts payable (current liability) which are of special importance. These accounts represent the areas of the business where managers have a direct impact. According to Emery (1978), Working capital refers to the net working capital. Net working capital is the excess of current assets over current liabilities

Efficient working capital management involves planning and controlling current assets and current liabilities in a manner that eliminates the risk of inability to meet short-term obligations on one hand and avoids excessive investment (Eljelly, 2004).

Management of short-term assets and liabilities needs careful devotion. Since the WCM plays an important role in the determination of profitability, liquidity, and risk as well as the ultimate objective of firm's value (Smith, 1980). The greater the investment in current assets leads to the lower risk in terms of settling short-term obligation, whilst gaining lower profitability because of the inability to invest in the profitable long-term investments. Efficient management of working capital is a fundamental part of the overall corporate strategy to create the shareholders' value. Firms try to keep an optimal level of working capital that maximizes their value (Afza and Nazir, 2007; Howorth and Westhead, 2003; Deloof, 2003).

The management related to short-term assets and liabilities is called working capital. Term working capital indicates the capability of a firm to meet its short term liabilities for the continue operations and working capital as surplus of current assets of the business over current liabilities of business (Guthmann, 1955).

Van Horne and Wachowicz (2008) had also stated the working capital management as that part of financial action that is related to "safeguarding and controlling of the firm's current assets and the planning for sufficient funds to pay current bills. Therefore, Working capital management is an identical important section of corporate finance that deals with current assets and current liabilities of the organization. Therefore, the financial managers have to sustain an appropriate level of working capital management to continue their operations and increasing the financial performance (Lamberson, 1995). The financial performance of a business is affected by the working capital management according to (Dong & Su, 2010). The financial position of firm is affected by working capital management: Filbeck & Krueger (2005) conclude that business success greatly depends on the ability of financial managers to effectively manage the business receivables, inventory, and payables.

The management decision making related to how much current assets and how they are invested in a business is referred as working capital policies. Working capital approaches are mixture of current assets and current liabilities. Policies associated to current assets are named as investing policies and others that are associated to current liabilities of a business are called financing policies (Hassani & Arezoo, 2014). According to previous literature on working capital management, there are two types of working capital policies that are used by the financial managers to increase the firm value. These types include one conservative working capital policy and second are aggressive working capital policy. In conservative working capital policy, the firms keep large amount of investment in current assets as compared to current liabilities, so, due to it their liquidity is very high and conservative working capital policy having low-level risk of bankruptcy and insolvency. On other hand, in aggressive working capital policy the firms maintain huge amount of current liabilities and less in current assets. The firms that are involve in the practices of aggressive working capital policy they have to face high-level risk and there are may be liquidity problems for the firm (Weinraub & Visscher, 1998), (Tewodros, 2010).

1.2. Problem Statement

Keown et al. (2013) conclude that the operational activities of every company heavily depend upon the sample availability of working capital. The two of the most reviewed components while perceiving and attitude building towards working capital are the profitability and risk of the projects. Therefore, firms tend to the trade-off between profitability and corporate risk.

The decision-making by the managers reflects their attitude towards the projects of the firm. The optimistic and conservative attitude of managers is reflected by the working capital divisions (Afza & Nazir, 2007).

The decisions of managers as agents working on behalf of and principle the shareholders can be the cause of conflicts as individually managers carry their interests as well. For example, the purpose of manager's decisions is to maximize the shareholder's wealth and if shareholders want to bear riskier projects but the managers feel that their reputation is at stake hence managers are reluctant to bear riskier projects. Managers may want substantial growth but not the growth, which will cause personal risk to their jobs, which will result in a conflict between managers and shareholders. Managers may desire a steady growth with good salaries, benefits and benefits for themselves, which may not maximize the shareholder's wealth (Jensen & Meckling, 1976).

The relationship between the two therefore as explained through agency theory is agent and principal. The axiom for the manager's performance is to maximize the wealth of shareholders through their professional and critical decision-making. The problem starts with the informational asymmetry among principals and agents since the principle does not have the complete understanding and information of the decision making of managers. The shareholders cannot supervise all the decisions made by the managers. Therefore, the shareholders always fear that managers may perform some acts, which are rather beneficial for managers not shareholders. In this way, the agency theory tells us that agency problem shapes when economic benefits must come to the firm rather than transfers or do not come to the firm. Managers are humans, exposed to the weaknesses of human nature, and therefore can peruse to their economic agendas. The congruence of objectives or alignment of motives is the guiding principle set by agency theory for reducing or minimizing the discrepancies and issues between managers and shareholders. Shareholders are managers, if managers are provided "Share Options" can result in goal congruence among the two. In other words, we can say that it will bridge up the gap between the objects and managers may think like shareholders. The approach of managers will shift towards more effective decision-making; hence, the value of the firm would be maximized (Ruan, Tian & Ma, 2011)

Large numbers of business failures in the past were attributed to the failure of financial managers to plan and control the working capital of their respective firms. These managerial inadequacies are still manifesting in organizations today in the forms of high bad debts,

over/under stocking, cash crises among others with their concomitant effect on their operational performance (Egbide, 2009).

Woubshet (2014) had studied the impact of working capital management on firm's performance of 11 sample metal manufacturing private limited companies listed in Addis Ababa. The result revealed that there were a significant negative association between account receivable periods, Inventory conversion period, account payable period and cash conversion cycle with firm's performance.

Niman (2015) studied the impact of working capital management to firm's profitability evidence from selected manufacturing companies in Somali Regional state of Ethiopia. He confirmed that company's managers can create profits or value for their companies and shareholders by handling correctly keeping each different working capital components. The researcher also found that a significant negative relationship between liquidity and profitability.

Mifta (2016) examined the impact of working capital management on profitability of large taxpayer manufacturing share companies in Ethiopia. He found that working capital components have a significant effect on firm's performance.

The findings of previous studies have shown that working capital management has significant association with firm's performance.However these studies does not give a full information because these studies are conducted far apart from today.

Therefore, the current study focused on evaluating the impact of working capital management policies on the financial performance of large taxpayer beverage manufacturing firms located in Addis Ababa City Administration in Ethiopia.

1.3. Research Objective

1.3.1 General Objective

The objective of this research would be to examine the impact of working capital management policies on the performance firms of large taxpayer beverage manufacturing firms in Addis Ababa City Administration.

1.3.2. Specific Objective

The specific objectives of this research would be as follow

To examine the effect of aggressive working capital policy on the performance of beverage manufacturing firms in Addis Ababa City Administration

To analyse the effect of conservative working capital policy on the performance of beverage manufacturing firms in Addis Ababa City Administration

To examine the effect of firms size on the performance of beverage manufacturing firms in Addis Ababa City Administration

To analyse the effect of leverage on the performance of beverage manufacturing firms in Addis Ababa City Administration

To determine the relationship between liquidity and financial performance of beverage manufacturing firms in Addis Ababa City Administration

1.4. Research Hypothesis

H1: There is significant relationship between degree of aggressiveness and financial performance of beverage manufacturing firms in Addis Ababa City Administration.

H2: There is significant relationship between degree of conservativeness and financial performance of beverage manufacturing firms in Addis Ababa City Administration.

H3: There is significant relationship between firms' size and financial performance of beverage manufacturing firms in Addis Ababa City Administration.

H4: There is significant relationship between leverage and financial performance of beverage manufacturing firms in Addis Ababa City Administration.

H5: There is significant relationship between firms' liquidity and the performance of beverage manufacturing firms in Addis Ababa City Administration.

1.5. Significance of the study

The result of this study will benefit the financial manager of large taxpayer beverage manufacturing firms. Firstly used for creating awareness on optimum level of working capital usages and managements.

Secondly, the study will reveal how essential working capital management policies are used to arrange the needed funds on the right time from the right source and for the right period and how a trade-off between liquidity and profitability will be achieved in studying of large taxpayer manufacturing firms. Thirdly, it would also fill the empirical literature gap on working capital management policies effect on firms' performance .Finally the result of this study will provide basic guidelines for researchers, accountants and professionals, financial managers, and policy makers.

1.6. Scopes of the study

This study is delimited to study the impact of working capital management policies on firms' performance of large taxpayer beverage manufacturing firms located in Addis Ababa city. The total size of the study was 13 large taxpayer-manufacturing firms and the study took six years data from the year 2013 to 2018. The study used one dependent variable return on asset and five independent variables i.e. aggressive working capital management policy, conservative working capital management policy, firms' size, leverage and firms' liquidity.

1.7. Organizations of the study

This paper would be organized in five chapters; Chapter one provides an introductory overview of the full study including the statement of the problem, objectives of the study, research hypothesis, relevance of the study, delimitation of the study, and organization of the study. The second chapter provides literature review on working capital management and its policies. Chapter three presents the methodology used for the study and gives a detailed overview of the population, sampling technique, the research design, data source and collection procedures and data analysis procedures. It also provides the description of the relevant variables that will include in the model, and model specification used for the study. Chapter four present the data analysis and discussion and finally chapter five includes the conclusion and recommendation.

Chapter Two

2. Literature review

In this literature both empirical and theoretical literature reviews was included .Under theoretical part of this literature the definition, the concepts, the types and the theories of working capital management and working capital management policies was included.

In addition, the empirical review literature addresses how working capital management policies of firms affect working capital management would be presented along with the previously conducted research of different researchers in the same and related topics. The framework of this research conducted according to both empirical and theoretical aspects.

2.1. Theoretical literature review

2.1.1. Definition of working capital management

Working capital is the capital that managers can immediately put to work to generate the benefits of capital investment. Working capital is also known as current capital or circulating capital.

Khan and Jain (2008).Define working capital and related concepts as follow; Working capital management is concerned with the problems that arise in attempting to manage the current assets, the current liabilities and the interrelationship that exists between them. The term current assets refer to those assets, which in the ordinary course of business can be, or will be, converted into cash within one year without undergoing a diminution in value and without disrupting the operations of the firm. The major current assets are cash, marketable securities, accounts receivable and inventory. Current liabilities are those liabilities, which are intended, at their inception, to be paid in the ordinary course of business, within a year, out of the current assets or earnings of the concern. The basic current liabilities are accounts payable, bills payable, bank overdraft, and outstanding expenses. *The goal of working capital management is to manage the firm's current assets and liabilities in such a way that a satisfactory level of working capital is maintained*. This is so because if the firm cannot maintain a satisfactory level of working capital, it is likely to become insolvent and may even be forced into bankruptcy. The current assets should be large enough to cover its current

liabilities in order to ensure a reasonable margin of safety. Each of the current assets must be managed efficiently in order to maintain the liquidity of the firm while not keeping too high a level of any one of them. Each of the short-term sources of financing must be continuously managed to ensure that they are obtained and used in the best possible way.

The interaction between current assets and current liabilities is, therefore, the main theme of the theory of working management.

According to Bolton (1976), there are two concepts of working capital: gross and net.

The term gross working capital, also referred to as working capital, means the total current assets. The term net, working capital can be defined in two ways:

1. the most common definition of net working capital (NWC) is the difference between current assets and current liabilities; and

2. The alternative definition of NWC is that portion of current assets which is financed with long-term funds. The task of the financial manager in managing working capital efficiently is to ensure sufficient liquidity in the operations of the enterprise. The liquidity of a business firm is measured by its ability to satisfy short-term obligations as they become due. The three basic measures of a firm's overall liquidity are (i) the current ratio, (ii) the acid-test ratio, and (iii) the net working capital. In brief, they are very useful in inter firm comparisons of liquidity. Net working capital (NWC), as a measure of liquidity is not very useful for comparing the performance of different firms, but it is quite useful for internal control. The NWC helps in comparing the liquidity of the same firm over time. For purpose of working capital management, therefore, NWC can be said to measure the 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 NWC is maintained.

2.1.2. Working capital theories

1. Keynesian Theory of Money

Keynes (1936) identified three reasons why liquidity is important, the transaction, speculative and precautions motive. The transaction motive is the need to have cash on hand to pay bills. The speculative motive is the need to hold cash to be able to take advantage of any

favourable exchange fluctuations or better pricing and finally precautionary motive is the need for a safety supply to act as a financial reserve.

2. Baumol Inventory Model

Baumol (1952) developed the inventory development model. The model is based on the Economic Order Quantity. Most firms try to minimize the sum of the cost of holding cash and the cost of converting marketable securities to cash. Baumol's cash management model helps in determining a firm's optimum cash balance under certainty. There are however certain assumptions which include; The firm is able to forecast its cash requirements with certainty and receive a specific amount at regular interval, The firm's cash payments occur uniformly over a period of time, The opportunity cost of holding cash is known and does not change over time. Cash holding incur an opportunity cost in the form of opportunity foregone and the firm will incur the same transaction cost whenever it converts securities to cash i.e. each transaction incurs a fixed and variable cost. The assumptions are a major limitation of the Baumol model.

3. Quantity Theory of Money

In the quantity theory, money is held only for making payments of current transactions (Keynes 1936). Ivan Fishers proposed this in 1911 where he used the model MV=PT where M is the nominal stock of money in circulation and V is the transaction velocity of circulation of money.

2.1.3. Factors affecting working capital requirement

A firm should plan its operations in such a way that it should have neither too much nor too little working capital. The total working capital requirement is determined by a wide variety of factors. These factors, however, affect different enterprises differently. They also vary from time to time. In general, the following factors are involved in a proper assessment of the quantum of working capital required

According to Khan and Jain, (2008).the factors are as follow;

General Nature of Business the working capital requirements of enterprises are basically related to the conduct of business. Enterprises fall into some broad categories depending on the nature of their business. For instance, public utilities have certain features, which have a

bearing on their working capital needs. The two relevant features are: (i) the cash nature of business, that is, cash sale, and (ii) sale of services rather than commodities. In view of these features, they do not maintain big inventories and have, therefore, probably the least requirement of working capital. At the other extreme are trading and financial enterprises. The nature of their business is such that they have to maintain a sufficient amount of cash, inventories and book debts. They have necessarily to invest proportionately large amounts in working capital. The manufacturing enterprises fall, in a sense, between these two extremes.

Production Cycle Another factor, which has a bearing on the quantum of working capital, is the production cycle. The term 'production or manufacturing cycle' refers to the time involved in the manufacture of goods. It covers the time-span between the procurement of raw materials and the completion of the manufacturing process leading to the production of finished goods. Funds have to be necessarily tied up during the process of manufacture, necessitating enhanced working capital. In other words, there is some time gap before raw materials become finished goods. To sustain such activities the need for working capital is obvious. The longer the time-span (i.e. the production cycle), the larger will be the tied-up funds and, therefore, the larger is the working capital needed and vice versa. There are enterprises, which, due to the nature of business, have a short operating cycle.

Business Cycle The working capital requirements are also determined by the nature of the business cycle. Business fluctuations lead to cyclical and seasonal changes which, in turn, cause a shift in the working capital position, particularly for temporary working capital requirements. The variations in business conditions may be in two directions: (i) upward phase when boom conditions prevail. (ii) Downswing phase when economic activity is marked by a decline. During the upswing of business activity, the need for working capital is likely to grow to cover the lag between increased sales and receipt of cash as well as to finance purchases of additional material to cater to the expansion of the level of activity. Additional funds may be required to invest in plant and machinery to meet the increased demand. The downswing phase of the business cycle has exactly an opposite effect on the level of working capital requirement. The decline in the economy is associated with a fall in the volume of sales, which, in turn, leads to a fall in the level of inventories and book debts. The need for working capital in recessionary conditions is bound to decline. In brief, business fluctuations influence the size of working capital mainly through the effect on inventories

Production Policy The quantum of working capital is also determined by production policy. In the case of certain lines of business, the demand for products is seasonal, that is, they are purchased during certain months of the year. What kind of production policy should be followed in such cases? There are two options open to such enterprises: either they confine their production only to periods when goods are purchased or they follow a steady production policy throughout the year and produce goods at a level to meet the peak demand. In the former case, there are serious production problems. During the slack season, the firms have to maintain their working force and physical facilities without adequate production and sale. When the peak period arrives, the firms have to operate at full capacity to meet the demand. This kind of arrangement would not only be expensive but also inconvenient

Credit Policy The credit policy relating to sales and purchases also affects the working capital. The credit policy influences the requirement of working capital in two ways: (i) through credit terms granted by the firm to its customers/buyers of goods; (ii) credit terms available to the firm from its creditors. The credit terms granted to customers have a bearing on the magnitude of working capital by determining the level of book debts. The credit sales result in higher book debts (receivables). Higher book debts mean more working capital. On the other hand, if liberal credit terms are available from the suppliers of goods (trade creditors); the need for working capital is less. The working capital requirements of a business are, thus, affected by the terms of purchase and sale, and the role given to credit by a company in its dealings with creditors and debtors.

Growth and Expansion As a company grows, it is logical to expect that a larger amount of working capital is required. It is, of course, difficult to determine precisely the relationship between the growth in the volume of business of a company and the increase in its working capital. The composition of working capital in a growing company also shifts with economic circumstances and corporate practices. Other things being equal, growth industries require more working capital than those that are static. 'The critical fact, however, is that the need for increased working capital funds does not follow the growth in business activities but precedes it.' Advance planning of working capital is, therefore, a continuing necessity for a growing concern. Or else, the company may have substantial earnings but little cash.

Price Level Changes Change in the price level also affects the requirements of working capital. Rising prices necessitate the use of more funds for maintaining an existing level of activity. For the same level of current assets, higher cash outlays are required. The effect of

rising prices is that a higher amount of working capital is needed. However, in the case of companies, which can raise their prices proportionately, there is no serious problem regarding working capital. Moreover, the price rise does not have a uniform effect on all commodities. It is likely that some firms may not be affected at all. In brief, the implications of changing price levels on working capital position vary from company to company depending on the nature of its operations, its standing in the market and other relevant considerations

Operating Efficiency The operating efficiency of the management is also an important determinant of the level of working capital. The management can contribute to a sound working capital position through operating efficiency. Although the management cannot control the rise in prices, it can ensure the efficient utilisation of resources by eliminating waste, improving coordination, and a fuller utilisation of existing resources, and so on. Efficiency of operations accelerates the pace of cash cycle and improves the working capital turnover. It releases the pressure on working capital by improving profitability and improving the internal generation of funds. To conclude, the level of working capital is determined by a wide variety of factors which are partly internal to the firm and partly external (environmental) to it.

Efficient working capital management requires efficient planning and a constant review of the needs for an appropriate working capital strategy

2.3.4. Principles of Working Capital Management

According to Dr, C, Boopaths and P. John Leeson (2016).The following are the principles of working capital management:

Principles of the risk variation— Risk here refers to the inability of firm to maintain sufficient current assets to pay its obligations. If working capital is varied relative to sales, the amount of risk that a firm assumes is also varied and the opportunity for gain or loss is increased. In other words, there is a definite relationship between the degree of risk and the rate of return. As a firm assumes more risk, the opportunity for gain or loss increases. As the level of working capital relative to sales decreases, the degree of risk increases. When the degree of risk increases, the opportunity for gain and loss also increases. Thus, if the level of working capital goes up, amount of risk goes down, and vice-versa, the opportunity for gain is like-wise adversely affected.

Principle of equity position— According to this principle, the amount of working capital invested in each component should be adequately justified by a firm's equity position. Every rupee invested in the working capital should contribute to the net worth of the firm.

Principle of cost of capital— this principle emphasizes that different sources of finance have different cost of capital. It should be remembered that the cost of capital moves inversely with risk. Thus, additional risk capital results in decline in the cost of capital.

Principle of maturity of payment— a company should make every effort to relate maturity of payments to its flow of internally generated funds. There should be the least disparity between the maturities of a firm's short-term debt instruments and its flow of internally generated funds, because a greater risk is generated with greater disparity. A margin of safety should, however, be provided for any short-term debt payment.

2.1.5. Working Capital Management Policies

1. Defensive Policy. Firms employ defensive policy by utilizing long-term debt and equity to finance their fixed assets and main parts of current assets. In this policy, the firm concern can implement a financial plan, which best fits, the estimated life of assets with the anticipated life of the sources of funds gained to finance assets (C. Paramasivan & T. Subramanian, 2009).

Defensive policy shrinks the risk by decreasing the current liabilities but it also touches profitability since long-term debt provides a higher interest rate, which will escalate the cost of funding (G. Arnold, 2008).

This indicates that a firm is not agreeable to accept the risk and sense it is proper to have cash or near cash balances, higher inventory stocks, and liberal credit terms. Typically, firms that are functioning in an uncertain situation choose to implement such a policy since they are not certain about the impending prices, demand, and short-term interest rate (Delsing et al., 2019). In such cases, it is good to have a higher level of current assets. This indicates maintaining a higher level of inventory in the stock to attain an unexpected increase in demand and evade the risk of work stoppage in operation and production. This policy provides an elongated cash conversion cycle for the firm (Boisjoly et al., 202).

2. Aggressive Policy. Firms can employ aggressive policy by financing their current assets with short-term debt since it provides a low-interest rate. However, the risk related to the short-term debt is more than the long-term debt (Dhole et al., 2019). In this policy, the whole expected necessity of current assets should be funded from short-term sources, and even a portion of fixed assets financing should be funded from short-term sources (C. Paramasivan &T. Subramanian, 2009).. This policy leads the finance mix to being highly risky, less costly, and highly profitable. Moreover, some finance managers accept even high risk by funding a long-term asset with short-term debts and this method drives the working capital on the adverse side (B. Ukaegbu, 2014)

3. Conservative Policy. Certain firms want neither to be aggressive by decreasing the level of current assets under current liabilities nor to be defensive by intensifying the level of current assets over the current liabilities. Hence, balancing the risk and return firms are employing the conservative strategy. It is also a combination of defensive working capital policy and aggressive working capital policy. In this method, provisional current assets, assets that exist on the balance sheet for short period will be fund by the short-term obligations and long-term debts have to finance the fixed assets and enduring current assets (E. Brigham &M. Ehrhardt, 2011). Therefore, the implementer of this method discovers a reasonable level of working capital with reasonable risk and return. It is considered a “low-profit low-risk” conception (C. Paramasivan &T. Subramanian, 2009). Besides, this approach not only diminishes the risk of failure to pay the debt but also decreases the opportunity cost of extra investment in the current assets.

2.2. Empirical literature reviews

Accordingly, to this research literatures that are on the same topic or related topics mainly on the relationship between working capital management, working capital policies and performance of firms at different studies will be present as follows.

Vahid et al (2012) tried to investigate the impact of working capital management policies (aggressive and conservative policies) on the firm profitability and value, using annual data for 28 industrial firms listed in Tehran Stock Exchange for the period from 2005 to 2009. The results show that following conservative investment policy by having high level of short term investment have negative effect on the firm’s profitability and value, while following aggressive investment policy using long term investment have positive effect on the firm

profitability and value. Regarding the financing Policies (aggressive and conservative policies), the results show that following aggressive financing policy by using more current liabilities to finance firm activities will affect negatively the firm profitability and value, while following conservative financing policy by using more long term debt to finance the firm operating activities have a positive effect on the firm profitability and value. This is attributed to the fact that though risk of having long term loans increase but allow firms to longer period to fulfil its financial obligations which is positively reflected on value and profitability. Finally, the results revealed that the firm Size, have positive effect on the firm profitability and value, while the result shows that Sales Growth does not have any effect on the firm value, but have a significant effect on profitability. The results emphasizes the importance of debt financing on firm's' value maximization.

Deloof (2003) investigated the relationship between working capital management and profitability of firms based on the data collected from the audited financial statements of 2000 most important Belgian firms directly accessed from the national bank of Belgium. Panel data regression analysis was employed. The researcher found a strong negative relationship between the measures of working capital management including the average collection period, inventory turnover in days, the average payment period and cash conversion cycle with corporate profitability.

Vahid et al (2012) investigated the impact of working capital management policies on the firms profitability and value through collecting and analyzing the data collected from the financial statements of 28 sample Iranian companies listed on Tehran stock exchange for a period of 5 years from 2005 to 2009. The panel data regression analysis were employed to investigate the impact. The result indicates that using a conservative investment policy and an aggressive financing policy has a negative impact on the firms profitability and value while the firms size and firm growth have positive impact on the profitability and value of firms.But, leverage measured in terms of debt ratio (Total debt/ total asset) has a negative impact on profitability.

Demelash (n.d) tried to analyse the effect of working capital policies on the financial performance and to what extent working capital policies contribute on the financial performance of medium and large taxpayers manufacturing firms in Garage zone. In addition, found that is aggressive working capital policies have positive and significant effect on the performance of firms. It infers that as firms utilize aggressive working policies, their financial

performance will be boosted and vice versa. Firms can increase their financial performance by 23.78% and 12.75 % by a unit decrease in CATAR and increase in CLTAR, respectively. However, the empirical result in relation to conservative working policy shows that there is a negative and significant relationship between using conservative working capital policy and firms performance. This reveals that as CATAR increases and CLTAR decreases, the firms performance increases and if the reverse is true, the financial performance of firms decreases. Firm can also increase their financial performance by 23.78% through decreasing their CATAR, in a sense via tending to use aggressive policy than being conservative and at the same time, the CLTAR must be increased if firms wish to maximize their performance. Unlike what was expected, the result of this study showed that firms' size does have negative and insignificant effect on firms' performance. As firms size increases, financial performance decreases. Likewise, the result showed a negative and significant relationship between leverage ratio and financial performance. This shows that increasing debt for selected manufacturing companies would certainly lower financial performance of that sector. Finally, the result concerning the relationship between liquidity i.e. current ratio and firms financial performance revealed that they have positive relationship but insignificant. This implies that a unit increase in current ratio can increase firms performance by 0.4% despite the increase in ROA as a result of increase in current ratio is found to be insignificant.

Tewodros (2010) tried to check the impact of working capital policies (investment and financing) on company's profitability. The data is collected from eleven manufacturing companies in Ethiopia for the period 5 years 2005- 2009. Financial statements of those companies were used as a source of data. The overall results of study showed that the financial managers of firms can enhance the profitability of firm by increasing the efficiency working capital management policies.

Woubshet (2014) had studied on the impact of working capital management on firm's performance of 11 sample metal manufacturing private limited companies listed in Addis Ababa during time interval of 2008 to 2012. The results revealed that there is a significant negative association between account receivable periods, Inventory conversion period, Account payable period and Cash conversion cycle with firm's performance measured by return on asset. finally he conclude that, taking longer time paying creditors , early collection of receivables from customers and maintaining sufficient inventory level by keeping product stock out less time are all associated with an increase in the firms performance.

Hassani and Arezoo (2014) they tried to check out the link between the aggressive/conservative working capital policies and firm's profitability risk of listed companies in Tehran. In the study they used the data of 274 companies over the seven years 2006 – 2012. The results of study indicated that the different industries used different working capital policies. The companies that want to reduce the profitability risk so those are involving in conservative working capital policy. More companies are using the aggressive working capital policy for increasing the profitability risk.

Mifta (2016) examined that the impacts of working capital management on profitability of manufacturing share companies in Ethiopia. During his study, He was measured firms performance in terms of return on asset, which is a dependent variable and average collection period, average payable period and inventory conversion period and cash conversion cycle as an independent variable. The finding showed that a negative relationship between average collection period, inventory conversion period and cash conversion period with profitability. However, he found that a positive relationship between average payable period with profitability

Snober,Javid and Velontrasina,Prudence (2014) tried to analyse the determinants of firm profitability of variables associated with the management of working capital policy namely working capital investment policy and working capital financing policy with a sample steam of 20 cements firm's for the period 2006-2011. Investment policy is regarding the management of current assets of the business and financing policy is concerned about the management of current liabilities mainly. In aggressive working capital investment policy, more resources are invested in fixed assets than current assets to gain more profits. A conservative working capital investment policy is opposite to it. In aggressive working capital financing policy, the more current liabilities are used than long-term debts and vice versa for conservative financing policy. The impact of working capital investment and the financing policies has been examined using panel data regression models between working capital policies and profitability. Moreover, the results show a positive correlation between investing policy and financing policy of working capital. This positive relation demonstrates that the firms, which follow aggressive working capital investing policy, they also go for aggressive financing policy. Similarly, the firms pursuing conservative investing policy also prefer conservative financing policy for the management of working capital. The study finds a negative relationship between the profitability measures of Cement industry and degree of

aggressiveness of working capital investment and financing policies. The firms report negative profit if they follow an aggressive working capital policy.

Niman (2015) studied on the impact of working capital management on firm's profitability evidence from selected manufacturing companies in Somali regional state, Ethiopia. In his study, he has found that there is a significant negative relationship between liquidity and profitability. The study also revealed that there is a negative relationship between firm's size and profitability. In general he conclude that firms financial managers can create profit by improving working capital component management at optimum level

Isaac and Olatunji (2013) conduct another latest study; in their study, they empirically assessed the impact of working capital management policy and on financial position of Nigerian foods and beverages industry. This study was a case study on Nestle, the data was used 2008 to 2012. The findings of the study argued that there is a significant relationship existing between the working capital policies and financial performance; based on this study they recommended that such type of firms have to follow the aggressive working capital policies to enhance their financial performance.

The results of this study will help the financial managers of firms to focusing on the capital management policies. There would be some guidelines for firms to how they can increase the firm performance by involving in different of working capital policies. This study is expected to contribute to better understanding of these policies and their effect on firm's performance in manufacturing firms of Addis Ababa.

2.3. Research Gap

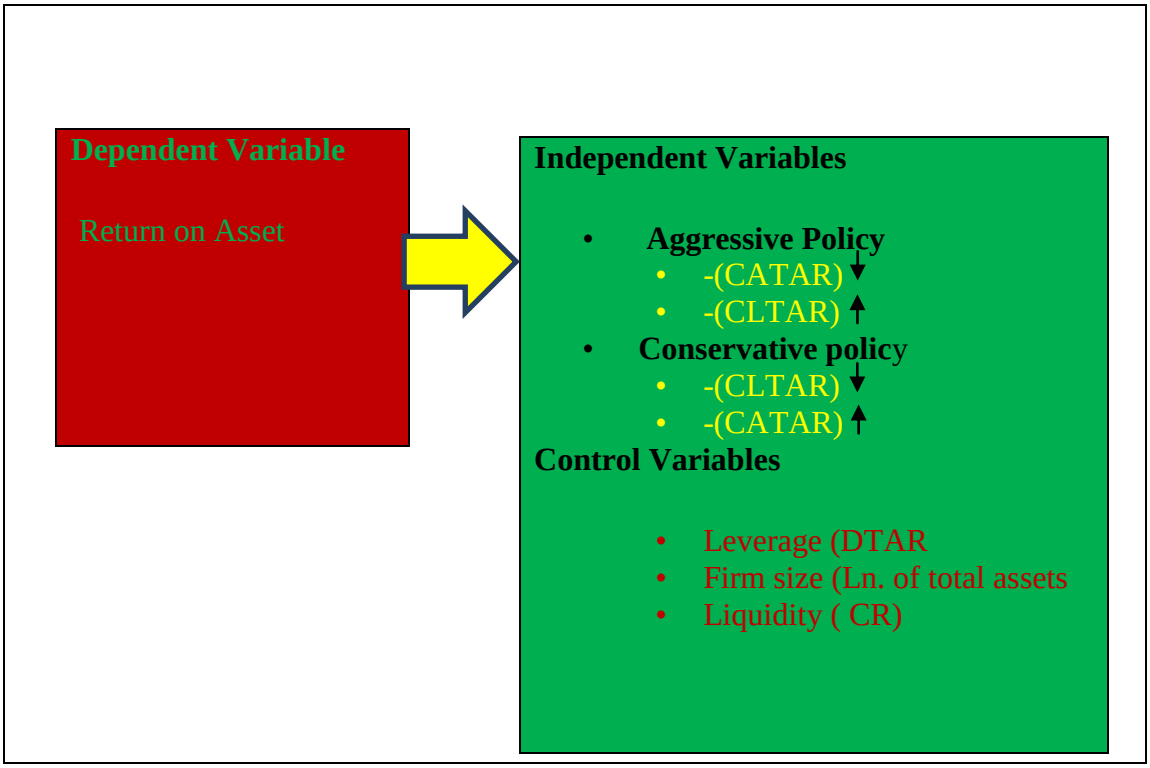
The gap observed in the previous researches are that.(1) there is no similar research conducted in degree level by students, most researchs are at master level.(2) most of the study are not in ethiopia, there are limited studies that are conducted related with working capital policies.(3) most studies are not similar with this topic. (4) most are far apart from today, there are no recent studies based on the recent updated data. Therefore, taking into account of the importance of working capital management to improve the financial performance of firms and the fact that working capital management can be shaped by working capital policies as per the arguments of few previous researchers, this study is to be

undertaken to fill the above mentioned gapes as there have no enough previous studies on the same and even on related topics specifically in Addis Ababa.

2.4. Conceptual Framework

Figure 1 below presents schematic conceptual framework of the relationship between working capital management policies and other control variables and performance of firms. The variables were used in this study have been developed from the previous literatures.

Fig. 2.1 Conceptual framework



Source: adopted from (Demelash, n.d)

Chapter Three

3. Methodology of the Study

3.1. Introduction

The previous chapter discussion was focus on the theoretical and empirical review of related literature works in relation to impact of working capital management on firm's performance. This chapter includes methods that research would be conducted, these are description of area, research design, approaches, population, sample size sampling techniques, source of data, data collection techniques, data analysis techniques, model specifications that would be used in this research.

3.2. Description of study area

The research area is found in Ethiopia mainly focus on the city administration of Addis Ababa, which is, serve as capital city of Ethiopia. Addis Ababa lies at an elevation of 2,355 metres (7,726 ft.) and is a grassland biome, located at 9 °1 ' 48 " N and 38 ° 44 ' 24 " E (*Earth-info.nga.mil, 2012).*

The city lies at the foot of Mount Entoto and forms part of the watershed for the Awash. From its lowest point, around Bole International Airport, at 2,326 metres (7,631 ft.) above sea level in the southern periphery, Addis Ababa rises to over 3,000 metres (9,800 ft.) in the Entoto Mountain to the north. The city is divided into 11 boroughs, called sub cities (kifle ketema), these are, Addis Ketema, Akaky Kaliti, Arada, Bole, Gullele, Kirkos, Kolfe Keranio, Lideta, Nifas Silk-Lafto, Yeka, Lemi Kura.

3.3. Research design

"Research design is the blue print for fulfilling the research objectives and answering the research questions" (*John* et al., 2007, 81). In research, there are different research methods, which can be used to address the research objectives. In this research, I used explanatory type of study based on a quantitative approach that uses to analyses the collected data (panel data).

According to Gujarati (2004) the critical objectives of using correlation analysis is to measure the strength or degree of linear association between the two variables. Correlation analysis would be used in this analysis to measure the relationship between firm's performance and the of working capital components.

So that explanatory research design would be applied, as the aim of this study is analysing the effect of working capital management policies on the performance of the selected manufacturing firms in Addis Ababa city administration.

3.4. Population

The population of this study contains all beverage manufacturing firms that were recognized as large tax payers found in Addis Ababa City Administration. According to the data obtained from Ministry of Revenue-Large tax payer office, there are about more than 20 manufacturing firms.

3.5. Sample size

The sample size would be determined by using purposive sampling method, which is a nonprobability sampling procedure that will help us to conduct this study.

According to this research the appropriate number of samples for this study was fulfil the following criteria that would be purposively employed by this study. 1) Each firm should have a continuous published data from 2013 to 2018 and (2) any firm with missing data during the study period have been excluded. In line with this, 13 manufacturing firms can meet both criteria. Accordingly, the researcher considered all 13 firms that meet the above two criteria. Hence, there can be 78 observations from 13 firms from each six years data since 2013- 2018(13*6 = 78).

3.6. Data collection method

This study mainly depends on secondary data from the financial statements of sample beverage manufacturing firms found in Addis Ababa City Administration. The source of the

data is Ministry of Revenue - large taxpayer branch office, since medium and large taxpayer firms are supposed to submit their financial statements to the office.

Secondary data is the primary source of information used to conduct this research study has financial statements on regular basis. The financial statements were the source of all information used in this study. The necessary data of income statements & statement of balance sheets over a period of six consecutive years from the period 2013 to 2018 gathered from Ministry of Revenue - large taxpayer branch office.

3.7. Variables and their measurement

3.7.1. Dependent Variables

Dependent Variable is a variable that is dependent on independent variables. Return on assets (ROA) is used as dependent variable to measure the relationship of working capital management policies on firm's performance. It is designed to determine how the management is employing the company total assets to make profit and the management effectiveness in utilizing its asset. They would be calculated by establishing relationships between profit figures on the one hand, and income or assets on the other hand. The term profitability is measured in different ways by the researcher. In this study, firm's performance would be measured in terms of Return on Asset (ROA). Return on Assets (ROA) = Net Income /Total Assets.

3.7.2. Independent Variables

Independent variables are variables that can affect the other variable. For this study, the independent variables are working capital management policies and the dependent variable is the financial performance of manufacturing firms. The term policy is qualitative in its nature thus given the nature of the problem that is going to be investigate; working capital policies are being provided as follows

1. Aggressive working capital policy

Aggressive Working Capital Policy is one of the high risky and profitability policies, which maintain low level of Aggressive Working Capital against the high level of sales, in the business concern during a particular period.

Under this approach, the entire estimated requirement of current assets should be financed from short-term sources and even a part of fixed assets financing be financed from short-term sources. This approach makes the finance mix more risky, less costly and more profitable.

Aggressive Working Capital Policy is one of the high risky and profitability policies, which maintain low level of Aggressive Working Capital against the high level of sales, in the business concern during a particular period. The degree of aggressiveness/conservativeness of the working capital investment policy will be measured based on the relative size of current assets as compared to the fixed assets employed by sample firms and the relative size of current liabilities to long term financing (C. Paramasivan; T.subramanian, 2003). The lesser the ratio of current assets to total assets, the higher the degree of aggressiveness of investment policy and if the reverse is true the firm is likely employ the more conservative investment policy. On the other hand, the higher the ratio of current liabilities to total asset, the higher the degree of aggressiveness and if the opposite is true, the lesser the degree of aggressiveness rather the more it becomes conservative. Many researchers argue that firms with high degree of aggressiveness of working capital are performing better.

$$CATAR = \frac{Total\ current\ assets}{Total\ assets} \quad \text{(1.1)}$$

Or

$$CLTAR = \frac{Total\ current\ liabilities}{Total\ current\ assets} \quad \text{(1.2)}$$

H1: there is significant relationship between degree of aggressiveness of working capital policy and the performance of beverage manufacturing firms in Addis Ababa City Administration.

2. Conservative working capital policy

Conservative working capital policy: Conservative Working Capital Policy refers to minimize risk by maintaining a higher level of Working Capital. This type of Working Capital Policy is suitable to meet the seasonal fluctuation of the manufacturing operation

Under this approach, the entire estimated finance in current assets should be financed from long-term sources and the short-term sources should be used only for emergency requirements. This approach is called as "Low Profit – Low Risk" concept

In a sense that it invests a lot in current assets and uses a lesser amount of short-term financing to maintain a higher level of working capital. This type of Working Capital Policy is suitable to meet the seasonal fluctuation of the manufacturing operation (C. Paramasivan; T.subramanian, 2003). Like degree of aggressiveness, degree of Conservativeness of working capital policy usually provided using a ratio of current assets to total assets or current liabilities to total assets. The more conservative policy tends to hold high level of current assets than fixed assets, as firms are conservative enough to remain liquid and tends to use lesser short-term financing than long term financing to reduce the risk of illiquidity. Thus,

$$CLTAR = \frac{Total\ current\ liabilities}{Total\ current\ assets} \quad \text{(2.1)}$$

The lesser the ratio, the more conservative working capital policy the firms adopts. The degree of conservativeness increases as the ratio of current liabilities to total assets becomes low.

$$CATAR = \frac{Total\ current\ assets}{Total\ assets} \quad \text{(2.2)}$$

The higher the ratio, the more conservative working capital policy the firm follows. The degree of conservativeness of working capital policy in managing current assets is high as the ratio of current assets to total assets getting higher and higher. Many researchers highlighted in the literature review argue that firms that adopt conservative policy perform less in profitability but perform well in reducing the liquidity risk. Thus, the hypothesis would be developed as follows;

H1: there is significant relationship between degree of conservativeness of working capital policy and the performance of beverage manufacturing firms in Addis Ababa City Administration.

3.7.3. Controlled independent variables

3. Firm size

The size of firm's has direct effects on working capital requirement

Size is the most widely known factor, which affects the financial performance of firms. To capture clearly the effect of working capital management policies on the financial performance of firms, size was taken as a controlled independent variable. The findings of many researches revealed as firm size has significant positive effect on profitability of firms. Thus, the hypotheses will be as follow.

H3: there is significant relationship between firms' size and the performance of beverage manufacturing firms in Addis Ababa City Administration.

The size of firms will be measure using the natural logarithm of total assets as follows.

$$FSZ = \ln(total\ assets) \quad \text{..... (3)}$$

4. Leverage

Leverage is also having a significant effect on the performance of firms adversely. Leverage is usually measured with debt to asset ratio as follows;

$$DTAR = \frac{Total\ debts}{Total\ assets} \quad \text{..... (4)}$$

H1: there is significant relationship between leverage and the performance of beverage manufacturing firms in Addis Ababa City Administration.

5. Liquidity

There is a trade-off between liquidity and profitability of firms. In a sense that firms that are highly liquid are tend to be less profitable than firms with a less amount of liquid assets. The most widely used measure of liquidity is current ratio and quick ratio. Firms with less liquid assets are tend to be profitable but are less liquid to settle currently matured short-term liabilities using its short-term asset, they have high chance to be run out of stocks, and hence this in turn creates customer dissatisfaction followed by a decline in profit. Current ratio is uses as a measure of liquidity to empirically test whether there in trade-off between liquidity and profitability

$$CR = \frac{Total\ current\ assets}{total\ current\ liabilities} \quad \text{..... (5)}$$

H1: there is significant relationship between firms' liquidity and the performance of beverage manufacturing firms in Addis Ababa City Administration.

3.8. Model specification

3.8.1. Variables of the study

These are the following variables will use in the study:

Independent Variables

1. Aggressive working Capital policy

2. Conservative working capital policy

Dependent Variable

Firm's Return on Asset (ROA)

Control Variables

Size, Liquidity and Leverage

3.8.2. Research Model

Panel regression Analysis will use in this study.

$$ROA_{it} = \alpha 0 + \beta 1\ CATAR_{it} + \beta 2\ CLTAR_{it} + \beta 3 liquidity_{it} + \beta 4 Size_{it} + \beta 5 leverage_{it} + e_{it}$$

Where;

$\alpha 0$… is the constant (intercept)

$\beta_1 ... \beta_5$ are coefficients to explanatory variables

ROA= Return on Assets = Net income/ total assets

CATAR= Current Assets / Total Assets,

CLTAR= Current Liabilities /Total Assets,

Leverage= Debt /Asset,

Firm size measures as a function of natural logarithm of total assets in a particular period

Liquidity = Current Assets / Current Liabilities

3.9. Data Analysis

Multiple linear regression analysis using balanced panel data has been performed to determine the relationship between working capital policy and financial performance. Both descriptive and inferential statistics would be undertaken to see the association of working capital policies and firm's performance. Descriptive statistics such as the mean, median, maximum, minimum, and standard deviation were used to describe the different variables and Pearson correlation coefficient was used to determine the association between them. Diagnosis tests of CLRM have been undertaken to check whether one or more of the assumptions are violated or not and to check the viability of the model to estimate the population parameters. The integrity and effectiveness of the model would be assessed by considering the coefficient of determination (R^2) and analysis of variance. gls least square regression using balanced panel data has been utilized to determine the degree to which the independent variables affect the dependent variable (ROA). To analyze and test the above Stata software was applied.

Chapter Four

4. Data analysis and interpretation

4.1. Results and Discussions

This chapter presented and discussed the empirical results on the impact of working capital management on firm's performance. The study presented on descriptive analysis and quantitative analysis based on the secondary data statistical output. The first presentation of descriptive statistics which shows the relevant output of variables such as, mean, maximum, minimum and standard deviation of variables used in the study were presented. The second the quantitative analysis focused to diagnostics the relationship between the dependent and independent variables considered in this study.

4.1.1. Descriptive statistics

The table below gives the mean, minimum, maximum and the standard deviation of each variable in the study. The descriptive analyses were presented for large taxpayer printing firms based on the annual financial data for the period of 2013 to 2018. The discussion included dependent, independent and control variables used to determine the impact of working capital management policies on firm's performance.

Figure 4.1 Summary of Descriptive

The table below shows the descriptive statistics of each variable, computed based on the 78 observations recorded.

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	78	.0978188	.1411968	-.37351	.3819136
LEV	78	.5470003	.2135898	.1421368	.9926657
CR	78	2.262029	3.368228	.3233636	24.99844
CLTCAR	78	.9965339	.7619686	.0400025	3.092494
CATAR	78	.4349869	.1837089	.131666	.9541721
FSZ	78	20.53624	1.736354	15.59257	23.19075

Source; STATA version14, 2015

As it indicated in table 4.1 above, the mean value of large taxpayer beverage firm's return on asset is 9.78 % of total assets. The minimum and maximum value of firm's return on asset

has -37.4% & 38.191% of total assets respectively. The standard deviation indicated that the value of performance could deviate by 14.11% from its mean.

The mean value and standard deviation of leverage (Debt to Asset) is 0.547 and 0.213 Respectively. This implies that there were moderate differences among leveraged level as measured by debt to asset ratio across the sample manufacturing companies under this study.

There exists significant variation across the sample companies for the reason that the mean value of size is 20.53 and the value of the standard deviation is 1.736. Hence, the Varieties of size among the companies might have significant impact on Performance of companies. The maximum and minimum values of size were 23.19 and 15.59 respectively. The mean value of liquidity measured using a current ratio (Current assets / current liabilities) is 2.26 and the value of standard deviation is 3.36 with 24.99 maximum and 0.32 minimum values.

A result show that some companies are more liquid and others also shows the existence of low variation and almost no reserve to cover its short-term obligations that will mature soon, in cases of emergency among the liquidity level for manufacturing companies under consideration.

The mean value and standard deviation of CATAR for the sample manufacturing firms considered are about 0.43 and 0.18, respectively, while the maximum and the minimum values are 0.95 and 0.13. This implies that there are some firms that follow conservative investment policy and some are using aggressive investment policy the difference among firms in terms of the adopted policy is high. Also, the mean value and standard deviation of the CLTCAR of firms shows that 0.99 and 0.76 respectively; whereas the maximum and the minimum value of it is 3.09 and 0.04 respectively. This also implies that some sample firms are using conservative financing policy where they use the smallest amount of current liabilities in proportion to long term debts while the remaining uses an aggressive financing policy whereby, they finance their activities aggressively using current liabilities as compared to the level of long-term debts they used.

4.1.2. Correlation Analysis

In the table below, the correlation analysis was undertaken between profitability measure; ROA and independent variables; size, leverage, liquidity (current Ratio), aggressive working capital policy and conservative working capital policy (CATAR or CLTCAR). As it can be seen from the table below, there was a negative correlation between ROA and size, CLTCAR and leverage. While, there is a positive correlation between ROA, CATAR and CR. Generally there is NEGATIVE relationship between aggressive working capital policy

(CATAR ↓ and CLTCAR↑) and return on asset.

Figure 4.2 Correlation analysis

	ROA	LEV	CR	CLTCAR	CATAR	FSZ
ROA	1.0000					
LEV	-0.2284	1.0000				
CR	0.1234	-0.3509	1.0000			
CLTCAR	-0.2046	0.4927	-0.4950	1.0000		
CATAR	0.3338	-0.0523	0.1616	-0.5444	1.0000	
FSZ	-0.2051	-0.0321	-0.2645	0.1345	-0.3020	1.0000

Source; STATA version14, 2015

As shown above the table, the correlation coefficient between ROA and firms size is -0.2051 which is the smallest correlation coefficient as compared to all other variables, this mean that firms size has small association with profitability. Also CLTCAR and leverage ranked have high negative correlation coefficient compared to other variables i.e -0.2046 and -0.2284,respectively.In addition, CATAR ranked high positive correlation with ROA compared to other is 0.3338.

4.2. Model Specification and diagnosis tests for classical linear regression model assumptions

According to Wooldridge (2013), multiple regression analysis can accommodate many explanatory variables to our model that are useful in explaining y (in this case ROA), then more of the variation in ROA can be explained, and it can incorporate fairly general functional form relations. Thus, multiple regression analysis can be used to build better models for predicting the dependent variable.

4.2.1. Model Specification test

In panel data one of the challenges facing a researcher is to decide which model is better, Fixed Effect Model (FEM) or Random Effect Model (REM)? To answer this question the researcher applied Hausman test to determine which model is suitable for the given data. This test helps to know whether the unobservable heterogeneity term is correlated with explanatory variables or not. The null hypothesis for this test is that

unobservable heterogeneity term is not correlated or random effect model is appropriate, with the independent variables. If the null hypothesis is rejected then we employ fixed effects method (Padachi, 2006).

H0: Random Effects model is appropriate
H1: Fixed Effects model is appropriate
Decision Rule: Reject H0 if p-value less than significance level 5%. Otherwise, do not reject.

Table 4.1. Test for Model selection

chi2(5) =0.32	**Prob>chi2 = 0.9972**

Source; STATA version14, 2015

Based on the Hausman test result above table 3.1, the p-value is significant at 5% level, therefore, we can reject the null hypothesis which states Random effect model is appropriate.

4.2.2. Heteroskedasticity

It has been assumed that the variance of the errors is constant; this is known as the assumption of homoscedasticity. If the errors do have a not constant variance, they are said to be heteroskedastic. The presence of heteroskedasticity makes ordinary least square estimators not efficient because the estimated variances and covariance of the coefficients are biased and inconsistent (Chris, 2008). There are many methods used to test the existence of heteroskedasticity, in this study the researcher used White-test with the null hypothesis stating that variance of error terms are constant (homoscedasticity assumption is fulfilled), otherwise variance of error terms is not constant. If p-value of White test is greater than 5%, the assumption of homoscedasticity is fulfilled and it will enable us to make best linear unbiased estimation *(BLUE).*

Ho: The model is Homoskedastic

H1: The model is Heteroskedastic

Table 4.2. Heteroscedasticity Test

chi2(19)	**=**	**30.22**
Prob > chi2	**=**	**0.051**

Source; STATA version14, 2015

The null hypothesis should not be rejected, as the P values of Chi- square are greater than level of significance at 5%. Hence, the researcher concludes that the variances of residuals for this study are constant so that the estimated results are the best linear unbiased estimate.

4.2.3. Test for multi-co linearity

Multicollinearity means that there is linear relationship between explanatory variables which may cause the regression model biased (Gujarati, 2004).

In any practical context, the correlation between explanatory variables is non-zero; although this will generally be relatively begin the sense that a small degree association between explanatory variables will almost always occur but not will cause too much loss of precision. He stated that the most important concern is that as the degree of multi-collinearity increases, the regression model estimates of the coefficients become unsteady and the standard errors for the coefficients can get uncontrollably inflated (Chris, 2008).

In any practical context, the correlation between independent variables will be non-zero, although this will generally be relatively beginning in the sense that a small degree of association between explanatory variables will almost always occur but will not cause too much loss of precision. However, a problem occurs when the explanatory variables are very highly correlated with each other, and this problem is known as multi-collinearity. The multi-collinearity test helps to identify the correlation between explanatory variables and to avoid double effect of independent variable from the model.

In this research the researcher used VIF (Variance Inflation Factors for the independent variables).If VIF value is less than 10 there is no multi-collinearity.

Figure 4.3. Multi-collinearity test

Variable	VIF	1/VIF
CLTCAR	2.44	0.409302
CATAR	1.73	0.579285
CR	1.49	0.669048
LEV	1.47	0.680449
FSZ	1.20	0.830157
Mean VIF	1.67	

Source; STATA version14, 2015

The VIF value is less than 10 in above table so, the model is no multi-collinearity.

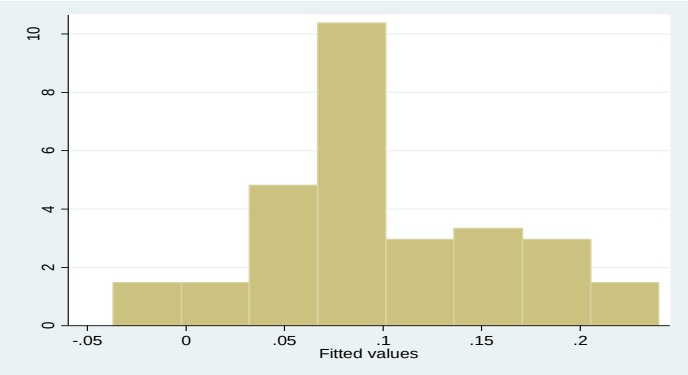
4.2.4. Normality

Normality is a condition in which the variables to be used in the model follow the standard normal distribution. If the series are normally distributed, the histogram should be bell shaped and the Jarque- Bera statistic insignificant. It thus follows that series will be normally distributed at 5% level of significance if the probability of Jarque-Bera statistic is greater than 0.05. In this research, the researcher use sktest (skewness/kurtosis test). If P value of kewness/kurtosis test is greater than 5% the residual distribution is normal.

Figure 4.4. Normality test

Skewness/Kurtosis tests for Normality

				joint	
Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
residuals	78	0.2834	0.6936	1.34	0.5107



Source; STATA version14, 2015

Based on the above test result above fig 3.1, the residuals were normally distributed because histogram is relatively bell-shaped and P value > 5% levels. P value is 0.5107, therefore residuals follow normal distribution.

4.2.5. Model Misspecification test (ϒ = 0)

Another implicit assumption that researchers need to check while using the classical linear regression model is that the appropriate 'functional form' is linear. Brooks (2008) noted that to check whether the model should be linear one can formally test it using Ramsey's RESET test, which is a general test for misspecification of functional form. Essentially, the method works by using higher order terms of the fitted values. Higher order powers of the fitted values of *y* can capture a variety of non-linear relationships, since they embody higher order powers. Thus, if the coefficient of the fitted values is different from zero, then, omitting the variable fitted values will make the estimated parameters or coefficients to be biased and inconsistent. However, if the coefficient of the fitted values is zero, then, omitting them will not have the effect of estimated parameters to be biased and inconsistent rather the model is considered to be correctly specified in linear functional form. For this particular research purpose, the model was specified as follows;

$$ROA_{it} = \beta_0 + \beta_1 (CATAR_{it}) + \beta_2(CLTCAR_{it}) + \beta_3(CR_{it}) + \beta_4(FSZ_{it}) + \beta_5(LEV_{it}) + u_{it)}$$

Thus, to check whether the model specified for this research is correctly specified or not, Ramsey RESET test was performed through developing the following hypothesis:

Null: The model is specified correctly

Alternative: The model is not correctly specified

The model will turn out to be correctly specified if the null is accepted. In a sense that if the Ramsey RESET F tests probability is greater than 5% significance level; hence the null hypothesis will be accepted that the model was correctly specified.

Figure 4.5. Model miss-specification test

```
Ramsey RESET test using powers of the fitted values of ROA
       Ho:  model has no omitted variables
                 F(3, 69) =      0.45
                 Prob > F =      0.7148
```

Source; STATA version14, 2015

In the above table Ramsey RESET F tests probability is 0.7148, which is greater than 5%; hence, the null hypothesis will not be rejected. This means the model has no omitted variables.

4.3. Regression Analysis

Multiple regression analysis was employed to describe and explain the relationship of sample-manufacturing firms' performance measured using return on asset (ROA) with CATAR, CLTCAR, Size, Current ratio and leverage.

As shown below return on asset (ROA) was regressed against CATAR, CLTAR, size, Current ratio and leverage using STATA software with a random effect model due to the fact that random effect model was found appropriate via conducting a Hausman test i.e. P is greater than 5% significant level.

Figure 4.6. Regression Analysis

ROA	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
LEV	-.1942351	.062298	-3.12	0.002	-.316337	-.0721332
CR	-.0064954	.0041716	-1.56	0.119	-.0146715	.0016807
CLTCAR	-.0446751	.0248126	-1.80	0.072	-.0933068	.0039566
CATAR	.2776756	.103443	2.68	0.007	.0749311	.4804201
FSZ	-.0006364	.0161013	-0.04	0.968	-.0321944	.0309217
_cons	.1555619	.3416346	0.46	0.649	-.5140296	.8251534

Source; STATA version14, 2015

According to the above empirical result the model can be expressed as follows;

ROA = 0.1555619 + 0.2776756 CATAR -0.0446751 CLTCAR -0.0006364 FSZ -0.1942351 LEV -.0064954 CR

Where: ROA is return on asset representing the dependent variable i.e. firms financial performance; CATAR is current assets to total assets ratio as independent variable to measure aggressiveness or conservativeness of firms investment policy in current assets; CLTCAR is current liability to total assets ratio as independent variable measuring aggressiveness or conservativeness of the firms financing policy using current liabilities. FSZ is firms size as a function of natural logarithm of total assets, used as a control variable, LEV is firms leverage measured in terms of total debt to total assets ratio, used as a control variable of affecting firms performance and CR is current ratio, which is the ratio of total current assets to total current liabilities used as a control variable to check the risk- return trade of between profitability and being liquid.

The detail results of the overall model along with coefficient of determination (R^2), adjusted R^2 and the degree to which the dependent variable is being explained by individual independent variables and all independent variables in combined are explained as follows;

4.3.1. Interpretation of R^2, adjusted R^2 and model empirical results

This section presents the empirical findings from the stata statistical results on the factors affecting large taxpayer printing firm's performance. The R2 value indicates the explanatory power of the model to explain dependent variables. The P-value indicates that at significance of the independent variables.

Adjusted R-square lies between 0 and 1 and also put a rough guide line as rule of thumb which can be used to see the adjust R2 value how well our model fits the data. The interval put as a guide lines are: < 0.1: poor fit, 0.11 to 0.30: modest fit, 0.31 to 0.50: moderate fit, >0.50: strong fit (Daniel, 2004).

The R^2 and adjusted R^2 are simply estimates that express the extent to which the variation in the dependent variable (ROA) could be explained by the independent variables CATAR, CLTCAR, FSZ, LEV and CR, which are inculcated in the model.

From the above table 4.2, the regression result of fixed effect model indicated that the coefficient of determination of R-Squared and Adjusted R-square were 18.19%and 12.5% respectively. The result indicated that 18.19% of the Change in return on asset of large taxpayer beverage firms are modestly explained by the selected firm's specific independent variables (CATAR, CLTCAR, FSZ, LEV and CR) that are included in the model in combined. Generally, R square is low in cross sectional data as compared to time series data. In panel data due to heterogeneity of cross sections, it is not too high. If your data is more time dominant, R square can be higher as compared to the case when panel data is more cross section dominant. In general, more related included explanatory variables boost the value of R square. Yet, one has to focus more on objectives of the research to be fulfilled from individual significance and overall significance of the model making sure that there is no model specification bias and avoid spurious regressions. Another point to mention here is that a very high R square in the presence of very few significant t values indicates the presence of multi-collinearity and spuriousness of the regression.

Figure 4.6 also provides the random effect model empirical results of estimate beta, coefficient, standard errors, t-statistics, and P- values of all independent variables and the constant term of the model. From the regression result in the model, the researcher infers that CLTCAR, FSZ, CR and LEV negatively affect the financial performance of the sample-manufacturing firms; whereas CATAR positively affects the firm's profitability.

Moreover, the constant term of the model p- value 0.649 is insignificant at 1%, 5% and 10%. Holding the value of all other independent variables zero, the return on asset could have the value of 0.1555649 despite it is insignificant to affect the return on asset as P value 0.649 is greater than 5% significance level.

The effect CATAR on sample manufacturing firms' financial performance was found to have Positive and significant at P 0.007, which is less than 5% significant level.. In a sense that as CATAR increased by one unit, return on asset will increase by 0.2776756 and vice versa. This implies that the more conservative policy the firm follows, the more it performs well and the more aggressive investment policy it follows, the more it becomes unprofitable. This finding was consistent with the finding of (Snober, Javid and Velontrasina, Prudence 2014) and inconsistent with the findings of (Vahid et al, 2012).

Regarding the CLTCAR, CLTCAR was found to have insignificant negative effect on the sample manufacturing firms' financial performance at P= 0.072, which is greater than 5%

significance level. This implies that the more the firms finance their assets conservatively using current asset, the more the firms perform financially and the more aggressive financing policy they follow, the less they perform financially, which was inconsistent with (Vahid et al, 2012) and consistent with (Snober, Javid and Velontrasina, Prudence 2014) findings. Thus, the empirical result based on the data obtained from firms in the case area shows that adopting aggressive financing policy will decrease firm's performance by 0.0446751 and when they follow conservative policy, their performance will increase by the same amount.

The size of firms as a function of natural logarithm of their total assets was regressed against their financial performance measured in terms of return on asset and it was found to have negative effect on the performance of firms. As the firms size increase by one unit, the firms' performance will decrease by 0.0006364 and vice versa, which was consistent with the findings of (Vahid et al, 2012) .Moreover, the effect of firms size on return asset is found to be insignificant at P=0.968 which is in excess of 5% significant level. The result on the effect of firm's size on return on asset was found to be exactly consistent with the finding of (Demelash, n.d).

Firms leverage measured in terms of total debt to asset ratio was found to have negative and significant effect on firms' performance at P= 0.002, which is less than 5% significance level. This implies that as firms leverage increased by one unit, firms performance will decrease by-0.1942351 and vice versa. This was consistent with (Vahid et al, 2012; Demelash, n.d).

Finally, the relationship of current ratio used as a measure of firms' liquidity with the firm's performance was found to have negative relationship but insignificant at P= 0.119, which is in excess of 5% significance level. The increases in current ration by 1 unit, decrease return on asset by 0. 0064954 and vice versa. This study finding pertaining to current ratio was in consistent with (Demelash, n.d).

Chapter Five

5. Conclusions and Recommendations

The fundamental purpose of this chapter is for concluding the major findings of the analysis, setting recommendation and put suggestion for future research about the topic.

5.1. Conclusions

The aim of this research is analyzing the effect of working capital policies on the financial performance and to what extent working capital policies contribute on the financial performance of medium and large taxpayer's beverage manufacturing firms in Addis Ababa City Administration. To do so, different previous researches on the same and related topic both domestically and outside Ethiopia were reviewed. The financial performance of firms could be expressed as a function of working capital policies they follow and other explanatory variables like firms' size, leverage and liquidity.

The result of the study revealed that aggressive working capital policies have negative and insignificant effect on the performance of firms. It infers that as firms utilize aggressive working policies, their financial performance will be decreased and vice versa. Firms can increase their financial performance by 27.76% and 4.46 % by a unit increase in CATAR and decrease in CLTCAR, respectively. This reveals that as CATAR increases and CLTAR decreases, the firms performance increases and if the reverse is true, the financial performance of firms decreases.

Firm can also increase their financial performance by 27.76% through increasing their CATAR, in a sense via tending to use conservative policy than being aggressive and at the same time the CLTCAR must decreased if firms wish to maximize their performance.

In addition, the result of this study showed that firms' size does have negative and insignificant effect on firms' performance. As firms size increases, financial performance decreases. A unit increase in firms' size decreases the firms' performance by 0.06% and vice versa, despite the effect is insignificant.

Moreover, the result showed a negative and significant relationship between leverage ratio and financial performance. This shows that increasing debt for selected manufacturing companies would certainly lower financial performance of that sector. The result of the study

indicates that, an increase in debt to asset ratio by a unit decreases the firms' performance by 19.42%.

Finally, the result concerning the relationship between liquidity i.e. current ratio and firms financial performance revealed that they have negative relationship but insignificant. This implies that a unit increase in current ratio can increase firms performance by 0.65% despite the decrease in ROA as a result of increase in current ratio is found to be insignificant.

Therefore, the researcher can conclude that employing aggressive working capital policy and maintaining high debt to total asset ratio will have adverse or negative significantly effect on financial performance of firms while employing conservative working capital policy would have significant positive effect on firms' performance at 5% significant level.

5.2. Recommendations

Based on the problems identified by this study, the following recommendations can be forwarded to managers and top-level management body of large beverage manufacturing firms.

- Large taxpayer beverage manufacturing firms in Addis Ababa City Administration should adopt conservative working capital policy while maintaining optimal level of liquidity if they wish to unleash their potential to increase or maximize financial performance. Firms can increase their return on asset by 27.76% through a unit increase in CATAR and 4.46% by a unit decrease in CLTCAR. This is in line with the theory that conservative policies could allow firms to maximize their performances.

- The results of significant negative relationship between leverage and return on asset leads to a 19.42% decrease in firms' performance. It seems it lacks a good combination of source of financing. So that based on manufacturing firms should carefully design the mix of debts with total assets they have while undertaking their financing activities in order to boost their financial performance otherwise.
- The negative relationship between manufacturing companies' profitability (ROA) and firm size, leads to a decrease in firm's profitability. The result of the study shows whenever the company increases its size, profitability decreases by 0.06% percent. Thus, manufacturing companies in the study area should have to look for their competitive

edge with their competitors to compete by lowering production cost to increase their market share through increase their size.

- The manufacturing firms of the study area are also recommended to decrease their current ratio to increase their financial performance despite the effect of increase in current ratio on return on asset is insignificant. A unit decrease in current ratio can cause return on asset to be increased by 0.65%.

5.3. Limitations and Suggestions for Further Research

This research had been done by considering a single dependent variable. The literature from previous researches, researcher believed that it would better to study by including one or more

dependent variable, which used to measure the profitability of firms' i.e. return on investment and return on equity.

In addition, this study focused on only large taxpayers manufacturing beverage firms in Addis Ababa City Administration. Thus, future researchers can conduct the same type of study in other manufacturing firms.

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APPENDIX

Converted Raw financial statements data of large taxpayer beverage manufacturing firm's

TAX_PAYER_ID	YEAR	ROA	LEV	CR	CLTCAR	CATAR	FSZ
10,072	2,013	0.068847	0.525776	8.717824	0.114708	0.367052	19.41344
10,072	2,014	0.128543	0.542972	7.23984	0.138125	0.460669	19.63052
10,072	2,015	0.199053	0.142137	5.106495	0.195829	0.472946	19.69422
10,072	2,016	0.195476	0.200011	4.749496	0.210549	0.506494	19.77220
10,072	2,017	0.128622	0.353564	6.738186	0.148408	0.534087	19.93472
10,072	2,018	0.085708	0.522292	2.321632	0.430732	0.542709	19.98628
10,084	2,013	0.276452	0.349135	2.369616	0.422009	0.538918	22.06117
10,084	2,014	0.136667	0.247665	2.031699	0.492199	0.266403	22.77765
10,084	2,015	0.155068	0.300801	2.241405	0.446149	0.338301	22.38115
10,084	2,016	0.304376	0.298856	2.148588	0.465422	0.42731	22.32012
10,084	2,017	0.269195	0.188326	3.430882	0.29147	0.473807	22.66178
10,084	2,018	0.161169	0.320854	2.425172	0.412342	0.400135	23.02573
10,440	2,013	0.337586	0.481726	1.296302	0.771425	0.624463	18.68877
10,440	2,014	0.00295	0.50798	1.861696	0.537145	0.687761	18.66357
10,440	2,015	0.10926	0.545223	2.500606	0.399903	0.918323	18.42218
10,440	2,016	0.206485	0.563065	2.665629	0.375146	0.954172	18.81743
10,440	2,017	0.281606	0.441089	2.659997	0.37594	0.792768	19.20583
10,440	2,018	0.165397	0.474293	2.46021	0.406469	0.806678	19.16091
10,609	2,013	0.099805	0.216657	24.99844	0.040002	0.539512	18.49028
10,609	2,014	0.101961	0.306777	7.237266	0.138174	0.221444	18.79710
10,609	2,015	0.123247	0.504992	13.02404	0.076781	0.408867	18.79443

10,609	2,016	0.175227	0.485531	6.272193	0.159434	0.368912	19.06959
10,609	2,017	0.166458	0.500511	1.544736	0.64736	0.413841	19.25188
10,609	2,018	0.16584	0.406419	1.820689	0.549243	0.385294	19.27488
10,932	2,013	0.08853	0.702504	1.222585	0.817939	0.842033	21.93405
10,932	2,014	0.065054	0.680767	1.239347	0.806876	0.780507	22.11307
10,932	2,015	0.186919	0.249398	2.741695	0.364738	0.560809	21.49389
10,932	2,016	0.200658	0.364465	2.252805	0.443891	0.578356	21.56417
10,932	2,017	0.157353	0.344424	1.802356	0.554829	0.620775	21.67821
10,932	2,018	0.150501	0.363541	1.837109	0.544334	0.667865	21.86227
10,939	2,013	-0.02213	0.400098	0.797721	1.253571	0.263984	20.94696
10,939	2,014	0.081852	0.361673	1.118769	0.89384	0.33467	21.04793
10,939	2,015	-0.03003	0.71204	1.061467	0.942093	0.36491	20.93152
10,939	2,016	0.030351	0.612634	0.779201	1.283365	0.329192	21.17374
10,939	2,017	0.107326	0.693503	1.175799	0.850486	0.490961	21.06525
10,939	2,018	0.116698	0.752677	2.033567	0.491747	0.639787	21.62926
10,950	2,013	0.028683	0.234874	1.272105	0.786098	0.298784	20.14705
10,950	2,014	0.006504	0.268705	1.426364	0.701083	0.383271	20.29919
10,950	2,015	-0.01579	0.554256	0.760279	1.315307	0.352852	20.35510
10,950	2,016	-0.37351	0.620639	0.558355	1.790977	0.318149	20.08305
10,950	2,017	0	0.635491	0.44391	2.25271	0.260155	20.04404
10,950	2,018	0	0.685379	0.545797	1.832183	0.328294	20.23069
10,953	2,013	0.038924	0.47058	0.445744	2.243442	0.199978	21.97917
10,953	2,014	0.000504	0.85418	0.5463	1.830497	0.353481	21.83526
10,953	2,015	0.036825	0.674749	0.721085	1.386799	0.341284	21.98729
10,953	2,016	0.062472	0.685321	0.609388	1.640991	0.328177	22.27015

10,953	2,017	0.108345	0.417575	1.034624	0.966535	0.381587	22.29060
10,953	2,018	0.103422	0.545041	1.187667	0.841987	0.515668	22.60064
10,968	2,013	0.044143	0.313445	1.097271	0.911352	0.306078	21.81352
10,968	2,014	-0.10717	0.512219	0.516159	1.937388	0.260297	22.05273
10,968	2,015	-0.12264	0.652906	0.47164	2.120262	0.300078	22.26232
10,968	2,016	-0.11442	0.529293	1.745203	0.572999	0.342556	21.96084
10,968	2,017	-0.18123	0.899274	1.053098	0.949579	0.31665	21.88657
10,968	2,018	-0.04317	0.950547	0.853729	1.171332	0.265082	22.03372
10,971	2,013	0.274852	0.942068	0.377025	2.652341	0.355184	19.34855
10,971	2,014	0.220112	0.602848	0.409153	2.444073	0.246657	19.97451
10,971	2,015	0.342621	0.962356	0.392312	2.548994	0.326268	19.77959
10,971	2,016	0.381914	0.970066	0.385238	2.595796	0.337664	20.00879
10,971	2,017	0.300601	0.574121	0.401975	2.487717	0.200396	20.40320
10,971	2,018	0.37787	0.617591	0.431889	2.315412	0.239642	20.53553
12,589	2,013	0.106362	0.405335	0.911905	1.096606	0.302923	20.69523
12,589	2,014	0.031211	0.46619	1.530272	0.653478	0.439232	20.86997
12,589	2,015	0.130134	0.586932	1.23874	0.807272	0.433813	20.76153
12,589	2,016	-0.01627	0.709084	0.668674	1.495497	0.341466	20.87096
12,589	2,017	-0.20318	0.992666	0.461174	2.16838	0.368547	20.75266
12,589	2,018	0.007994	0.888728	2.050084	0.487785	0.566143	21.26930
101,470,110,010	2,013	-0.06111	0.407218	0.323364	3.092494	0.131666	21.17510
101,470,110,010	2,014	-0.01962	0.557559	0.453382	2.205644	0.248881	22.14857
101,470,110,010	2,015	-0.01219	0.839433	1.191068	0.839582	0.340364	22.11100
101,470,110,010	2,016	-0.003	0.657695	1.209815	0.826573	0.264076	22.65723
101,470,110,010	2,017	0.09665	0.762731	1.505902	0.664054	0.370298	22.76148

101,470,110,010	2,018	0.123466	0.678474	1.012365	0.987786	0.248263	23.19075
104,618,780,002	2,013	-0.21649	0.878327	0.54402	1.838167	0.200579	15.59257
104,618,780,002	2,014	0.183444	0.158926	2.283128	0.437996	0.362848	16.07529
104,618,780,002	2,015	0.311314	0.65873	2.132122	0.469016	0.648958	16.34277
104,618,780,002	2,016	0.287752	0.71169	1.76325	0.567135	0.644244	16.42853
104,618,780,002	2,017	0.172793	0.712615	2.425858	0.412225	0.764898	16.98073
104,618,780,002	2,018	0.162651	0.755788	1.12179	0.891432	0.768834	17.22504