DETERMINANTS OF CORPORATE CASH HOLDING OF
NON-FINANCIAL FIRMS LISTED IN THE NAIROBI
SECURITIES EXCHANGE

BY

CONSTANTINE MULONDANOME BARASA

UNITED STATES INTERNATIONAL UNIVERSITY -AFRICA

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A Dissertation Report Submitted to Chandaria School of Business in Partial Fulfillment of the Requirements for the Degree of Doctor of Business Administration (DBA)

UNITED STATES INTERNATIONAL UNIVERSITY -AFRICA

SUMMER 2018
STUDENT’S DECLARATION

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Cash holding has received considerable attention worldwide due to concern that firms are holding “too much” liquidity in spite of the fact that cash is a low return asset. Recent research has been centered on establishing whether firm characteristics determine its cash holding. This study was undertaken due to the mixed results in the findings in earlier studies carried out on the international scene and limited research on the subject locally. The main purpose of this study was to evaluate the determinants of cash holding for non-financial firms listed on the Nairobi Securities Exchange. Specifically, the study reviewed the effect of Market to book ratio (MTB), size, leverage, cash flow, interest rates and industry sector on the cash holding of nonfinancial companies listed on the Nairobi Securities Exchange. The study adopted a post-positivist approach.

This study applied co-relational and non-experimental research design. A population of 44 nonfinancial firms listed on the Nairobi Securities Exchange for the period 2002-2017 was undertaken. Secondary data was extracted from annual reports and financial statements while primary data was collected through self-administered questionnaires for management views on the determinants of cash holding from. Whereas a census review was adopted in the secondary data collection, a purposive sample of 168 senior executive was selected for primary data collection.

The methodology applied was multivariate analysis using the OLS model with year and industry dummies and panel data model to test for the determinants of cash holding using the trade off, pecking order and the free cash flow theories.

The study found that Market to book value has insignificant positive relationship with cash holding in the secondary study with most of the respondents in the primary study also negating the constructs that market to book ratio are positively related. The result of the test of the second hypothesis on the relationship between cash holding and size indicated a positive insignificant relationship the results of the primary study were in agreement with secondary study with respondents disagreeing with the statements proposing a negative relationship between cash and firm size. Regression analysis on the relationship between cash holding and leverage returned a significant positive relationship. Similarly in the primary study results majority respondents did not agree that leverage is negatively related to
cash holding. Similar findings were reported on cash flow where secondary study findings suggested a positive and significant positive relationship between cash holding and cash flow from operations but the results from primary study did not concur with most the respondents not affirming the hypothesized relationship.

Interest rates were found not to have a significant moderation effect on the relationship between cash holding and all independent variables. Primary study results indicated that interest rates was a significant determinant of cash holding. Finally industry sector was found to be a significant determinant of cash holding but does have a moderating effect on the relationship between cash holding and Cash flow and Leverage. Overall therefore the result indicate that cash holding is positively related to cash flow and leverage and its was further established that the cash holding of nonfinancial companies listed on the NSE, Kenya are not significantly related to the Market to book ratio and size of the firm. The study thus concluded that Market to Book ratio and Size are not significant determinants of cash holding of non-financial firms listed on the NSE.

The study contributes to the literature on the determinants of cash holding and is useful to Managers in shaping their cash holding policies and Investors in establishing whether managers are making optimal cash management decisions. Further study is recommended on the relationship of cash holding and other firm characteristics such dividend payments, Board size, Sales ratio and working capital. It would also be useful for a study to be extended to Private firms to compare the results with the sample of public firms.
ACKNOWLEDGEMENT

The successful completion of this work would not have been possible without the very valued support from various individuals and I would like to appreciate them most sincerely for the various roles that they played.
First my two never tiring supervisors’ Prof. George Achoki and Prof. Amos Njuguna for their step by step guidance and thorough evaluation of my work and suggestions for improvement at every stage of the process.
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My fellow DBA 1 colleagues for the times shared encouraging on another.
My colleagues at HF Group Plc for their belief in me and continuous encouragement.
DEDICATION

This thesis is dedicated to my wife Fidelice and our three children Marsella, Francis and Felician for their love, understanding and encouragement as I went through the rigor of the doctorate program.

It is also dedicated to my dear parents the Late Francis and Colleta whose fidelity to the virtue of education was unwavering and whose wish is fulfilled in my attainment of this fete.
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# LIST OF ACRONYMS AND ABBREVIATIONS

| Acronym | Description |
|---------|-------------|
| ASEAN   | Association of South East Asia Nations |
| CEO     | Chief Executive officer |
| CF      | Cash Flow |
| CFO     | Chief Finance Officer |
| CLRM    | Classical Linear regression model |
| CMA     | Capital Markets Authority |
| df      | Degrees of freedom |
| EMU     | European Monetary union |
| KMO     | Kaiser Mayer Olkin |
| LEV     | Leverage |
| MTB     | Market to Book Ratio |
| NPV     | Net Present Value |
| NSE     | Nairobi Securities Exchange |
| OLS     | Ordinary Least Squares |
| PCM     | Principal Component’s Method |
| R&D     | Research and Development |
| Sig.    | Significance |
| SIZE    | Firm Size |
| SPSS    | Statistical Package for Social Sciences |
| T-Bill  | Treasury bill |
| VIF     | Variance Inflation factors |
CHAPTER ONE

1.0. INTRODUCTION

1.1. Background to the Study

Determining the level of cash holding is one of the most important decisions a manager makes (Ginglinger and Saddour, 2007). The argument continues that when there is a cash inflow, the manager has to decide to distribute it to shareholders as dividends or through a share purchase, invest it, or save it for the future. It has been argued that financial crises that have happened around the world have not been a case of corporates or nations being insolvent but rather that there is illiquidity in the market that sends even the most solvent of firms to bankruptcy (Strahan, 2012). Fresard(2010) argues that the strategic importance of cash has been heightened by the recent financial crisis quoting examples from recent media reports then he avers that whereas previously cash holding was considered a dangerous thing to accumulate and companies that hoarded large cash positions were viewed with a great deal of suspicion, the recent market turmoil and the resultant tightening of credit have clearly emphasized the advantage of maintaining a liquid balance sheet, as many firms are desperately seeking to avoid a cash squeeze. The rapidly changing perspective underscores the need for a deeper understanding of what the implications of corporate cash policy really are (Fresard, 2010).

The importance of studying corporate cash holding of firms is rooted in the fact that in most firms it forms a significant portion of firm assets. For instance various researchers report significant cash holding such as Ozkan and Ozkan (2004) who reports 14% of assets in cash, Ditmar, Mahrt-Smith and Serveas, (2003) find firms holding 13% asset equivalent in cash, Lee and Lee, (2010) record firms holding in cash 12% of their net assets and Kachleva and Lins (2007) report the highest level at 16% in their study). Secondly management has easy access to cash balances and have an upper hand in the choice of how to apply them. Also cash balances fluctuate over time thus the need for planning for minimal balances required to meet transactional needs even with the fluctuations (Dittmar and Mahrt-Smith, 2007). It is thus important that firms carry optimal cash balances as any excess may be misapplied
because of the agency problem where managers do no act in the best interest of the owners of the firms (Jensen, 1986).

There are generally six motives that have been advanced as explaining why companies hold cash. The first three, transaction, precautionary and speculative are based on the classical liquidity preference theory advanced by Keynes (1936), the other motives are the agency motive developed by Jensen (1986), the tax motive where recent studies by Foley, Hartzell, Titman and Twite (2007) especially in the US have found that American companies with overseas operations held back large cash balances with their foreign subsidiaries due to the unwillingness to repatriate profits that would then be taxed. The final motive is the loan covenants (compensating balances), under this motive firms that have been granted loans by banks or other financial institutions are bound under such agreements to hold a certain amount of liquidity and this then forms a threshold of cash holding for such a firm (Correia, Flynn, Uliana & Wormald, 2015). In recent years other explanations have been advanced in an attempt to develop a complete picture of the transaction approach. In this framework, cash decisions may be affected by the existence of market imperfections such as information asymmetry, agency conflicts or financial distress (Garcia-Teruel & Martinez-Solano, 2008). On the one hand, information asymmetry and agency conflicts between shareholders and creditors make it difficult and expensive for firms to obtain funds. In these circumstances, firms may build up their liquid monetary assets in order to reduce the costs associated with dependence on external financing. On the other hand, managers have an incentive to accumulate cash balances to increase the amount of assets under their control, which may induce discretionary behaviours in the management that are detrimental to the shareholders (Jensen, 1986). Finally, accumulating cash may reduce the firms’ likelihood of entering financial distress (Garcia-Teruel & Martinez-Solano, 2008).

As highlighted above firm’s cash holding has been found to have gradually and in some cases dramatically increased over the recent decades. Dittmar & Mahrt-Smith (2007) report that in 2003, the sum of all cash and marketable securities represented more than 13% of the sum of all assets for large publicly traded US firms, reflecting a substantial increase from 5% in 1990. In value terms, Dittmar & Mahrt-Smith, (2007) the aggregate cash held by publicly traded US firms in 2003 represented approximately 10% of annual US GDP. More recently Cho-Min,I-
Hsin, Min-Lee & Hui-Wen (2017) report that corporate cash holding in Japan accounted for up to 44% of the country’s GDP and in South Korea 34% of GDP.

Many researchers further argue that although it is optimal for firms to hold some cash to finance day-to-day operations and as a buffer against the cost of externally financing their investments, holding excessive cash resources may have negative value implications if managers use these liquid resources inefficiently. In other words, a dollar may not be worth a dollar if there is a chance that it is going to be wasted. What has also baffled researchers is the relative increase in corporate cash holding over the past three decades even with the improvements in financial and information technology that theoretically would imply that firms are better able to predict cash flow and therefore hold less cash under the precautionary motive and further have better risk management instruments that facilitate hedging against future eventualities (Bates, Kahle and Stulz, 2009).

Research in this area has been motivated by the finding that firms have systematically increased their level of cash holdings as a percentage of assets (Morais & Silva, 2013). Dittmar & Mahrt-Smith (2007) report a constant increase in the Cash/Assets ratio which stretches, according to Bates et al., (2009), over the last three decades. These authors report that the average value more than doubled between 1980 and 2006 in listed industrial firms in the USA, rising from 10.5% to 23.2% of assets. High levels of cash ratio are also reported by Gao, Harford, & Li (2013) indicating an average value of 20.45% of assets in 2011 in listed firms in the USA. Iskandar-Datta & Jia (2012) revealed that the tendency was not confined to the USA, being identical in a set of industrialized countries. The study by Ferreira & Vilela (2004), which uses a sample of Eurozone countries, reveals that non-financial European firms have on average around 15% of assets in cash holdings. Such significant values would allow for the amortization of a considerable proportion of these firms' liabilities (Bates et al., 2009). Interestingly, this phenomenon coincides with the internationally increase of the zero leverage phenomenon (Bessler, Drobetz, Haller and Meir, 2013).

McLean (2011) estimates that share issues mostly end up increasing cash levels. Specifically in 1970, $1 issued resulted in $0.23 of cash retention, whereas in the decade of 2000 $1 issued resulted in $0.60 for increased cash holdings. Duchin (2010) reports that for the average cash holdings of stand-alone firms are almost double the cash holdings of diversified
firms. From 1990 to 2006, diversified firms held on average 11.9% of their assets in cash, whereas stand-alone firms held more than 20.9% of their assets.

The financial crisis over the period from 2007 to 2009 highlighted once again the importance of firms’ demand on liquid assets, for many nonfinancial firms, external financing becomes too expensive and/or difficult to obtain due to the tight financial markets in a period of crisis (Lee & Song, 2010). Therefore, the firms tend to make efforts to increase cash holdings to avoid raising external capital such as bank loans, bond offerings, and equity offerings in response to the crisis (Lee & Song 2010). Pinkowitz stulz and Williamson (2013) find that the increase in abnormal cash holdings of U.S. firms is not significantly different from the increase in cash holdings of foreign firms. Over that period cash holdings increase most for highly profitable firms, which is consistent with the view that these firms lacked good investment opportunities. Recent studies have investigated how the global financial crisis has changed the short-term management policies of firms. For instance, Duchin, Ozbas, and Sensoy (2010) find that U.S. firms’ burn through cash holdings during a period of global financial crisis, and post crisis investment is positively related to cash reserves. Campello, Graham, and Harvey (2010) also find that firms are likely to postpone or cancel investment plans when the capital markets are tightened. Both studies document that cash-poor firms have had to cut R&D, employment, and capital spending to cope with tightening credit conditions and avoid a cash squeeze (Pinkowitz et al., 2013).

Several studies that undertaken on the U.S. market and on international stage, have sought to explain the firm characteristics that affect cash holding using three theoretical models: the trade-off model (Myers 1977) and the pecking order model (Myers & Majluf 1984) and the free cash flow theory (Jensen 1986). Within the three theoretical models a number of determinants of cash holding have been developed: Investment opportunities, firm size, leverage, dividend payments, corporate governance parameters (Board size, CEO duality, and ownership structure and investor protection mechanisms), cash flow volatility, credit rating, interest rates, and financial constraints among others.

Cash is generally a low return asset when compared with other investment opportunities and therefore holding excess liquidity is not a particularly attractive position for most firms. Determining the appropriate level of liquidity to hold was the subject of classical cash holding models such a Baumol (1952) and Miller and Orr (1966). Such target cash holding
was a tradeoff between the costs and benefits of holding cash. Afza and Adnan (2007) state that maintaining appropriate level of liquidity within the organization is fundamental for smooth operations of a firm. The level of cash a firm maintains is characterized by its policies regarding capital structure, working capital requirements, cash flow management, dividend payments, investment and asset management (Opler, Pinkowitz, Stulz and Williamson, 1999; and Gill & Shah, 2012). From a competitive strategy approach, cash holding has been identified as important strategic tool (Fresand, 2010). A company may use its cash to fund new products, channels and entry into new markets, superior pricing and erecting barriers to entry among other strategic activities which can unnerve competition and therefore ensure continued prosperity of the firm (Benoit, 1984). There are costs associated with both excess and inadequate cash holding levels. A firm with excess cash holding is likely to lose value through interest income forgone and suffer increased cost of capital. Inadequate cash holding on the other hand could lead to incapacity to fund business opportunities, failure to access cash discounts and general reputational risk related to firms deemed to be facing liquidity challenges (Ongudipe, Ongudipe and Ajao, 2012). It is therefore imperative that firms hold optimal cash holdings to maximize shareholder value.

As stated above in the recent times firms have been found to have increased their cash holding for instance Sanchez (2013) observe that by 2011, US firms were holding four times as much cash as they were holding in 1995. Daher (2010) finds that the cash to assets ratio of private firms in the UK almost doubled between 1994 and 2005. In South East Asia (ASEAN) cash represents a substantial portion of corporate assets and the firms grew their mean cash holding from 8% in 1996 to 12% in 2005 (Lee & Lee, 2010). In Kenya sections of media run stories of firms stock piling cash in anticipation of uncertainties related to elections as the following excerpt refers; “A survey by The East African of 28 listed companies shows that more than half of them held more cash compared with the previous year” So this research will seek to establish the cash holding patterns of Kenyan non-financial firms over the review period with the aim of reporting on the level and pattern of cash holding as well as the possible determinants of firm cash holding.

Research in cash holding can be classified into three major strands: Those seeking to establish an optimal cash holding for firms, those concerned with explaining the determinants
of cash holding using either the Tradeoff theory, Pecking order theory or Free cash flow theory and finally other common study area look at the impact of cash holding either on firm value or various performance measures. The results on the determinants of cash holding have been most varied across the spectrum of national as well as international studies. In their conclusion on determinants of cash holding on the Nigerian market Ongudipe, et al (2012), sum the uniqueness of their findings as follows; “Our results are almost consistent with previous studies except for the findings of insignificant relation between growth opportunities and size and cash holding in the Nigeria which contradicts the previous findings in other countries. Thus, the present findings represent unique characteristics of Nigerian firms’ cash holding” Ongudipe, et al (2012) pp. 54.

1.2. Problem statement

The importance of studying corporate cash holding of firms is rooted in the fact that in most firms it forms a significant portion of firm assets(Ozkan and Ozkan (2004) 14%, Ditmar et al. ,2003) 13%, Lee and Lee, (2010) 12% and Kachleva and Lins (2007) 16%). Management has easy access to cash balances and have an upper hand in the choice of how to apply them. Also cash balances fluctuate over time thus the need for planning for minimal balances required to meet transactional needs even with the fluctuations (Dittmar and Mahrt-Smith, 2007). It is thus important that firms carry optimal cash balances as any excess may be misapplied because of the agency problem where managers do no act in the best interest of the owners of the firms (Jensen,1986)

Garcia-Teruel, Martinez-Solano & Martinez-Solano (2008) explain that in finance literature there are two confronting positions regarding cash balances. The two are the financial flexibility hypothesis (Myers and Majluf, 1984 and the free cash flow argument (Jensen 1986). The financial flexibility proponents aver that firms with large investment opportunity sets will hold large cash balances and low debt so as to maintain their borrowing power and prevent investment distortions. Under the free cash flow argument excess cash is deemed to fuel agency cost and should thus be avoided. DeAngelo and DeAngelo(2007) seem to advocate for a middle ground where by excess cash holding is viewed as conferring both flexibility benefits but at the same time presents agency cost and as a mitigation they prescribe that investors should pressure management to limit cash balances to reduce agency
cost but also maintain some precautionary balances to afford them some flexibility to fund unexpected capital needs  (Garcia-Teruel, Martinez-Solano & Martinez-Solano, 2008)

This research seeks to cover the cash holding practices in Kenyan non-financial firm’s cash holding practices to bring out any unique findings and determine whether they conform to the determinants established in previous studies. Kiragu (1991) finds that most firms in Kenya fail due to poor cash management and imprudent debt management policies. Some researchers (Dittmar, Mahrt-Smith and Servaes, 2003 and Kusnadi & Wei, 2011) have done cash holding studies using international samples but such studies were found not to have used adequate sample size to bring out the uniqueness of the local industry. For instance Dittmar, et al (2003) used one Kenyan company while Kusnadi and Wei (2011) did not use any company in Kenya in their sample.

Kabui(2003) studies the determinants of cash holding on the NSE with the objective of developing firm specific models. This study is different in the sense that we study the determinants in light of the three theoretical models (trade off, pecking order and free cash flow). Additionally the study is justified by developments in the countries financial markets since the study as there are now more non-financial companies quoted on the NSE ( 44 companies compared to 28) and the non-financial industrial sectors have been expanded from three to nine. The study also applies primary study to collaborate with the secondary data method. Kariuki, Namusonge and Orwa, (2015) on the other hand reviewed managerial perspective covering the private manufacturing firms in Nairobi. In this study we cover listed entities that are more transparent in terms of availability of reliable information. This study will thus provide for an opportunity to confirm previous research finding in a more in depth basis than the previous studies.

In May 2015 the Kenya became a new lower middle income after rebasing its economy and this according to the United Nations Development Programme (UNDP) is likely to boost investor confidence and attract more foreign and domestic investments, the country is also seen as a strategic investment hub for Africa and this has seen many companies setting up their regional offices in the country (UNDP September 2014). The country is also the largest economy in the East African Community (EAC). Although the country has a capital markets it’s considered immature and illiquid and cannot be compared with the developed world.
The need for research in the country cannot be overemphasized. According to the World Bank easy of doing business index 2016, Kenya is ranked number 114 in protecting minority investors (Doing Business, 2016). And according to Dittmar et al., (2003) firms in countries with strong shareholder protection hold less cash and Pinkowitz, Stulz and Williamson (2006) show that cash is worth less to the minority shareholders of firms in countries with low investor protection. This finding is consistent with the hypothesis that poor protection of investor rights makes it easier for management and controlling shareholders to expropriate corporate resources for their own benefit. Kalcheva and Lins (2007) find that firms with entrenched managers hold more cash, particularly when country-level shareholder protection is poor, and firm values are discounted when firms with entrenched managers hold high levels of cash, particularly when country-level shareholder protection is poor. It is thus important to explore the cash management practices in this country to establish if it conforms to extant literature and if not develop necessary regulatory policies that will influence cash behavior of corporates.

Research on corporate cash holding generally exclude industries that are regulated as the cash holding for this companies is not entirely a management decision and this is observed in the previous studies such as Bates et al. (2009) exclude financial firms and utilities because they may carry cash to meet capital requirements rather than for the economic reasons studied in the research. In Kenya only Banks and Insurance companies have regulatory cash requirements issued under the Banking Act and the Insurance Act respectively and are therefore excluded from the sample for this research.

Previous cash holding research has sought to establish the determinants of corporate cash holding by testing up to 10 variables but following Koh and Kilough (1986) who found that it is not necessary to have a large number of ratios to predict a phenomena- in their case business failure, all that is needed is a set of dominant ratio’s derived from a larger set of ratios. They quote a case of Tafler’s(1983) who started a discriminant analysis with eighty potentially useful ratios and ended up with just for ratio. We will thus focus on four ratios we consider key in cash holding research.
1.3. **General objective**

The broad objective of this study was to investigate the determinants of corporate cash holding for nonfinancial firms in Kenya.

1.4. **Specific Objectives**

The specific objectives of this study are as follows;

1.4.1. To establish the effect of MTB on cash holding of non-financial firms listed on the NSE Kenya.

1.4.2. To determine the effect of Firm size on the cash holding of non-financial firms listed on the NSE.

1.4.3. To establish the effect of leverage on the Cash holding for non-financial firms listed on the NSE, Kenya.

1.4.4. To establish the effect of Cash flow on cash holding of non-financial firms listed on the NSE, Kenya.

1.4.5. To determine the moderating effect of prevailing interest rates on corporate cash holdings and firm characteristics of non-financial firms listed at NSE

1.4.6. To establish the moderating effect of industry/sector on cash holding practices of non-financial firms listed on the NSE.

1.5. **Hypotheses**

The hypotheses tested in this study and explained in chapter two were as follows;

1.5.1. The Market to book ratio (MTB) is positively related to cash holdings.

1.5.2. Firm size of non-financial firms is negatively related to cash holdings

1.5.3. Leverage is negatively related to cash holdings of no financial firms.

1.5.4. Corporate cash holdings for non-financial firms are positively related to cash flow.

1.5.5. Prevailing interest rates does not moderate the relationship between corporate cash holdings and firm characteristics of non-financial firms.

1.5.6. There is no significant moderating effect on cash holding of non-financial firms by industrial sector.
1.6. Justification of the study

This study on the determinants of corporate Cash holding of firms listed on the NSE is important to various stakeholders as follows

1.6.1. Corporate Executives

This study will be useful to different stakeholders such as Corporates and shareholders. To the corporates the study will provide useful insights into the cash management practices in the markets which they can adopt or adapt to their own needs. Investors will gains insights whether the corporates are holding cash to maximize their value.

1.6.2. Scholars and Academics

This study contributes to the literature on the determinants of corporate cash holdings in at least two ways. First, it focuses on cash holding of firms listed on Nairobi Security Exchange (NSE) and only limited research has been conducted on the topic. Second this study validates some of the findings of previous authors by testing the relationship between cash holdings and market-to-book ratio, leverage, firm size, interest rate, cash flow and industry dummy of the sample firms. Thus, this study adds substance to the existing theory developed by previous authors.

1.6.3. Policy makers

Policy makers are concerned with setting up rules to protect investors and easy the cost of investment in a country. This study will contribute to policy making by establishing whether Kenyan firms cash holding is consistent with investor value maximization which will indicate investor protection policies adopted are working as expected or not.

1.7. Scope of the study

This study covered 44 non-financial firms listed on the Nairobi Securities Exchange for the period 2002-2017. Financial firms (Banks and insurance companies) are excluded from the study because their cash holding levels are regulated. Data was sourced from Capital Markets Authority (CMA) database and company annual reports. The study was limited to establishing the determinants of cash holding practices at these firms over the period.
Primary data was collected between April and May 2015. The respondents were corporate executives based in Nairobi corporate offices only.

Care was taken to reduce non response bias in the study. This was achieved through a number of strategies including promise of confidentiality, telephone, physical and email follow ups, and offering a free report of the results as an incentive to complete the questionnaire.

1.8. Definition of terms

1.8.1. Non-financial firms

According to the office of National Statistics UK, Non-financial corporations produce goods and services for the market and do not, as a primary activity, deal in financial assets and liabilities. (ONS 2013). It further gives examples of Non-financial firms as firms engaged in sectors such as retail trade, manufacturing, utilities, business service providers (such as accountancy and law firms), caterers, haulage companies, airlines, construction companies and farming/agriculture.

Adopting the above definition, this study will focus on all firms that are quoted on the Nairobi Securities Exchange (NSE) excluding those listed under the Banking and Insurance industry sectors. That is those that are not regulated under the Banking and insurance Act respectively.

1.8.2. Cash holding

Cash holding, in the context of this study, is defined as cash in hand or readily available for investment in physical assets, repayment of debt obligations and for distribution as dividends to suppliers of equity capital (Gill and Shah, 2012).

According to the International Accountants Standards Board (IASB), Cash comprises of Cash on hand and demand deposits whereas cash equivalents are short-term highly liquid investments that are readily convertible to known amounts of cash and that are not subject to an insignificant risk of changes in value (IAS 7.6).
1.8.3. Firm Value (Market to Book Ratio)

This is the ratio of the firm’s market value to the replacement cost of its assets. It’s also called the Market to book ratio (MTB). According to Opler et al (2009) Market to book ratio is often used as a proxy for investment opportunities.

1.8.4. Firm Size

Firm size is defined as the natural logarithm of total assets (Garcia-Tereul and Martinez-Solano, 2008)

1.8.5. Leverage

Leverage is defined as the sum of long-term debt and debt in current liabilities divided by the book value of total assets (Saddour, 2006).

1.8.6. Cash flow

Cash flow as net operational income plus depreciation divided by net assets (Garcia-Teruel & Martinez-Solano, 2008)

1.8.7. Interest rates

Interest rates as used in this study refer to the average quarterly 91 day Treasury bill rate (Garcia-Teruel & Martinez-Solano, 2008).
1.9. Chapter Summary

In this chapter the stage for the study was set by discussing the back ground to the study, the study seeks to look at the puzzle that corporate cash holding has become with the recent trend of increased cash holding reported in various studies across the globe. Lack of consensus in the findings on the determinants of cash holding as well as limited research on the subject locally justifies why the study should be carried out.

The research problem was then developed touching on the need for more in-depth research into cash holding within the local context. The study objective was narrowed into investigating the determinants of cash holding due to the varied research findings on the subject and limited empirical evidence on the local non-financial firms.

The general objective vis the determinants of corporate cash holding and the specific objectives were developed in to six testable hypotheses. The scope of the study was identified as the nonfinancial firms quoted on the Nairobi Securities Exchange. The justification of the study was identified as filling the research gap on local cash holding research, addressing the managerial problem of what to determine the cash management policies as well as for broad policy makers to understand cash holding behavior of firms and therefore put in place mechanisms to encourage or motivate cash management policies that maximize stakeholder value.

In Chapter two the broad theoretical foundation of the thesis is discussed and narrowed to the studies conceptual model.

In Chapter three the Research methodology used in the study is elaborated. Specific areas of Research philosophy, design and procedures to operationalize the research objectives are explained.

In Chapter four the results on the data analysis are presented both in general terms and in reference to the specific objectives set out in the research.

In Chapter five the research results are discussed in depth in reference to the empirical framework and broad conclusions made. In the chapter recommendations for improvement as well as areas for further research are proposed.
CHAPTER TWO

2.0. LITERATURE REVIEW

2.1. Introduction

This chapter provides an overview of the theoretical foundations of the study. It presents an in-depth review of the empirical research relating to the determinants of corporate cash holding. The relationship between various determinants and corporate cash holding is then presented in a conceptual framework depicting the researcher’s conceptualization of the variables to be investigated in the study.

2.2. Theoretical Review

A theory is a reasoned statement or group of statements, which are supported by evidence meant to explain some phenomena. A theory is a systematic explanation of the relationship among phenomena. Theories provide a generalized explanation to an occurrence. Therefore a researcher should be conversant with those theories applicable to his/her area of research (Kombo and Tromp, 2009, Smyth, 2004). According to Trochim (2006) Aguilar (2009), and Tormo (2006), a theoretical framework guides research, determining what variables to measure, and what statistical relationships to look for in the context of the problems under study. Thus, the theoretical literature helps the researcher see clearly the variables of the study; provides a general framework for data analysis; and helps in the selection of applicable research design.

Simon (2011) asserts that a theoretical review provides a well-supported rationale to conduct the study and helps the reader understand the researcher’s perspectives. In research there is the temptation to rely on personal intuition and guts in the investigation, Simon (2011) further states that a sound theoretical framework should assure the reader that the investigation is backed by grounded theory and that previous findings are from credible sources. Although there are different theories that have been developed to explain cash holding practices among firms, there is divergence of views on the expected impact of the determinants among the models. The initial model for explaining cash holding is the liquidity preference theory which is based on the motives for holding cash. Growing from the liquidity
preference theory three other theories: Trade off model, Pecking order model and free cash flow have been developed and are explained as under.

2.2.1 Liquidity Preference Theory

This theory was propounded by Lord Keynes in (1936), according to him the theory seeks to explain the level of interest rate with regards to the interaction of two important factors: the supply of money and desire of savers to hold their savings in cash or near cash. Keynes defines this theory as the rewards of not hoarding but the rewards for parting with liquidity for the specified period. This theory, therefore characterized as the monetary theory of interest as distinct from the real theory of the classical school of thought. Keynes (1936) further posits that, the determination of interest rates will be found in the money market and there are basically the supplies of money exogenously determined, while the demand for money depends on the following three motives.

Keynes (1936) stressed that, money is held to finance expenditures, including both transactions and of the level of income. However, he believed that money is held for purpose other than as a medium of exchange. According to Koutsoyiannis (2003), speculative balances depend on the anticipated direction and magnitude of prospective changes in market interest rates. Nzotta (2004) opined that, if individuals believe that market interest rates are likely to increase in the future, they have an incentive to hold their wealth in the form of liquid assets in order to avoid the capital loses of long-tern assets that would accompany the expected increase in interest rates.

Jhingan, (2004) confirmed that, those who hold money believe or expect that money balance will exceed the yield on alternative assets are said to exhibit liquidity preferences. Amadi and Akani (2005) were of the view that, more individual expect a future increase rates when the current level of interest rates is high. Andabai (2007) also view that, liquidity preference and the speculative demand for money are opined to be inversely related to the current level of interest rates. Liquidity preference as seen here is the degree of risk aversion and the expected yield on alternative financial assets (Pandey, 2005). Okpara (2007) stated that, the total demand for money combines the speculative motive with the transaction and precautionary reasons Keynes called M1 which he made a function of nominal income. The
part held for speculative purposes he called M2 which depends on the market rate of interest. Uchendu (2010) opined that, M1 and M2 should not be confused with the M1 and M2 definitions of money supply. According to Afolabi (1999), the demand for money (liquidity preference) depend on two factors: nominal incomes and the market rate of interest, alternately, the demand for money depends on a real income and the real rate of interest if the price level is constant or if the demand for money is stated in real terms.

Overall Keynes (1936), discusses the preference for liquidity, indicating three reasons for holding currency: transaction motives, precautionary motives and speculation motives. The first arises from the need for cash for current business transactions due to time lags between fund inflows and outflows. For Keynes, precautionary motives arise from the desire for security with regard to uncertainties and the desire to take advantage of unforeseen opportunities. Finally, Keynes interprets money as a way of preserving wealth as an alternative to investing in risky assets (speculation motive).

The transaction motive was developed as a model for optimal demand for cash based on transaction costs. It was first suggested by Baumol (1952) and Miller and Orr (1966). This motive explains that the main advantage of holding cash is that the firm can lower its transaction costs by using its cash to make payments rather than liquidating assets. In that sense, firms will hold more cash when higher transactions costs to convert non-cash assets to cash are likely, while it holds less cash when the opportunity costs of cash are higher. The optimal demand for cash occurs when a firm suffers from transaction costs of converting liquid assets into cash and uses that cash for payments (Bates, et al., 2009). This problem is insignificant for large firms since transaction costs can induce economies of scale; this is why larger companies tend to hold less cash (Mulligan, 1997).

Under the precautionary motive, firms are expected to hold cash as a precaution to hedge future cash shortfalls (Keynes, 1936). Kim, Mauer and Sherman (1998) study a U.S. Sample and find that firms that have higher costs of external financing, more volatile returns, and low returns on assets tend to hold cash in larger amounts. From this study, they develop a model whereby optimal cash holdings level is represented by a trade-off between the low return on liquid assets and the benefits of minimizing the firm’s reliance on costly external financing.
Another model for optimal cash holdings was developed by Opler, Pinkowitz, Stulz and Williamson (1999). In this model, cash holdings allow firms to reduce the underinvestment problem by keeping enough cash on hand when the cost of cash holdings is the lower return earned on these cash holdings. Along the same line of thought, Baum, Caglayan, Ozkan and Talavera (2006) find that a firm’s cash-to-assets ratio is driven by macroeconomic uncertainty. Almeida, Campello and Weisbach, (2004) find that the precautionary motive mainly holds for financially constrained firms but not their unconstrained counterparts.

In order to have more insight into the precautionary motive for holding cash, Lins, Servaes and Tufano (2010) conduct a study of corporate liquidity by surveying Chief Financial Officers (CFOs) of private and public firms in 29 different countries; the sample consists of 204 firms with the largest representations being from the U.S., Germany and Japan, they find that cash and lines of credit are not typically held for the same purposes. They state that lines of credit are mostly held out of a precautionary motive whereas cash is held in case future growth opportunities arise and access to external capital reveals difficult. The same motive does not seem to apply for holding non-operational cash in firms under study. Similarly, Lins, et al. (2010) qualify excess cash holdings in their study as a “form of financial distress insurance”; their discussions with CFOs around the world reveal that nonoperational cash is mainly held as a basic precautionary motive, to serve as a kind of shield to the firm against potential cash shortfalls.

Another study testing the precautionary motive was conducted by Arena and Julio (2015) who try to find a link between litigation risk and corporate liquidity policy. Following this motive, cash holdings serve as a cushion for future cash needs; in that sense, firms with high exposure to litigation risk are hypothesized to hold more cash in case of necessary future settlement costs. Arena and Julio (2015) examine litigation risk by studying lawsuits filed on 2,410 U.S. firms between 1996 and 2006. Their findings suggest that cash holdings increase by 9.4% on average in comparison with cash levels before litigation threats. They also find that ex-ante measures of litigation risk are positively and significantly related to cash holdings in firms, controlling for all other factors correlated with cash. In addition to this, the authors also notice, consistent with Gormley and Matsa (2010), that the value of an additional dollar of cash is significantly lower in firms exposed to litigation risk, this being a
result of shareholders of firms with potential litigation problems preferring to receive a higher payout than holding cash because the latter might potentially lead to high awards for damages.

Arena and Julio (2015) also find strong evidence of spillover effects within industries: when a firm goes into a litigation lawsuit, peer companies in the same industry are noticed to increase their cash holdings as a precaution against litigation risk exposure. Cash holdings levels could also be attributed to tax incentives. The tax motive was explored by Foley, Hartzell, Titman and Twite (2007) who hypothesize that liquidity levels in a company are partly due to tax incentives faced by U.S. multinational companies. This hypothesis is motivated by the fact that the U.S. impose taxes on the foreign income of their firms, but firms have the right to defer these taxes until earnings are repatriated. As a consequence to this law, U.S. multinationals have reason to retain earnings in the form of cash in the absence of any attractive investment opportunities. They also find that firms that face an above average repatriation tax burden hold 47% of their cash abroad while firms with below average repatriation tax burden hold only 26% of their cash abroad.

In addition to repatriation tax, firms may also worry about double dividend taxation. When money is transferred from the company to shareholders in the form of dividends, earnings are typically taxed twice: first, at year end when companies must pay tax on earnings, and second, when after-tax earnings are distributed to shareholders, the latter must pay income tax on dividends. In order to avoid additional dividend taxation, firms may prefer to hold cash rather than pay it out to shareholders. Di and Hanke (2013) study the impact of double taxation on corporate liquidity. By examining small publicly-traded C corporations, they find a negative relation between long-run cash effective tax rates and cash holdings.

The other motive for holding cash is self-interest. Liu and Mauer (2011) examine the effect of chief executive officer (CEO) compensation incentives on corporate cash holdings and the value of cash to better understand how compensation incentives designed to enhance the alignment of manager and shareholder interests could influence stockholder-bondholder conflicts. They find a direct relationship between top management risk-taking incentives and cash holdings. Ozkan and Ozkan (2004) investigates the importance of managerial ownership among other corporate governance characteristics including board structure and ultimate
controllers of companies. They present evidence of a significant dual relation between managerial ownership and cash holdings in which at low levels of managerial ownership the relationship is negative and it shifts to positive as the share of managerial ownership becomes major. In addition, they observe that the way in which managerial ownership exerts influence on cash holdings does not change with board composition and, in general, the presence of ultimate controllers. Harford (1999) and Pinkowitz (2002) both find that the likelihood of a firm becoming a takeover target is significantly negatively related to the holding of excess cash. This result could be explained in terms of the takeover-deterrence effects of corporate liquidity. Excess cash enhances the ability of a hostile target to defend itself against an unwanted bid. Such defenses include repurchasing stock, acquiring a competitor of the bidder and filing private antitrust litigation, or turning around to acquire the suitor itself (Faleye, 2004).

Finally the relationship with banks have been found to influence cash holdings. In the granting of loans to a firm, Banks or other financial institutions might specify the amount of liquidity that a company needs to maintain. These loan covenants would normally specify that the cash holding should not be less than a certain percentage of the short term liabilities. Luo and Hachiya (2005) tests two views of bank’s role for Japanese firms (whether bank ties affect firm’s cash holding decisions and how bank ties affect the relation between cash holdings and firm value). They find that firms with closer bank relations hold less cash, but some of them are over-borrowing. The results show that banks do not monitor their client firms and are unlikely to push the managers of the firms to take efficient actions on maximizing firm value. They discover that cash holdings cause more severe agency conflicts for the firms who have closer relations with the banks. Pinkowitz and Williamson (2001) found that because of higher bank power in Japan firms there held more cash when compared to those in the USA and Germany where bank power was deemed to be relatively lower. In the UK market where Bank’s influence is also low, financing via debt was found to be inversely related to cash holding levels in the firms. Ozkan and Ozkan (2004).

2.2.2. Trade-off model

The trade-off theory of cash is attributed Myers(1977) which proposes that firms set the desired level of cash holding by equating the marginal costs and marginal benefits of holding
cash. The marginal cost of cash holding is explained as the benefit foregone has the cash been invested in a higher earning asset. The benefits include lower transaction cost in the sense that no assets have to be liquidated or cash raised from out to finance attractive investments. Secondly there is reduced likelihood of financial stress for the firm and therefore higher probability of implementation of positive NPV projects as financial constraints are limited. (Almeida, Campello & Weisbach, 2004)

Source; Modified from Opler et al., 1999.

**Figure 2.1: Optimal Cash Holding.**

In figure 2.1 the optimal amount of liquid assets is given by the intersection of the marginal cost of liquid assets curve( opportunity cost curve) and the marginal cost of liquid asset shortage curve(transaction cost curve) at point M. The marginal cost of liquid assets curve is non-decreasing while the marginal cost of liquid asset shortage curve is decreasing.

The trade-off theory of cash-holding behaviour presents the idea that enterprises can find an ideal cash balance through trading off the costs and benefits of holding cash (Dittmar et al., 2003). The benefits of holding cash relate to prudence, the ability to invest in profitable opportunities when external financing is limited, and a curtailment of costs compared with asset liquidation or raising outside financing (Ferreira and Vilela, 2004). The costs associated with holding cash are mainly related to opportunity costs incurred through failing to invest in
positive net value (NPV) projects (Opler et al., 1999). When large cash balances remain on the balance sheet, firms may lose the opportunity to invest in profitable projects and may even handicap their profitable projects to retain cash (Al-Najjar, 2013). A transactional element is therefore considered by firms in conjunction with a wider range of factors such as the impact of asymmetric information and the agency costs associated with external financing sources on the demand for cash reserves (Dittmar et al., 2003). Under the trade-off theory, a number of factors relating to firm characteristics influence firms’ cash-holding decisions, including the payment of dividends, size, leverage, cash flow and the availability of liquid assets to act as cash substitutes. Other factors include the existence of investment opportunities, cash flow uncertainty and debt maturity (Ferreira and Vilela, 2004).

Ferreira and Vilela (2004) found support for trade-off theories in EMU countries. The available investment opportunities and cash flow uncertainty positively influences the holding of cash balances, while liquidity, size and leverage show a negative relationship with cash holdings.

Opler et al. (1999) found that firms have an optimal level of cash holdings and confirmed the trade-off hypothesis in which firms’ trade off the costs and benefits of holding cash to find the optimum balance. However, the authors’ analysis also revealed that firms often hold cash at levels that are higher than predicted by the trade-off hypothesis (Opler et al., 1999). Dittmar and Mahrt-Smith (2007) suggested that this result could be a consequence of agency problems.

Empirical evidence for the trade-off theory of the determinants of cash holdings can be found in other studies. Powell and Baker (2010) found strong evidence for trade off as a determinant in a survey of the views of 1,000 US CFOs on cash holdings. The results showed that 72% of the CFOs agreed with trade-off as a determinant for cash holdings, with strong support for precautionary factors and the availability of investment opportunities as determinants of cash-holding decisions. Venkiteshwaran (2011) surveyed US firms and found evidence supporting trade-off theories in the firms’ analyses of target cash-holding levels. The study found that over time, firms targeted optimum cash levels and exhibited trade-off behavior in their evaluation of the costs and benefits of retaining cash when selecting cash-holding levels.
The existence of financial constraints have been found to impact the straight target level of cash holding as predicted by the tradeoff theory (Almeida et al. (2004) and Gryglewicz (2011)) This is because financial constraints introduces an element of uncertainty and therefore supporting the precautionary motive. Further the tradeoff theory assumes managers are always acting in the best interest of the shareholders it has been argued that where managers do not necessarily act in such a manner the agency problem sets in and the cash holding patterns do not follow the tradeoff theory prediction(Saddour,2006).Dittmar and Duchin( 2010) argue that that firms actively rebalance their cash holdings, yet imperfectly, consistent with the presence of adjustment costs this may affect the working of the pure tradeoff theory

Whereas the tradeoff theory advocates for cash holding on account of the benefits that accrue, According to the free cash flow theory argues that firms with higher cash balances do not need to access the capital and debt markets and as such are able to circumvent the monitoring process available in the market. This is likely to fuel the agency costs leading to value destruction. Cash can also be taxed twice both at corporate and individual level when cash reserves are distributed as dividends (Tahir, Alifiah, Arshad & Salem, 2016)

2.2.3. Pecking Order theory

The pecking order theory is largely a financing structure theory proposed by Myers and Majluf (1984). It states that companies seek to decrease their costs associated with asymmetric information in external financing by using sources of financing for investments in a particular order. Retained earnings are used first because they are the cheapest source, and when retained earnings are drained, enterprises resort to external funds in the form of debt financing, followed by equity (Ferreira and Vilela, 2004). Debt financing is sought before equity financing because debt financing tends to have lower asymmetric information costs (Al-Najjar, 2013).

Under this theory, an optimum cash level is not sought by firms, but internal financing is preferred and cash acts as a bulwark to finance future investment needs (Ferreira and Vilela, 2004). If cash flows are adequate to provide firm’s investment requirements, the firm can use retained earnings to pay down debt, hold cash and pay dividends, in that order (Al-Najjar and
Belghitar, 2011). If cash flows are not adequate to provide for a firm’s investment requirements, firms will lower dividends and cash holdings and issue debt (Ferreira and Vilela, 2004).

Profitability and leverage are found to hold consequential significance for cash holdings under this theory (Al-Najjar and Belghitar, 2011). A number of different financial variables can be used to empirically explain the determinants of cash holdings under this theory, such as leverage and profitability (Al-Najjar and Belghitar, 2011), size and cash flow (Ferreira and Vilela, 2004).

Evidence for the pecking order theory can also be found in the work of D’Mello, Krisnaswami and Larkin (2008) who investigated the determinants of cash holdings in the context of spin-offs and the cash allocated to the subsidiary. Examining actually assigned cash against cash ratios offered by trade-off theories, the results showed that cash diverged from anticipated levels due to pecking order effects, with surplus cash holdings positively related to concomitant cash flows (D’Mello et al., 2008). Ferreira and Vilela (2004) examined many of the predicted relationships between determinants and levels of cash holdings and also found evidence to support the pecking order theory. For instance, a high level of available investment opportunities and cash flows led to greater levels of cash holdings, while leverage and the availability of liquid assets had a negative impact, consistent with pecking order predictions. The researchers concluded that pecking order theory offers an important explanation for the determinants of cash holdings (Ferreira and Vilela, 2004). In a survey of the dividend policy of Jordanian firms, Al-Makawi (2007) also found evidence for the pecking order theory. Maturity of the firm, firm size and profitability were all positively related to dividend policy, which it was argued was broadly consistent with pecking order theory.

According to Opler et al., (1999) a challenge that arises with extending the "pecking order" model to explain cash holdings is that the conditions under which this extension is consistent with shareholder wealth maximization are rather restrictive. As long as there is any cost to holding cash, a firm that simply accumulates cash will at some point have an excessive amount of cash, and shareholders would be better off if the firm used that cash to pay additional dividends or to repurchase shares.
2.2.4. Free cash flow theory

Jensen’s (1986) managerial agency theory of corporate cash holdings emphasizes the importance of corporate governance in the determinants of cash holdings and the possible adverse impacts of large cash holdings. Due to the separation of management and ownership, the theory holds that the relationship between managers and shareholders has the potential for many conflicts of interest with the controllers of a business not necessarily operating that business in the interests of shareholders (Pinkowitz et al., 2006) by retaining large cash reserves to be used at their own discretion (Al-Najjar, 2012).

The managerial agency theory of corporate cash holdings emphasizes the importance of corporate governance in the determinants of cash holdings and the possible adverse impacts of large cash holdings. Due to the separation of management and ownership, the managerial agency theory holds that the relationship between managers and shareholders has the potential for many conflicts of interest (Jensen, 1986), with the controllers of a business not necessarily operating that business in the interests of shareholders (Pinkowitz et al., 2006) by retaining large cash reserves to be used at their own discretion (Al-Najjar, 2012). The theory implies that these actions lead to a destruction in value because if managers are left alone to run a company in their own best interests, they tend to waste resources on their own agenda and projects (Dittmar and Mahr-Smith, 2007), incurring agency costs. Due to the liquidity of cash, such a result is more likely to occur with cash than with any other firm assets (Powell and Baker, 2010). The theory has further implications for the value of cash reserves because investors tend to believe that managers are likely to deploy cash reserves inefficiently, and investors therefore lower their valuations of cash holdings (Dittmar and Mahr-Smith, 2007).

Under the managerial agency theory, empirical evidence would be expected to show that managers of a company are likely to stockpile cash reserves (Pinkowitz et al., 2006). Kalcheva and Lins (2007) found moderate empirical evidence for this assertion in their study utilizing managerial control rights data of over 5000 companies in 31 countries to investigate the relationship between control, corporate governance and cash holdings. The researchers found that companies with controlling managers tended to have higher cash reserves, and the correlation was even more significant in countries where shareholder protection was weak.
Whereas the free cash flow theory seem to point at managers are influenced by selfish motive some studies(Dittmar and Duchin, 2013, Malmendier and Tate, 2005 and Malmendier, Tate and Yan, 2011) indicate that managerial characteristics such as conservatism, prior professional experience and socialization impact their financial decision making.

2.2.5. **Summary of model Predictions**

Trade off and pecking order theory (also called capital structure theories) have been found to derive nearly identical predictions regarding the determinants impact on the level of cash. Free cash flow theory on the other hand offer varied predictions.

Table 2.1 presents the differences in the model predictions under the three theories (trade-off, Pecking order and Free cash flow theories).

**Table 2.1: Summary of model predictions**

| Variable         | Trade of Theory | Pecking Order theory | Free cash flow theory |
|------------------|-----------------|----------------------|-----------------------|
| Market to Book Ratio | Positive       | Positive             | Negative              |
| Leverage         | unknown         | Negative             | Negative              |
| Real size        | Negative        | Positive             | Positive              |
| Cash flow        | Negative        | Positive             |                       |
| Interest rates   | Negative        | Negative             |                       |
| Industry         | Unknown         | Unknown              | Unknown               |

Source: Researcher (2018)
2.3. Conceptual Framework

A concept is an abstract or general idea inferred or derived from specific instances (Kombo and Tromp, 2009, Miles and Huberman, 1994 and Reichel and Ramey, 1987). Unlike a theory, a concept does not need to be discussed to be understood (Smyth, 2004). Miles and Huberman (1994) defined a conceptual framework as a visual or written product, one that “explains, either graphically or in narrative form, the main things to be studied—the key factors, concepts, or variables—and the presumed relationships among them.”

A conceptual framework is a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation (Kombo and Tromp, 2009). Conceptual framework explains graphically or in narrative form the main factors, concepts, or variables under study and the presumed relationships between them. When clearly articulated, a conceptual framework has potential usefulness as a tool to assist a researcher to make meaning of subsequent findings. It forms part of the agenda for negotiation to be scrutinized, tested, reviewed and reformed as a result of investigation and it explains the possible connections between the variables (Smyth, 2004).

The conceptual framework is the researcher’s conceptualization of the interactions between the variables of the study. The most important thing to understand about the conceptual framework is that it is primarily a conception or model of what is out there that the researcher plan to study, and of what is going on with these things and why—a tentative theory of the phenomena that is being investigated. The function of this theory is to inform the rest of research design—to help you to assess and refine your goals, develop realistic and relevant research questions, select appropriate methods, and identify potential validity threats to the conclusions.

The Conceptual framework for the current study shows the interaction between the dependent variable (corporate cash holding) and the independent variables (market to book ratio (MTB), size, leverage and cash flow). The moderating variables are Industry Sector and Interest rates.
The diagrammatic representation of the conceptual framework for this study is shown in figure 2.2

**Independent Variables**

- Market to book ratio-(H1)- Market value of assets +book value of liabilities/Net Assets
- Firm size-(H2) - Natural Log of Net Assets
- Leverage - (H3) – Total Debt/Net Assets
- Cash flow (H4)- Net Operational income+ Depreciation/ Net Assets

**Moderating Variables**

**Dependent Variable**

- Cash holding (Cash and marketable securities)/Net Assets
- Interest rates (H5)- Average 91 day treasury Bill rate & Industry sector (H6)- NSE classification of non-financial firms

**Figure 2.2: Conceptual Framework**

Source: Research (2018)
2.3.1 Corporate Cash holding

Gill and Shah (2012) is defined as cash in hand or readily available for investment in physical assets, repayment of debt obligations and for distribution as dividends to suppliers of equity capital. In this perspective, cash holding will comprise cash in hand and bank as well as short term investments in money market securities such as treasury bills. According to the International Accountants standards Board (IASB), cash comprises of cash on hand and demand deposits whereas cash equivalents are short-term highly liquid investments that are readily convertible to known amounts of cash and that are not subject to an insignificant risk of changes in value (IAS 7.6).

Cash can be measured in different ways, Opler et al., (1999) use cash plus cash equivalents over net assets, i.e. total assets less cash and cash equivalents. The underlying reason is that a company’s ability to generate future profit streams is dependent on its net assets in place. Ozkan and Ozkan (2004), on the other hand, only use the ratio of total cash and equivalent items to total assets another measurement of cash would be the cash to sales ratio but as reported by Opler et al., (1999), this alternative measurement has no impact on the results of the predictions.

The large increase in corporate cash balances in recent years has garnered much attention in both the academic literature and popular press. Various explanations have been advanced to support this shift in cash holding policies by several researchers. Bates et al., (2009) explain that the corporate cash flows have become more uncertain over the years and this increase in riskiness has driven up precautionary cash balances. Falato et al., (2013) attribute the increase on the change in the nature of firm assets. Others such as Azar et al., (2016) suggest that the opportunity cost of holding large cash balances has decreased. Other factors advanced include agency conflicts, change in the nature of firms going public and aversion to repatriate cash due to unfavorable tax laws especially in the US has led to large amounts of cash being hoarded abroad by large multinational companies thus fuelling increased cash holding.

Drawing from empirical evidence, the level of cash increases when growth opportunities, profitability, or liquidity constraints increase. The cash level decreases when firms’ size,
leverage, liquidity substitutes, investment activities, or dividends increase. The shareholder power hypothesis applies only when corporate governance is of high quality and the respective firm operates in a country with strong shareholder protection. When country-level shareholder protection is moderate, predictions from the flexibility and the spending hypothesis gain importance, which means high quality corporate governance is associated with decreasing cash holdings. Weak corporate governance and high information asymmetries are associated with cash being spent faster on inefficient acquisitions as well as capital expenditures, and liquidity substitutes being turned into cash more often. The value of cash depends on two key drivers, which are information asymmetries and liquidity constraints. The former decrease the market perception of cash, the latter increase it. Furthermore, a persistent policy of high cash holdings is reported to beneficially influence a firm’s.

Previous cash holding research has sought to establish the determinants of corporate cash holding by testing up to 10 variables but following Koh and Kilough (1986) who found that it is not necessary to have a large number of ratios to predict a phenomena- in their case business failure, all that is needed is a set of dominant ratio’s derived from a larger set of ratios. They quote a case of Tafler’s(1983) who started a discriminant analysis with eighty potentially useful ratios and ended up with just for ratio. We will thus focus on four ratios we consider main in cash holding research.

In the following paragraphs a review of the determinants of cash holdings that are of interest to the study is undertaken.

2.3.2. Effect of Firm Value (Market to Book ratio) on Cash Holding

Fisher Separation Theorem states that the firm's decision regarding physical investment is, of course, paramount, and once this decision is made, the firm will then decide how to finance the investment, whether it be from internal funds (cash) and/or external funds (loans and bond and equity issues). It is in this context that firms will decide whether and how much financial assets (cash) to hold.

If firms did not face borrowing constraints, they could finance their investment in plant and equipment by borrowing as much as they needed from external sources at market rates and
therefore would not need to hold financial assets in preparation for the sudden and unexpected appearance of profitable investment projects (projects with a positive net present value). However, if firms faced borrowing constraints, as a result of which they had to pay more than the market rate of interest when borrowing from external sources, they might choose to hold at least some financial assets at all times to ensure that they were able to take advantage of any profitable investment projects that might suddenly and unexpectedly arise without having to borrow from external sources, thereby saving on expected future financing costs.

The existence of growth opportunities in firms is an important factor that positively affects cash levels, as has been shown in various empirical studies (Kim et al., 1998; Opler et al., 1999; Ozkan and Ozkan, 2004; and Ferreira and Vilela, 2004). As Myers and Majluf (1984) point out, firms whose value is largely determined by their growth opportunities have larger information asymmetry. Consequently, firms with greater growth opportunities incur higher external financing costs. They also suffer more serious agency conflicts associated with debt, which can lead to underinvestment insofar as it discourages shareholders from embarking on profitable projects (Myers, 1977).

According to the transactional motive and precautionary motive, cash is beneficial for firms. Firms need cash to carry out their normal activities, to take advantage of profitable future investment opportunities, and to meet unforeseen events.

When a firm has significant investment opportunity it will have to hold higher cash balances under the pecking order theory or else it will have to forego the opportunities or resort to costly external fundraising to bridge the gap.

The managerial agency theory postulates that cash holdings may lead to suboptimal behavior, since it fuels agency costs as because managers with large amount of funds under their control and they have more power over its use (Martinez-Sola, Garcia-Teruel, & Martinez-Solano, 2013). This manifests itself when there are no more profitable investments and managers spend money on negative NPV projects instead of paying it out as say dividends. This would lead to destruction of shareholder value and, even if the firm has a large investment programme, to a low market-to-book ratio. Thus, using the market-to-book ratio
as a proxy, it is likely that the relation between investment opportunity set and cash holdings will be negative.

Ferreira and Vilela (2004) reason that firms characterized by low growth opportunities may invest even in projects having negative net present value. Entrenched management and poor growth prospects compel firms to hoard more cash for use; but during funds’ raising these firms will tend to conceal detailed information from investors, disclosure of which is mandatory by regulatory authorities (Jani, Hoesli and Bender., 2004; Bates et al., 2009) this is in line with agency theory because in such cases cash is accumulated due to agency problems (Bates et al. 2009).

Growth opportunities are measured differently in previous studies, depending to a great extent on data availability. For their study on Spanish SMEs, Garcia-Tereul et al. (2007) use the sales change ratio as a proxy for growth. However, if more data is available, the market-to-book (MTB) ratio also called Tobin’s Q is a commonly used measure of growth opportunities (Chen & Zhao, 2006). This is the ratio of the firm’s market value to the replacement cost of its assets (Lewellen and Badrinath, 1997). Tobin’s Q is often used in corporate finance studies to measure firm valuation (Tong, 2008; McConnell, Servaes and Lins, 2008; Lin and Su, 2008; among others).

Tobin’s Q is a common proxy to measure a firm’s investment opportunity (Lang, Stulz and Walkling, 1991; Doukas, 1995) and is defined as the ratio of the market value of a firm to the replacement cost of its assets. Because the replacement costs of assets are difficult to measure, we estimate Tobin’s q as the ratio of the market value of assets to the book value of assets (MTB) as used in prior studies (Denis, 1994; Chen and Ho, 1997; Chen, Ho, Lee and Yeo, 2000). (Tong, 2006)

According to Saddour (2006), Firms benefit from holding cash balances in the following ways: they are able to take on attractive investments opportunities (positive NPV projects) without high transaction costs involved in raising funds externally. It reduces the risk of illiquidity for firms due to uncertain cash flows. In addition cash holding planning helps firms adjust their dividend policies in line with projected cash holdings. The foregoing benefits make cash holding useful to shareholders and hence, one would expect a direct
relationship between cash holdings and firm market value as represented by the Market to book value ratio (Saddour, 2006)

*H1: Market to Book ratio is positively related to cash holdings.*

### 2.3.3. Effect of Firm Size on Cash holding

Researchers often use firm size to proxy for transparency as larger firms tend to be older and more thoroughly researched than smaller firms. In the presence of non-trivial fixed costs of raising external funds large firms have cheaper access to outside financing per each dollar borrowed. Larger firms are also more likely to have a wide range of funding sources. Conversely, size may also be a proxy for the probability of default, for it is sometimes contended that larger firms are more difficult to fail and liquidate, or, recover once they are in financial distress. Size may also proxy for the volatility of firm assets, for small firms are more likely to be growing firms in rapidly developing and thus intrinsically volatile industries. Another explanation is the extent in the degree of information asymmetry between insiders and the capital markets may be lower for larger firms due to the existing scrutiny that they are subject too from the larger pool of savvy investors that may have stake in them, whether debt of equity.

Miller and Orr (1966) model of demand for money by firms under the trade of theory postulate that there are economies of scale in cash management. This thus imply that larger firms to hold less cash than smaller firms. Firm size and cash holdings should have an inverse relationship since big companies can profit from economies of scale (Mulligan, 1997), are more diversified hence have more stable cash flows coupled with a lower probability of financial distress (Titman & Wessels, 1988), and have easier and cheaper access to financing (Ferri & Jones, 1979). There is also an inverse relationship between size and information asymmetries (Harris & Raviv, 1990); this is why large firms need not accumulate cash to avoid underinvestment as small firms do. Peterson and Rajan, (2003) argue that a greater proportion of the costs of fundraising are fixed and therefore companies raising large amounts of cash enjoy lower per dollar cost therefore making it comparatively more expensive for smaller firms to borrow. In this circumstances small firms would thus prefer to hold more cash to avoid external fundraising that is expensive. Furthermore, it is
generally accepted that larger firms, because of diversification, have lower probability of being in financial distress (Rajan and Zingales, 1995). These trade of theoretical arguments advanced above point to a negative relation between firm size and cash holdings.

On the contrary, the pecking order theory predicts the relationship between size and cash holdings to be positive since large firms typically perform better than small firms and hence should have more cash (Opler, et al., 1999). This is due to positive effects of size on profit, bigger sized firms are expected to be more successful. Hence, these firms will tend to accumulate more cash than smaller firms after controlling for their investment (Opler et al., 1999, Ferreira and Vilela, 2004; Jani et al., 2004). This shows that in contrast to our previous debate pecking order theory predicts a direct relationship of size with corporate cash holdings.

Bates, et al., (2009) find that cash ratios increase over their sample period for small firms more pronouncedly than large firms; however, in the 2000s, the negative relationship between size and cash holdings begins to disappear and the authors attribute it to large firms holding cash due to agency problems. Ferreira and Vilela (2004) also find a negative relationship between cash holdings and size. Lee and Song (2007) find that after the Asian financial crisis, cash holdings increase everywhere regardless of firm size. Bigelli and Vidal (2012) also find a negative relationship between size and cash holdings in private firms.

Under the free cash flow theory managers want to erect defenses against a takeover to perpetuate themselves. In this context, it is explained that generally larger firms tend to have larger shareholder base that is difficult to rally around a particular corporate action which gives rise to superior managerial discretion. Also, larger companies are not likely to be the target of a takeover due to the amount of financial resources needed by the bidder. Thus, it is expected that managers of large firms have more discretionary power over the firm investment and financial policies, leading to a greater amount of cash holdings. (Ferreira and Vilela, 2004). Thus a direct relationship of with corporate cash holdings is predicted by agency theory.

It should be noted that firm size is related to another set of factors that may influence liquidity levels. More specifically, smaller firms suffer more severe information asymmetries
(Jordan, Lowe and Taylor, 1998; and Berger, Klapper and Udell, 2001), more financial constraints (Whited, 1992; and Fazzari and Petersen, 1993) and they are more likely to suffer financial distress (Rajan and Zingales, 1995; and Titman and Wessel, 1988). Also, financial distress is associated with high fixed costs and these costs are proportionately greater for smaller firms (Warner, 1977). (Garcia-Teruel and Martinez-Solano, 2008)

According to Li & Dang (2015), firm size in corporate finance is commonly measured by total assets, sales and market value of equity. Other measures they cite as occasionally used to measure firm size include number of employees and profits. While highlighting that employing any of the three common methods of measuring firm size have pros and cons, they contend that which measure to use depends on factors such as data availability and purpose of the study (Li and Dang, 2015). In this study firm size is measured by the logarithm of book assets. Although Ozkan and Ozkan (2004) and Opler et al., (1999) measure total assets in real terms, nominal values are used in this study, which is in line with Garcia-Teruel et al. (2008) as well as Ben and Yuanjian (2007). A negative relationship is expected between cash holdings and firm size.

H2: Firm size is negatively related to cash holdings

2.3.4. Effect of leverage on Cash holding

Leverage or debt ratio shows the extent to which a firm is using debt capital in its financing structure. Higher ratios imply that a firm has a higher ability to issue debt and therefore the expected relationship to cash holding will be an inverse one. Proponents of this line of thought explain that instead of holding large volumes of cash and cash equivalents (marketable securities), firms would instead issue debt (John, 1993). To support the argument further, Baskin (1987) argues that it becomes costlier to finance liquidity at high levels and therefore firms with high debt levels would reduce their liquidity as a way of managing the cost of liquidity.

Financial leverage takes the form of a loan or other borrowings (debt), the proceeds of which are reinvested with the intent to earn a greater rate of return than the cost of interest. Leverage increases the returns of an investment with the caveat that the greater the debt the greater the risk taken. The risks involved include financial distress and bankruptcy.
According to Opler et al., (1999), leverage is measured as the ratio of total debt divided by total assets less cash and cash equivalents.

Both the trade-off and the pecking order theories predict a negative relationship between leverage and cash holdings. Under the trade-off theory, Ozkan and Ozkan (2004) and Diamond (1984) consider that debt could substitute for cash holdings since debt reduces moral hazard and is more flexible. Similarly, the pecking order theory considers cash as negative debt. Opler, et al., (1999) state that firms who have excess cash use it either to pay off outstanding debt or accumulate it; and although firms may have target debt level, cash still follow a pecking order behaviour. On the other hand however, Ferreira and Vilela(2004) claim that the trade-off theory could also predict a positive relationship between leverage and cash holdings because leverage increases the probability of bankruptcy and firms therefore hold more cash to reduce the probability of financial distress.

According to pecking order theory and arguments put forward by Opler et al., (1999) and Jani et al., (2004), debt is issued in situations when a firm has used up all of the retained earnings. Thus cash level of a firm usually falls if its investment needs are higher than its retained earnings and vice versa. One important fact in this regard is that firm’s high leverage can be used as a proxy for its access to the debt market (John, 1993). In the context of agency theory according to Ferreira and Vilela (2004) managers tend to hold more cash because cash is safer than debt. Furthermore Jensen (1986) argues that entrenched management is happy to hold more cash in time of poor investment opportunities rather than to distribute it to shareholders as dividends. Higher level of cash may be used by for personal benefits or even they might invest in projects having negative NPV, because these projects are immune from scrutiny by financial market participants. (Rehman and Wang, 2015)

The free cash flow theory also predicts a negative relationship between leverage and cash holdings, because less levered firms are subject to less external monitoring and hence allow more managerial discretion resulting in higher cash levels.

Financial leverage or gearing of a firm is measured as the ratio of total debt (long and short-term debt) to the book value of total assets (Saddour, 2006)
Following empirical evidence we will measure financial leverage as the sum of long-term liabilities and current liabilities divided by the book value of total assets. A negative relationship is hypothesized between leverage and cash holdings supporting what has been claimed in the literature about cash being negative debt.

H3: Leverage is negatively related to cash holdings.

2.3.5. Effect of Cash flow on cash holding.

The trade-off theory views cash flow as an alternative source of liquidity than can set managers free from the financial constraints that can otherwise be imposed by the capital markets (Hardin et al., 2009). Essentially, cash flows can be used in times of cash shortages, thus, negating the need to hold cash (Kim et al., 2011). The pecking order theory, however, proposes that firms with good cash flows will use these cash flows to finance their projects, pay off their debt and accumulate cash holdings. Therefore, companies with persistently high cash flows will have significant cash holdings.

Almeida, Campello, and Weisbach (2004) argue that firms will increase cash holdings when they have greater cash flows (earnings); in other words, cash holding has a positive response to cash flow. However, Riddick and Whited (2009) found a negative cash-flow sensitivity of cash. Regardless of the positive or negative cash-flow sensitivity of cash, both Almeida et al. (2004) and Riddick and Whited (2009) imply a linear relationship between cash flow and cash holdings. Instead of linearity between cash flow and cash holdings, Bao, Chan, and Zhang (2012) believe that a non-linear relationship exists. They argue that the response of cash holdings to cash flow depends upon whether firms have positive or negative earnings. Bao et al., (2012) empirically found the asymmetry of the cash-flow sensitivity of cash; that is, the cash-flow sensitivity of cash has different results for positive versus negative earnings.

Almeida et al., (2004) develop a simple model of corporate cash management policies and propose the marginal propensity to save cash out of current cash flows to finance future investment needs (cash-cash flow sensitivity) as a new measure that they think would be better to reflect the role of financial constraints than the investment-cash flow sensitivity. Since firms have to forego current investments if they are to hold large amounts of cash balances, managers have to trade-off the costs and benefits of holding cash before deciding
on optimal cash management policies that will maximize their firm values. Almeida et al., (2004) further contend that moving the center of attention from corporate investments to financial policies would help to circumvent the problems associated with the investment-cash flow sensitivity and offer a more theoretically sound implication about the role of financial constraints.

According to the analysis of Almeida et al., (2004), an increase in cash flow will cause firms to want to increase current investment as well as future investment. A firm that has no current borrowing limitations will not as a matter of practice increase its cash holdings in response to an increase in its cash flow and can apply a major part of the growth in its cash flow to fund current investment because it can always be able to fund future investment using external funds without any difficulty. Thus, an increase in cash flow will not have a systematic impact on how much unconstrained firms save in the form of cash (that is, the so-called “cash flow sensitivity of cash” of unconstrained firms would be expected to be zero).

Bates et al., (2009) find that U.S. firms hold much more cash now than they did in the past in order to hedge against liquidity risks. Acharya, Almeida and Campello (2007) explains that the impact of cash flows on cash holdings should be jointly determined with debt levels because cash can be used to repay debts. They further contend that payout policies such as those related to dividends and stock repurchases also represent important cash outlays.

According to pecking order theory, firms prefer to fund themselves with resources generated internally before resorting to the external market. In these circumstances, firms with large cash flows will keep higher cash levels, as is confirmed by Opler et al., (1999) and Ozkan and Ozkan (2004), for the US and British markets respectively, or by Ferreira and Vilela (2004), for European Monetary Union (EMU) countries. However, Kim et al., (1998) claim that the relation is in fact negative, as they consider that cash flows represent an additional source of Liquidity for the firm and can therefore substitute cash. (Garcia-Teruel et al., 2008). Thus, the sign and magnitude of the “cash flow sensitivity of cash” is theoretically ambiguous and will depend on whether or not firms are borrowing constrained and on whether or not increases in cash flow are accompanied by increases in productivity. Empirical analysis is needed to determine the sign and magnitude of the “cash flow sensitivity of cash.”(Almeida et al., 2004)
There are various measures of cash flow used in previous studies for instance Opler *et al.*, (1999) use earnings after interest, dividends, taxes plus depreciation over net assets as cash flow proxy, Ozkan and Ozkan (2004) use pre-tax profits plus depreciation over total assets as a measure of cash flow and Saddour (2006) defines cash flow as net operational income plus depreciation divided by net assets. This study uses Saddour (2006) definition to ensure consistency in measurement of variables as net assets has been applied rather than total assets. Payment of dividends was erratic among the studied companies and hence we did not want to introduce it as a variable.

Assuming that the tradeoff theory is the most efficient of the cash holding theories then we expect a positive relationship between cash flow and cash holding.

*H5: Corporate cash holdings are positively related to cash flow.*

### 2.3.6. Moderating effect of Interest Rates on Cash holding

Initial studies on possible relation between Cash holding and interest rates were done by Baumol (1952), who reported that it is advantageous for firms to hold cash balances than resorting to debt (external borrowing) of liquidating investments to meet funding needs. In terms of directional relations, Tobin (1956) study showed that as the rate of interest rises the demand for cash reduces and the converse that when the interest rates reduce demand for cash increases. He suggested that during times of high interest rates, companies will increase holdings of more liquid investments that earn the higher rates and shift into cash only when an operational payment has to be made.

Meltzer (1963) in an investigation of the determinants of volatility in cash balances held by firms avers that the changes are largely due to variability in firm’s expected rate of return and prevailing interest rates. Consistent with the transaction motive for holding cash, Opler *et al.*, (1999) find that liquid assets decrease with interest rates and the slope of the yield curve.

Ferreira, *et al.*, (2005) looked at business conditions as a determinant of firms’ cash holdings. They present evidence that cash balances generally during recessions, especially for firms that are experiencing financial stress. Using one-month Treasury bill (T-Bill) rate as proxy
for recessions, they documented that the one-month Treasury bill rate is a significant
determinant of cash holdings.

Garcia-Teruel and Martinez-Solano (2008) found an inverse relationship between interest
rates and cash holding. Similar results were reported by Bates, et al. (2009). In their study
however they used the logarithm of the cash ratio as the dependent variable.

Lins et al., (2010) in a survey of finance executives in about 30 countries around the world to
measure corporate liquidity pose the question that asked how important is the difference
between the interest rate on debt and the interest rate on cash. Thirty-five percent of
responding CFOs rated it as very highly important. They conclude that CFOs take interest
rates into account when making cash holding decisions. (Stone, Gup and Lee, 2012)

Stone, Gup and Lee (2012) study the relationship between market rates of interest and
corporate cash holdings over the 1970-2011 period. The study found that the expected
negative relationship did not exist over all four decades. They conclude that the relationship
is driven by several factors that they are unable to test for and that there exists a puzzle
among the interest rates and cash holdings in the 1980’s and the 1990’s.

Azar et al. (2016) argue that the recent corporate cash-hoarding occurrence can be explained
by the reduction in interest rates since the 1980s. This is because interest rates are positively
associated with the cost of holding cash. A fall in interest rates leads to a reduction in the
carrying cost of cash, and therefore can explain the secular trend in corporate cash balances.
Boileau and Moyen (2016) reach a similar conclusion that an economy-wide reduction in the
cost of holding liquidities is responsible for the rise in cash holdings.

More recently Gao, Whited, and Zhang (2017) found a hump shaped relationship between
interest rates and cash holding(it is positive when interest rates are relatively low and
negative when interest rates are relatively high). They explain that as interest rates increase,
firm value drops, thus raising default risk and the cost of debt. Increased credit spread
prompts firms to demand more cash, as higher external financing costs induce firms to build
a liquidity cushion to support their operations and capital investments. This mechanism
generates the upward-sloping part of the corporate cash demand schedule. As interest rates
continue to rise, high debt-financing costs leads to lower proceeds raised with the same
amount of debt issuance. In combination with fixed operating costs, this financial friction significantly tightens firms' budgets and results in capital investment cuts. Consequently, lower capital investment needs contribute to a lower demand for cash. When interest rates are very high, this second mechanism dominates, and cash holdings decline with interest rates. They further explain that when interest rates fall, the low cost of holding cash in terms of forgone interest earnings is offset by its low benefit from reduced borrowing costs, so cash demand is weak conversely

Based on prior traditional transactional based model of corporate cash holdings a negative relationship is expected with interest rates. That is, as interest rates fall the foregone interest of holding money in physical investments falls pushing up cash holding and the converse is true when there is a rise in interest rates.

Interest rates will be measured by the average 91 Days Treasury bill rate prevailing at the balance sheet date.

\textit{H4: Interest rates significantly moderates the relationship between cash holding and the independent variables.}

2.3.7. Moderating effect of Industry Sector on Corporate cash holding

Several authors have reported variation of cash holding across various industry sectors. For instance it was reported by Gill and Shah (2012) that the motives for holding cash in Manufacturing Sector differ from Services Sector for Canadian firms. This is because of the specific risk factors which are unique to individual firms such as research and development (innovation) intensity, organizational expenditure rate among other factors affect cash ratio differently in these sectors (Sánchez & Yurdagul, 2013).

In particular the high-tech and high R&D sectors concentrate a disproportionate amount of cash For instance Chudson (1945), finds that cash-to-assets ratios tend to vary systematically by industry, (Opler \textit{et al.}, 1999) Saddour (2007) find that on average, there is a strong variation of the cash levels among industries and conclude that classification play an important role in explaining French firms’ cash holdings. Gill & Shah (2012) report variation in cash holding between manufacturing and service industry sector in Canada. Stulz and
Williamson (2012) examine an international sample of firms, and find that the highest cash balances are held by high R&D multinationals. Lyandres and Palazzo (2012) report that the consistent increase in cash holdings in the recent past has been driven almost solely by innovating firms. These findings thus suggest that industry characteristics are a key determinant in corporate cash holdings.

Use will be made of the industry classification as applied by the Nairobi Securities Exchange and this will be coded and applied in the regression equation to determine if significant variation in cash holding is observed across the different industry sectors.

*H6: Industry Sector influences cash holding of firms.*

### 2.4. Empirical Literature Review

Empirical literature review is a directed search of published works, including periodicals and books, that discusses theory and presents empirical results that are relevant to the topic at hand (Zikmund *et al.*, 2010). Literature review is a comprehensive survey of previous inquiries related to a research question. Although it can often be wide in scope, covering decades, perhaps even centuries of material, it should also be narrowly tailored, addressing only the scholarship that is directly related to the research question (Kaifeng and Miller, 2008). Through the use of a systematic approach to previous scholarship, literature review allows a researcher to place his or her research into an intellectual and historical context. In other words, literature review helps the author declare why their research matters (Kaifeng and Miller, 2008).

#### 2.4.1. Effect of Firm Value (Market to Book ratio) on cash holding

The main benefit of holding cash is that it enables firms to finance attractive investments opportunities without resorting to expensive external financing. It also makes it possible for firms to reduce risk related to the variability in operational cash flows (Saddour, 2007).

Myers and Majluf (1984) point out firms whose value is largely determined by their growth opportunities have larger information asymmetry. Consequently, firms with greater growth opportunities incur higher external financing costs. They also suffer more serious agency conflicts associated with debt, which can lead to underinvestment insofar as it discourages shareholders from embarking on profitable projects (Myers, 1977). Hence we might expect
firms with more investment opportunities to keep higher liquidity levels, in order not to limit or cancel their profitable investment projects. The value of the firms is dependent upon them carrying out these projects, thus the cost of not having sufficient cash to make the investments is higher (Garcia-Teruel and Martinez-Solano, 2008)

Several studies have reported positive relations between cash holding and MTB which is used as a proxy for investment opportunities available to a firm. Ferreira and Vilela (2004,) used a sample of 400 firms in 12 Economic and Monetary Union (EMU) countries for the period of 1987-2000 to investigate the determinants of corporate cash holdings. Their results suggest that cash holdings vary directly with the investment opportunities available for the firm.

Saddour (2007) in their study of French firms found varying cash holding practices among mature and growing companies and conclude that high cash holding seemed more of value to growing companies than their mature counterparts. The study found the former to hold higher cash than the latter. In the analysis the two sets of firms also had different determinants of cash holdings. Growth companies needed high cash balances to fund their profitable investments projects without raising outside funds at high transaction costs. This is in contrast to the motive for cash holding of mature companies which need funds to be able to pay dividend to their shareholders and may be to enable managers to increase the resources under their control consistent with the free cash flow theory.

Tayem (2017) report a direct relationship between cash flow and investment opportunities from a review of Jordanian firms the finding is consistent with both the trade off and financial hierarchy theories.

Afza and Adnan (2007) study the level of corporate cash holdings of non-financial Pakistani firms. Using used dataset for the period of 1998 to 2005 they found a negative relationships between market-to-book ratios. This finding is in the minority of empirical evidence in this topic.

Hardin III et al., (2009) used a sample of 1,114 firm-year observations for 194 equity real estate investment trusts (REITs) from USA over the 1998 to 2006 period. They found that REIT cash holdings are directly related to the growth opportunities
Kim et al., (2011) examined a panel data set obtained from 125 publicly traded US restaurant firms between 1997 and 2008 and found that restaurant firms with greater investment opportunities tend to hold more cash.

Rizwan and Javed (2011) report a positive relationship between cash holding and Market to book ratio on a sample of 300 firms listed on the Karachi Stock exchange over the period 1998 to 2007. Alam et al., (2011) who found a positive relationship between market-to-book ratio and cash holdings.

Gill and Shah (2012) found positive relationships between MTB and cash holding for Canadian manufacturing firms and a negative relationship between Cash and MTB for firms in the services sector.

2.4.2. Effect of firm size on Cash holding

There is general agreement that firm size and cash holding are negatively related. Several models developed to determine optimal cash holding (Baumol, 1952; Miller and Orr, 1966; Mulligan, 1997) posit that large firms enjoy economies of scale and are therefore able to hold low cash levels than small firms (Garcia-Teruel and Martinez-Solano, 2008). Opler et al., (1999) studying US firms finds that smaller firms with more investment opportunities and risky activities possess a larger proportion of liquid financial assets.

Bates et al., (2009) study cash holding of US firms for the period 1980-2006 and find that the average cash ratio increased across each size quintile, but the increase is more pronounced for smaller firms. The increase in the average cash ratio for the largest firms is especially strong in the later years of our sample, although not in the most recent years. From 1980 to their peak, average cash holdings more than double for the second and third quintiles and almost double for all other quintiles. When they regressed the cash ratio on a constant and time (measured in years) for each size quintile and they found a positive and significant slope coefficient for each. From this they conclude that the secular increase in cash ratios is not driven by the largest firms in our sample, and is markedly more pronounced in smaller firms.
In a study of Jordanian firms for the period 2005-2013 Tayem (2017) report an inverse relationship between cash holding and firm size using OLS, GMM and random effect panel regression analysis.

In studies where the relationship has been found to be positive it has been attributed to agency problem (Bates et al., 2009) and level of maturity of firms (Saddour, 2006). In times of financial crisis firms of all sizes are found to increase cash holding (Lee and Song, 2007) because of the prevailing financial constraints in the markets.

Saddour (2006) finds that for growing French companies there is a negative relationship between cash and size, however the cash level of mature companies increases with size. Afza and Adan (2007) reports a negative relationship between cash holding and size for Pakistan firms. From a study of Swiss firms Drobeta and Grüninger (2007) report an inverse relationship between firm size and cash holdings.

Ullah and Kamal(2018) study 180 firms in Pakistan for the period 2006-2014 and report that firm size is positively related with cash holding.

2.4.3. Effect of Leverage on Cash holding

Kim et al., (1998), Opler et al., (1999) and Bates, et al., (2009) document a negative relationship between leverage and cash holdings, so do Ferreira and Vilela (2003) for EMU countries, Bigelli and Vidal (2012) for private firms and Lee and Song (2007) for East Asian firms after the Asian financial crisis.

However the relationship between cash and leverage is not a straight forward. Some studies such as Guney et al., (2007) found a negative relationship between cash and leverage at low levels of debt however as debt increased the relationship turned positive. The different variability pattern is attributed to low transaction cost at low levels of debt but as debt increases the impact of high potential distress cost kick in and as a consequence the firm increase cash holding to ward off potential risk of bankruptcy. Consistent to this Tayem (2017) in their study of cash holding practices of Jordanian firms over a 9 year period (2005-2013) report that at low levels leverage is negatively related to cash holding due to
substitutability of between cash and debt but they find that at high levels of leverage (using leverage squared as a proxy), cash and leverage are positively related.

Powell (2018) finds that about 57% of managers in firms listed in the Indonesian stock exchange (IDX) agree or strongly agree that there is a positive relationship between leverage and cash holdings at higher levels of debt due to increased risk of financial distress. However contrary to Guyen et al.,(2007) findings above Powel(2018) finds that at a significant number of managers of firms with low and moderate debt levels strongly disagreed with the construct that debt and leverage are inversely related.

Harford et al., (2011) document a relationship between corporations’ refinancing risk and cash holdings. More specifically, they found that firms with shorter-maturity debt hold more cash to compensate for the refinancing risk. They found this to explain 28% to 34% of the increase in corporate cash holdings over the 1980 to 2008 period.

Saddour (2006) found cash levels negatively affected by leverage for both growing and mature French companies.

Lee and Song , (2007) study cash holding practices of ASEAN firms before and after the Asian financial crisis and report that High-leveraged (low leveraged) firms have median cash ratios of 6.9% (11.2%) in 2006. This was not consistent with the precautionary motive of cash holdings, which suggests that financially constrained firms tend to have more cash holdings due to costly external financing.

Borhanuddin and Pok (2011) in their study of Malaysian firms find that leverage varies inversely in a significant manner with cash holding. They infer that the relationship implies that that debt acts as an alternative to cash holding.

Ullah and Kamal(2018) review 180 firms in Pakistan for the period 2006-2014, the result of their regression analysis indicate that Leverage is negatively correlated with cash holding at 10% confidence level.
Evidence from American SMEs found by Faulkender (2004), and it appears to indicate that SMEs prefer to keep high cash levels rather than use the cash to reduce their debt, given their greater difficulty in gaining access to the capital markets. Ozkan and Ozkan (2004) also consider that more highly leveraged firms may keep more cash in order to lower their default risk.

2.4.4. Effect of Cash flow on Cash holding

Ferreira and Vilela (2004) who found that cash holdings are positively affected by the cash flows. Afza and Adnan (2007) who found a positive relationship between cash flow and cash holdings. Drobetz and Grüninger (2007) also found a positive relationships between operating cash flows for Swiss firms.

Ozkan and Ozkan (2004) reports that the effect of cash flows on cash holdings is positive and significant at 10%. The positive coefficient of cash flows was consistent with the view that firms that have higher cash flows are expected to hold larger amounts of cash as a result of their preference for internal over external finance.

Alam et al., (2011) who found a positive relationship between cash flow and cash holdings. Rizwan and Javed (2011) find that Pakistani firms increase cash holding with increase in cash flow. Firms with large cash flows will keep higher cash levels, as is confirmed by Opler et al., (1999) US, or by Ferreira and Vilela (2004), for European Monetary Union (EMU) countries.

Tayem(2017) report positive relationship between cashflow and cash holding for Jordanian firms. Racic and Stanisic (2017) analyse the empirical determinants of cash holdings on the sample of non-financial companies operating in Serbia. The results from panel data analysis using the generalized method of moments (GMM) for the period from 2008 to 2013 indicates that companies with higher cash flow hold more cash in their assets. This is consistent with the trade off and pecking order theories of cash holding.

Kim et al., (1998) found a negative relationship and concluded that this could be as a result of firms treating cash flow as a source of liquidity and therefore applying it as a substitute for cash holding. Riddick and Whited (2009) find that corporate cash holding and cash flows are
negatively related and they attribute this to the firm’s tendency to lower cash holding in order to invest once they project positive cash flows. In a similar line of thought Bao, Chan and Zhang (2012) report that cash flow sensitivity of corporate cash holding is negative when a firm faces negative cash flows. They also affirm the results in both financially constrained firms and those that are not constrained.

2.4.5 Moderating effect of interest rates on Cash holding

The effect of interest rates on cash holding is rooted in the liquidity preference theory. Early scholars such as Baumol(1952) and Tobin(1956) recognize that cash is needed to facilitate transactions as and when they are due and that such transaction demand for cash holding depends and varies inversely with the prevailing interest rates(Stone,Gup and Lee, 2013). In a separate study Meltzer (1963) conclude that non-human wealth (IRR on investment projects) and interest rates play an important role in explaining the demand and velocity for real cash balances. He further states that the interest rates negatively vary with the marginal propensity to hold cash.

Ferreira & Vilela (2004) found evidence that cash levels increase during recessions, especially for financially constrained firms and that T-Bill rate is a significant determinant of cash holdings. Bates, et al. (2009)

Garcia-Teruel and Martinez-Solano (2008) measure the opportunity cost of investment in cash for small and medium sized firms in Spain and find that the difference between the return on a firms investments and the return on treasury bills is negatively related to cash holding.

Stone et al., (2013) studies the relationship between market rates of interest and corporate cash holdings over the 1970-2011 period. They do not find the expected negative relationship over the study period and conclude that the relationship is driven by several factors that they were unable to test for and that there exists a puzzle among the interest rates and cash holdings in the 1980’s and the 1990’s.

Azar et al. (2016) argue that the corporate cash-hoarding phenomenon can be rationalized by the reduction in interest rates since the 1980s. More specifically, interest rates are positively
associated with the cost of holding cash. A fall in interest rates implies a drop in the carrying
cost of cash, and therefore can explain the secular trend in corporate cash balances.

2.4.6. Moderating effect of Industry Sector on Cash holding

Authors such as Zhou (2009) draw attention to the different evolution of cash holdings
among sectors. The author concludes that high technology firms increased their cash
holdings more significantly, but from 2000 the increase in cash holdings has come to be
generalized, as a response to adverse macroeconomic shocks (Ehling & Haushalter, 2013).

Nguyen (2005) report that cash holding is positively associated with firm level but negatively
related to industrial risk for Japanese companies. Bates et al., (2009) find that firms in
industries with high idiosyncratic risk such as those in high tech firms held more cash than
manufacturing firms

In a study of the effect of cash holding on firm competitiveness, Fresard (2010) reports that
cash holding do not only improve a firms competitiveness but that there is noticeable
differential effect on the market share growth for firms in competitive markets as compared
to those in concentrated markets by a margin as high as two times. Qiu and Wan (2014)report
that the impact of technological spill overs(involuntary leakage or transmissions of
knowledge among firms) on cash holding is more pronounced in firms with greater market
changes such as the mobile phone or computers industry.

Saddour(2007) study cash holding of French companies for the period 1998-2002 and find
that on average, there was strong variation of the cash levels among industries both at the
entire sample level as well as for their two panels of growth and mature companies. It is
reported that both for the whole sample and the sub sample of growth companies, the sector
of basic industries held the lowest cash levels (10% of the net assets for the whole sample
and 12% for the growth companies). For the mature companies, the sector of non-cyclic
services holds the lowest cash level (9% of their net assets). The sector of informational
technologies is the sector where firms held the highest levels of cash holdings (21% for our
whole sample, 16.5% for mature companies and 24% for growth companies).
In their study of the US market for the period 1990 to 2003, Dittmar and Mahrt-Smith (2007) report that the industries with the highest levels of cash holdings in 1990 are Precious Metals, Coal, Recreation, Business Services, and Computers. By 2003, the leaders are Pharmaceutical Products, Electronic Equipment, Computers, Precious Metals, and Business Services.

Similar results are reported by McVanel & Peravalov (2008) study cash holding among Canadian firms between 1980-2006 and report that that around two-thirds of industries had increased cash holdings in the most recent decade in their study period. They also note that there was significant variation of liquid asset holdings across industry sectors. The knowledge-based industries, such as biotechnology and telecommunications, were more likely to hold a higher proportion of assets in cash. Moreover, biotechnology, computer software and processing, and telecommunications have experienced large increases in cash holdings between 2000 and 2006. The three industries combined accounted for over 14 per cent of reported liquid balances in their database in 2006 and 5 per cent of total assets. Not surprisingly, they accounted for the disproportionate number of cash-rich firms. Biotechnology and computer software and processing, together, accounted for only about 9 per cent of firms in the database in 2006, but for over 18 per cent of firms in the highest cash quartile in that year. These firms’ higher cash holdings may be related to high investment opportunities and R&D spending. Resource-based industries, particularly the metal mining companies, had also significantly increased their proportional cash holdings, presumably buoyed by higher commodity prices.
2.5. Chapter summary

In this chapter the theoretical foundations of this study was discussed extensively. The classical liquidity preference theory was identified as having been the basis of the initial research in this area that mainly sought to establish the optimal or target cash holding by firms to fulfill trading or transaction reasons. The three theories that have dominated the modern research in cash holding were then introduced and discussed. The Trade off, Pecking order theories and free cash flow theory were compared based on the predicted relationship between the cash holding and the independent variables was explained.

The conceptual frame work of the relationship between cash holding and the independent variables (Market to book ratio, Size, Leverage and Cash flow) was explained with the control or, moderating factor as Interest rates and industry.

After operationalization of the research variables detailed review of key empirical findings on the variables of interest was done. The review indicated varied findings across the study variables.

This chapter has provided the foundation for the research methodology to be elaborated in Chapter 3.
CHAPTER THREE

3.0. RESEARCH METHODOLOGY

3.1. Introduction

In this chapter the research philosophy is identified and explained. Then the research strategy in terms of research design, population of the study, the sampling design, data collection methods and actual research analysis procedures are explained broadly. Zikmund, Babin, Carr and Griffin (2010) explain that a research methodology serves the purpose of detailing the technical procedures of a study in a way that the target audience can understand clearly. Dawson (2009) states that research methodology is the philosophy or general principle which guides the research. Kombo and Tromp (2009) concur with Zikmund et al., (2010) that research methodology deals with the description of the methods applied in carrying out the research study. Further Schwardt (2007) defines research methodology as a theory of how an inquiry should proceed. It involves analysis of the assumptions, principles and procedures in a particular approach to inquiry.

Creswell (2009) stated that research methodology is the systemic approach that a research adopts to accomplish the research’s aim. In the same vein, Silverman (2010) stated that re-search methodology is a specific approach which researchers select to help in mastering the execution of research including planning, data gathering and data analysis. From the perspective of Crotty (2003), research should include epistemology, theoretical perspective, method-ology and method while Saunders, Lewis, and Thornhill (2012) extended this listing into an onion model which includes philosophies, approaches, strategies, choices, time horizons, techniques and procedures. The nested or hierarchical model of Kaglioglou et al., (1998) lists only three elements: research philosophy, research approach and research technique. Keraminiyage (2014) suggested using a combination of both the nested model and the onion research model. This suggested development is based upon the philosophy that both the onion research model and the nested model are connected in three major areas. These areas are research philosophy, research approach and research technique. In addition, Keraminiyage (2014) combined these models’ considered time horizons and believed them to link the main issues which should be highlighted prior to the research journey in order to accomplish research-based targets on time. In this study, the authors tended to use the onion model created by Saunders et al., (2012) because it was seen as a
systemic model which provides a clear guideline and helps follow up the research stages smoothly.

Figure 3.1: The research process ‘onion’ (Source: Adapted from Saunders et al., 2012)

3.2. Research Philosophy

Rocco, Bliss, Gallagher and Perez-Prado (2003) define a paradigm as a —world view. It is a basic set of beliefs or assumptions that guides a researcher‘s inquiry. This implies that every researcher will approach research with a plethora of interlocking and sometimes contradicting philosophical assumptions and standpoints. According to Schostak (2008), scientific research is based on some basic philosophical assumptions, namely ontology, epistemology and axiology. Ontology refers to a model of a particular field of knowledge or the concepts and their attributes, as well as the relationships between the concepts, while epistemology refers to the branch of philosophy that studies the nature of knowledge, its presuppositions and foundations, and its extent and validity (Schostak 2008). Axiology on the other hand is the study of quality or value (Schostak 2008).
Saunders et al. (2012) document that epistemology concerns what constitutes acceptable knowledge in a field of study. Epistemology has to do with assumptions about the criterion by which applicable knowledge about an event is constructed and evaluated (Saunders et al. 2012).

There are five major research paradigms in business and management studies according to Saunders et al., (2012), these are positivism, critical realism, interpretivism, post modernism and pragmatism. Of the foregoing philosophies Pat (2006) proposes the main two as positivism and interpretivism.

The interpretivist paradigm involves more in-depth investigations that seek to answer how and why something is happening. They are primarily descriptive documentary analysis, though there are situations where answers can be coded to generate quantitative findings. The emphasis is on exploration and insight, rather than experiment and the mathematical or statistical treatment of data (Pat, 2006).

According to Bryman & Bell (2007), positivism is an epistemological position which studies social reality and beyond by employing natural scientific methods. The positivist paradigm relies on numerical (quantitative) data and mathematical or statistical treatment of that data. The paradigm lends itself to highly valid and highly reliable research, but only where the variables that affect the work can be identified, isolated, and relatively precisely measured, and not necessarily, also manipulated. This study will adopt this philosophy.

According to Saunders et al., (2012), in this research philosophy the role of researcher is very important for the study. He stated that in positivism philosophy the researcher plays role of an objective analyst to evaluate the collected data and produces an appropriate result in order to achieve research aims and objectives.

Predictions can be made on the basis of the previously observed and explained realities and their inter-relationships. "Positivism has a long and rich historical tradition. It is so embedded in our society that knowledge claims not grounded in positivist thought are simply dismissed as a scientific and therefore invalid" (Hirschheim, 1985, This view is indirectly supported by Alavi and Carlson (1992) who, in a review of 902 IS research articles, found that all the empirical studies were positivist in approach. Positivism has also had a particularly successful association with the physical and natural sciences.
There has, however, been much debate on the issue of whether or not this positivist paradigm is entirely suitable for the social sciences (Hirschheim, 1985), many authors calling for a more pluralistic attitude towards IS research methodologies (see e.g. Kuhn, 1970; Bjørn-Andersen, 1985; Remenyi and Williams, 1996). While we shall not elaborate on this debate further, it is germane to our study since it is also the case that Information Systems, dealing as it does with the interaction of people and technology, is considered to be of the social sciences rather than the physical sciences (Hirschheim, 1985). Indeed, some of the difficulties experienced in IS research, such as the apparent inconsistency of results, may be attributed to the inappropriateness of the positivist paradigm for the domain. Likewise, some variables or constituent parts of reality might have been previously thought unmeasurable under the positivist paradigm - and hence went unresearched (after Galliers, 1991).

Post-positivists accept the critique of traditional positivism that has been presented by the subjectivists, without going so far as to reject any notion of realism. Post-positivists accept that we cannot observe the world we are part of as totally objective and disinterested outsiders, and accept that the natural sciences do not provide the model for all social research. However, they do believe in the possibility of there being an objective reality. While we will never be able to totally uncover that reality through our research, post-positivists believe that we should try to approximate that reality as best we can, all the while realizing that our own subjectivity is shaping that reality. Rather than finding the truth, post-positivists will try to represent reality as best they can.

The post-positivist stance asserts the value of values, passion and politics in research. Research in this mode requires an ability to see the whole picture, to take a distanced view or an overview. But this kind of objectivity is different from 'just the facts', devoid of context – it does not mean judging from nowhere (Eagleton, 2003). It requires a fair degree of passion (Eagleton, 2003) especially passion for justice and the ability to subject one’s own assumptions to scrutiny. This requires patience, honesty, courage, persistence, imagination, sympathy and self-discipline alongside dialogue and debate. Post positivist researchers believe that positivist research methods predominantly mirror the representational ideology of the positivist researchers. Where the positivist researcher might strive to discover objectively the truth hidden in the subject’s mind, post-positivists strive to disrupt the
predictability that can occur in traditional interviews. Rather than an interviewee providing prepared/manufactured responses to standard questions designed to be unbiased and neutral, we strive to engage in social construction of a narrative with our participants. In this way we hope to activate the respondent’s ‘stock of knowledge’. (Richie and Rigano, 2001)

A post-positivist research philosophy will be adopted in this study as we will be testing the relation between the variables (Determinants of cash holding) to establish whether they conform to established theoretical frameworks. Post-positivist represent a traditional form of research that draws from the positivism view that social research should mirror as much as possible those of natural sciences i.e that the researcher should be objective and detached from the objectives of the research. Post positivism however goes a step further by arguing that we can only know social reality imperfectly and probabilistically. While objectivity remains an ideal, there is increased use of qualitative techniques in order to check the validity of things. (Baxter, Hughes & Tight, 2006).

3.3. Research Design

According to Trochim (2006) a research design refers to the overall plan that a researcher deploys so as to achieve harmony in the different aspects of the study in their quest to seek answers to the research problem. It is the game plan for the collection, measurement and analysis of data. Kombo and Tromp (2009) describe a research design as the review of the overall research aim, the literature and chosen research methods. Kothari (2004) states that research design facilitates the smooth sailing of the various research operations, thereby making research as efficient as possible, yielding maximal information with minimal expenditure of effort, time and money.

Lavrakas (2008) asserts that choosing an appropriate research design depends on; the nature of the research questions and hypotheses, the variables, the sample of participants, the research settings, the data collection methods and the data analysis methods. Thus, a research design is the structure, or the blueprint, of research that guides the process of research from the formulation of the research questions and hypotheses to reporting the research findings. In designing any research study, the researcher should be familiar with the basic steps of the research process that guide all types of research designs. Also, the researcher should be
familiar with a wide range of research designs in order to choose the most appropriate design to answer the research questions and hypotheses of interest.

There are three broad research designs that a study can adopt: quantitative, qualitative and mixed method. Quantitative research represents the dominant methodology for conducting social research (Bryman, 2008). This methodology is typically characterized by collecting numerical data, using deductive reasoning to link theory and research, a preference for a natural science approach (positivism) to explain social phenomena, and having an objectivist conception of social reality (Bryman, 2008). According to Creswell (2009), there are two primary research designs for conducting quantitative research: Surveys – provide a numeric description of trends, attitudes, or opinions of a population by studying a sample of that population. Experiments – determine if a specific treatment influences an outcome.

In a quantitative methodology, the data collected is hard, objective and standardized (Corbetta, 2003). Quantitative research is structured and theory precedes observation.

Mixed methods research is a new approach as a distinct research design with philosophical assumptions that guide the direction of the collection and analysis of data. Many researchers believe that both methodologies complement rather than rival each other, and quantitative research may subsequently compensate for the weaknesses of qualitative research and vice versa (Cooper & Schindler, 2008; Neuman, 2010).

The study applied co-relational and non-experimental research design. Correlational research design is the measurement of two or more variables to determine or establish the extent to which the values for the variables are related or change in an identifiable fashion. The data, relationships, and distributions of variables are studied only. Variables are not manipulated; they are only identified and are studied as they occur in a natural setting. It is non-experimental because manipulation of the subjects is not required.
In chapter 1 the relationships between the dependent variable (cash holding) and the independent variables (determinants of cash holding) was expressed in form of hypothesis and this is what will be measured for nonfinancial firms to check if they are in fact related. This is consistent with previous studies in this area (Afza & Adnan, 2007, Gill & Shah, 2012, Ogundipe, et al., 2012). We will use quantitative data obtained from the company annual reports and collected using questionnaires administers to CFO’s of the sample companies to study the relationships.

3.4 Population

Lavrakas (2008) defines a population as any finite or infinite collection of individual elements. Hyndman (2008) describes a population as the entire collection of ‘things’ in which we are interested. According to Creswell (2009), a population is an entire group of individuals, events or objects having common observable characteristics. The population of relevant for this study consisted of all non-financial companies listed on the Nairobi securities exchange. The NSE was considered ideal for carrying out this study due to the availability, accessibility and reliability of the data. The target population for this study was considered in two ways. At the secondary study level the population was 44 nonfinancial firms listed in the NSE while for the primary study this was 176 senior and finance executives in the companies.

3.5. Sampling Design

Sampling refers to the systematic selection of a limited number of elements out of a theoretically specified population of elements. The reasoning behind this is to ensure that useful inferences are made about the entire population. According to Kothari (2004), the ultimate test of a sample design is how well it represents the characteristics of the population it purports to represent. The reason for sampling in this study is to use a representative data, easier accessibility of study population and the greater speed of data collection at minimal costs. This method has also helped to achieve gain in precision, flexibility in the choice of the sample design for different strata and finally one is able to get estimates of each stratum in addition to the population estimate (Kothari, 2004).
3.5.1 Sampling Frame

A sampling frame is the listing of the entire population from which a sample is to be drawn Leary (2001). The sample consisted of all the non-financial companies that were listed on NSE at any time between 2002 and 2013. A 12 year period is long enough to establish trends and especially account for possible effects of the evolution of the economic cycle on cash levels. (García-Teruel & Martínez-Solano (2008). Sampling frame for the primary data was 176 Senior and Finance executives in the 44 firms.

3.5.2. Sampling Technique

Sampling technique refers to the process of selecting the study participants Kothari (2004). It entails selection of a sub-group from a population so as to participate in the research. According to Ogula (2015), it is the process of selecting a number of individuals for a study who represent the entire population under study. This aims at drawing non-biased deductions with regard to the entire population Kothari (2004).

The study used two sampling techniques, primary study, purposive sampling procedure was applied while for secondary study a census survey technique (100%) sample was used.

Lavrakaz (2008) states that a purposive sample, also referred to as a judgmental or expert sample, is a type of non-probability sample. In this approach the researcher decides what needs to be known and sets out to find respondents who can and are willing to provide the information by virtue of knowledge or experience. It is the deliberate selection of particular units of the universe for constituting a sample which represents the universe. Kothari (2004).

Burns and Grove (2003) in their study they emphasize that purposeful sampling method enable the researcher to select specific subjects who will provide the most extensive information about the phenomenon being studied. In this study based on the upper echelons theory of Hambrick and Mason (1984), the people involved in making decisions about cash holding are the senior company and finance executives and they are therefore well placed to respond to the diverse questions on the subject.
A census survey of non-financial companies listed on the NSE will be carried out. A census survey is preferred because a number of firms with different characteristics hence any individual firm biases will be eliminated by looking at the trends that cut across the firms studied, Thus enriching the validity of the collected data. (Saunders, Lewis, and Thornhill, 2012). Mugenda and Mugenda (2003) argue that census population studies are more representative because everyone has equal chance to be included in the final sample that is drawn and this method is suitable for a small population under study. Study of non-financial firms is preferred in cash holding studies (Ongudipe et al., 2012,) because the cash holding of financial companies is regulated.

3.5.3. Sample size

The target population for the study comprised of all non-financial firms listed in the Nairobi Securities Exchange (NSE). The NSE had 44 non-financial companies as at 31 December 2017. The 44 companies were screened against various factors which included availability and integrity of Data. Three companies were dropped as they did not meet the criteria thus the remaining 41 companies become the target population of the study. The 41 companies were classified as shown in the table 3.1 based on the NSE categorization.
Table 3.1. Distribution of the Target population

| Segments/Sectors                              | Number of companies | Percentage |
|----------------------------------------------|---------------------|------------|
| 1 Agricultural                               | 5                   | 12.20 %    |
| 2 Automobiles and Accessories                | 2                   | 4.88 %     |
| 3 Energy and Petroleum                        | 4                   | 9.76 %     |
| 4 Telecommunications and Technology           | 1                   | 2.44 %     |
| 5 Construction and allied                    | 5                   | 12.20 %    |
| 6 Manufacturing and allied                   | 8                   | 19.51 %    |
| 7 Investment                                 | 6                   | 14.63 %    |
| 8 Commercial and Services                    | 10                  | 24.39 %    |
| **Total**                                    | **41**              | **100%**   |

The table 3.1 shows that the target population which was made up of non-financial listed companies that are classified into eight segments. Approximately 12.20 percent comprised of companies in the Agricultural sector while 4.88 percent of the companies were in the Automobile and accessories segment. Companies in the Energy and Petroleum sector made up 9.76 percent of the target population while 2.44 percent were in the Telecommunications sector. About 12.20 percent of the companies were in the Construction and allied segment while 19.51 percent were in the Manufacturing and allied segment. About 16.63 percent of the companies were in the Investment segment while 24.39 percent were in the Commercial and Services sector. The distribution shows that most of the non-financial listed companies come from the Commercial and Services sector while the least number of companies came from the Telecommunication segment that had only one company. The distribution however indicates that all the non-financial segments were represented.
3.6. Data collection Methods

Data collection refers to the activity of gathering initial and unprocessed information that can be transformed into meaningful information, following the systematic process of data analysis (Gall, Gall & Borg, 2007). Data collection was both primary and secondary.

Primary data refers to original data that is collected afresh for the first time from the data source. Kothari (2004). According to Hox and Boeije (2005) primary data are data collected for the specific research problem at hand, using research procedures that fit the research problem. It is first-hand information collected by an individual, group or organization. The resulting data is usually referred to as raw data meaning it has not been re-organized and cleaned. Primary data in this study was collected from the company head offices using questionnaires as described below.

Secondary data is data that already exists and is readily available from other sources like organizational records, government sources, corporate fillings, print, and trade, business associations among other sources. These can be used to test new hypotheses or explore new relationships and according to Saunders, et al., (2012), The analysis of existing data is efficient and economical because data collection is typically the most time-consuming and expensive part of a research project.

To collect secondary data researchers must locate data sources that may be useful for their research problem, retrieve relevant and evaluate how well the data meet the quality and requirements of the current research and methodological criteria of good research practice (Hox & Boeije, 2005). Secondary data will be obtained from the NSE, CMA and or other financial intermediaries.

The strategy of using both primary and secondary data to address the same study objectives was meant to improve the interpretive coherence and improve both communicative and pragmatic validity of the study results. However since the principle analysis was panel data analysis methodology, the main data collection approach is the secondary data analysis.
3.6.1. Data collection Instruments

Data collection is accomplished by research instruments. A key consideration is to ensure that the chosen instrument supports the research objective. In this of two research instruments were applied. Questionnaires were used in the collection of primary data while a secondary data was collected using a data sheet developed for the purpose.

3.6.1.1. Questionnaires

A survey questionnaire was applied to collect management views on the determinants of corporate cash holdings. Schwab (2005) defines questionnaires as measuring instruments that ask individuals to answer a set of questions or respondent to a set of statement. Mugenda and Mugenda (2003) and Kothari (2004) define a questionnaire as a written list of questions that are answered by respondents so that they can be processed to make some inferences.

Dawson (2002) identifies three types of questionnaires used in data collection; closed ended, open-ended or a combination of both. Quantitative researchers make use of Closed-ended questionnaires. As these questionnaires follow a set format, and as most can be scanned straight into a computer for ease of analysis and greater numbers can be produced. Open-ended questionnaires are used in qualitative research, although some researchers will quantify the answers during the analysis stage. The questionnaire does not contain boxes to tick, but instead leaves a blank section for the respondent to write in an answer. For instance whereas closed-ended questions might be used to find the number of respondents belonging to a group/category, open-ended questions will seek their opinions, feelings and the like about the category in the investigation. As there are no standard answers to these questions, data analysis is more complex. Also, as it is, opinions which are sought rather than numbers, fewer questionnaires need to be distributed. However, many researchers tend to use a combination of both open and closed questions. That way, it is possible to find out how many people use a service and what they think about that service on the same form. Many questionnaires begin with a series of closed questions, with boxes to tick or scales to rank, and then finish with a section of open questions for more detailed response.
Mugenda and Mugenda (2003) and Kothari (2004) identify various advantages of using questionnaires in data collection. First its inexpensive and can be used where the universe is large and is widely spread geographically, Secondly since the respondent fills it without interference from the researcher, it is free from the bias or influence from the enumerator.; They also allow the respondents to answers in their own words; They are not restrictive to a particular time window and therefore allow respondents adequate time to give well thought out answers; respondents who are not easily approachable can also be reached conveniently; large samples can be made use of and thus the results can be made more dependable and reliable. The disadvantages of use of questionnaires; Low response rate as in most cases not all questionnaires are completed and returned; bias due to non-response cannot be determined with certainty and they can only be used when the only when respondents are educated and cooperating.

The questionnaire adopted in this study was the one developed by Powel and Baker (2010) modified as appropriate since the current study had different research objectives.

The survey questionnaire contained six questions providing background information, 24 closed-end statements on the determinants of corporate cash holdings. The questionnaire contained a copy number to permit testing for non-response bias and to avoid including duplicate responses. The survey asked respondents to indicate their level of agreement or disagreement with each statement about corporate cash holdings in nonfinancial firms quoted at the NSE in general where SD = strongly disagree (1), D = disagree (2), A = agree (3), and SA = strongly agree (4). The cover letter assured recipients that their answers would be completely confidential and released only in summary form. If the CFOs preferred not to respond to the survey personally, they were asked to give it to someone actively involved in their firm's liquidity decisions or to return the blank questionnaire. (Powel and Baker, 2010) The questionnaires were physically delivered and collected from the firm’s corporate head offices.

To avoid the common method bias the questions were kept simple and the scale very straightforward so as to avoid ambiguity as recommended by Podsakoff, Mackenzie, Lee and Podsakoff (2003).
3.6.1.2 Secondary Data collection sheet

Secondary data collection instrument developed by the researcher was be used to collect financial data from company annual reports to be used in the regression analysis. The data for all variables in the study will be extracted from published annual reports and financial statements of the listed companies in the NSE covering 2002-2017. The specific financial statements from which data was extracted included financial statements, statement of financial position, statements of cash flow, notes to the accounts and corporate governance disclosures. Data of interest was the Total Assets, Cash flow from Operation, Cash and bank balance, Long-term liabilities and Current liabilities. Interest rates were collected from the central Bank of Kenya website. With the specific data of interest being the 91 days treasury bill rate as at the end of each month over the study period.

3.7. Research procedures

The study was duly approved by the University. A formal permit authorizing the research was obtained from the National Commission of Science Technology and innovation (NACOSTI). The questionnaires for the study was crafted according to the research objectives and pretested to ascertain the suitability of the tool before application.

3.7.1. Pilot Study

The study carried out a pilot test to test the validity and reliability of the questionnaires in gathering the data required for purposes of the study. Kothari (2004) describe a pilot test as a replica and rehearsal of the main survey. According to Saunders et al., (2012) the purpose of the pilot test is to refine the questionnaire so that respondents will have no problems in answering the questions and there will be no problems in recording the data. In addition, it is intended to enable the researcher to obtain some assessment of the questions\' validity and the likely reliability of the data to be collected. Sekaran (2006) elaborates that a pilot test is necessary for testing the reliability of instruments and the validity of a study. Once the questionnaire is pilot tested and amended and the sample selected, the questionnaire will then be used to collect data in line with Saunders, et al., (2012).
The pilot study was a small scale replication of the actual study, targeting a small number of persons with characteristics similar to those of the target group of respondents, namely finance executives in non-financial firms.

The questionnaire developed by the researchers on the basis of the research questions was pilot tested by administration to a randomly selected sample of Sixteen (16) respondents to refine it. The purpose of this exercise will be to ascertain the suitability of the questionnaire as an instrument that will aid in addressing the research questions. The researchers then administered the refined questionnaire to the identified sample of respondents. The data collected was validated and then coded for analysis.

Mugenda and Mugenda (2003) and Cooper and Schindler, (2011) consider a sample of up to 10% as adequate for pretesting. In these study we adopted the same approach in the pilot exercise. The 14 questionnaires were coded and input into Statistical Package for Social Sciences [SPSS] for running the Cronbach reliability test. The reliability of the questionnaire was tested using the Cronbach’s alpha correlation coefficient. As indicated in table 3.2, the results of the reliability test produced an overall Cronbach Alpha correlation coefficient of 0.737. The closer Cronbach’s alpha coefficient is to 1, the higher the internal consistency reliability (Sekaran, 2003). A coefficient of 0.7 is recommended for a newly developed questionnaire and therefore 0.737 was adequate for this study.

**Table 3.2: Cronbach’s Test**

| Variable          | Cronbach's Alpha | N of Items |
|-------------------|------------------|------------|
| Market to Book Ratio | 0.825            | 6          |
| Size of Firm      | 0.731            | 3          |
| Leverage          | 0.705            | 5          |
| Cash flow         | 0.710            | 4          |
| Interest Rates    | 0.750            | 3          |
| Industry/Sector   | 0.700            | 3          |
3.7.1.1 Effect of Market to Book Ratio on Cash Holdings of the Firm.

The results in the Table 3.3 indicates that 92.80 percent of the respondents indicated that the firms strived to hold optimal levels of cash that trade off the opportunity costs of holding too much cash against the trading costs of holding too little, whereas 7.10 percent were in disagreement with the statement. The mean score of the responses was 4.00 which indicate that majority of the respondents agreed with the statements on the assertion that firms strived to hold optimal levels of cash. 71.40 percent of the respondents were in disagreement with the assertion that firms with greater uncertainty in their future cash flows tend to hold more cash to prevent underinvestment in future profitable projects while 28.50 percent were in agreement with this assertion. The mean score of the responses was 2.00 which indicate that majority of the respondents disagreed with the statements on this assertion. On the other hand, 71.40 percent of the respondents indicated that firms with abundant investment opportunities hold higher levels of cash to insulate future capital expenditures from the variability of internally generated cash flows while 28.60 percent of the individuals were in total disagreement with the assertion. Also, 85.70 percent of the respondents disagreed with the assertion that they preferred larger cash balances to provide them with more discretion in the firm's spending and capital expenditure decisions, another 14.20 percent of them agreed with this assertion. The results, further indicated 92.80 percent of the respondents disagreed that firms with abundant investment opportunities held excess cash in order to maintain their competitive positions while 7.10 percent of them were in agreement that firms with abundant investment opportunities held excess cash in order to maintain their competitive positions. Lastly, 92.90 percent disagreed that companies held high cash balances so as to support our share price while 7.10 percent of them were in agreement with this statements. The mean average to all the statements on the effect of effect of Market to Book Ratio on cash holdings of the firm is 2.50 as indicated in the Table 3.3 suggesting that respondents held the view that the effect of Market to Book Ratio, had an influence on cash holdings.
### Table 3.3: Pilot study result effect of MTB on cash holding

| Statement                                                        | Strongly Disagree | Disagree | Agree | Strongly Agree | Mean | Std Dev. |
|-----------------------------------------------------------------|-------------------|----------|-------|----------------|------|----------|
| Firms strive to hold optimal levels of cash that trade off the opportunity costs of holding too much cash against the trading costs of holding too little | 0.0%              | 7.1%     | 35.7% | 57.1%          | 4.00 | 1.00     |
| Firms with greater uncertainty in their future cash flows tend to hold more cash to prevent underinvestment in future profitable projects | 7.1%              | 64.3%    | 21.4% | 7.1%           | 2.00 | 1.00     |
| Firms with abundant investment opportunities hold higher levels of cash to insulate future capital expenditures from the variability of internally generated cash flows | 0.0%              | 28.6%    | 64.3% | 7.1%           | 3.00 | 1.00     |
| I prefer larger cash balances to provide me with more discretion in my firm's spending and capital expenditure decisions | 21.4%             | 64.3%    | 7.1%  | 7.1%           | 2.00 | 1.00     |
| Firms with abundant investment opportunities hold excess cash in order to maintain their competitive positions | 21.4%             | 71.4%    | 0.0%  | 7.1%           | 2.00 | 1.00     |
| We hold high cash balances because to support our share price | 0.0%              | 92.9%    | 0.0%  | 7.1%           | 2.00 | 1.00     |

**Average** | 2.50 | 1.00
3.7.1.2. Effect of Firm Size on Cash Holdings of the Firms

The results in Table 3.4 indicates the level of agreement or disagreement on statements regarding the effect that firm size has on the cash holdings of the firm. 78.5 percent of the respondents felt that the firm did not hold less cash because they were large, but 21.4 percent thought that was so. Also, it was asserted by 71.4 percent of the respondents that large firms have leveraged with lenders and investors and are therefore able to hold less cash. The results, further indicated that 92.9 percent were in disagreement with the statement that firms held more cash since they were small in size. The mean average to all the statements on the effect of firm size on cash holdings of the firm is 2.00 as indicated in the Table below suggesting that respondents did not hold the view that the size of the firm, had an influence on its cash holdings.

Table 3.4: Pilot study result effect of Size on cash holding

| Statement                                                                 | Strongly Disagree | Disagree | Agree | Strongly Agree | Mean | Std Dev. |
|---------------------------------------------------------------------------|-------------------|----------|-------|----------------|------|----------|
| I hold less cash because my firm is large                                  | 57.1%             | 21.4%    | 7.1%  | 14.3%          | 2.00 | 1.00     |
| Large firms have leverage with lenders and investors and are therefore able to hold less cash | 0.0%              | 28.6%    | 64.3% | 7.1%           | 3.00 | 1.00     |
| We held more cash when our company was small                              | 64.3%             | 28.6%    | 0.0%  | 7.1%           | 1.00 | 1.00     |
| **Average**                                                               |                   |          |       |                | 2.00 | 1.00     |

3.7.1.3. Effect of Leverage on Cash Holdings of the Firms

The results presented in Table 3.5 indicated that 85.7 percent of the respondents agreed with the statement that if the credit rating of the firm was to improve I would hold less cash.
whereas 14.3 percent of them were in disagreement with this statement. Similarly, 78.6 percent of them disagreed that there was easy access to Capital/Debt markets and as a result there was no need to hold a lot of cash while 21.4 percent of them believed that the ease of access to the capital markets led to the firm holding less cash. Further 85.7 percent of them disagreed that the costs of financial distress/Bankruptcy were high and as a result the firm held large cash balance so as to be in control, however 14.3 percent of them believed that this was the case. The results also indicated that 85.7 percent of the respondents never believed on the assertion that when firms are financially distressed they are more likely to use excess cash flows to increase cash holdings instead of paying down debt while 14.2 percent of them were in agreement with the statement. Lastly, the results also indicate that 85.7 percent of the respondents disagreed that firms will reduce their cash holding if our debt levels reduce, while 14.2 percent thought that if cash holdings will reduce if the debt levels also reduced. Since the average for these statements is 2.20 this indicates that the respondents felt that or disagreed that leverage had an effect on cash holdings of the firm. Despite these observation descriptive statistics cannot be concluded to be adequate on making the assertion without subjecting the data to more rigorous analytical tests.
Table 3.5: Pilot study result effect of Leverage on cash holding

| Statement                                                                 | Strongly Disagree | Disagree | Agree | Strongly Agree | Mean | Std Dev. |
|---------------------------------------------------------------------------|-------------------|----------|-------|----------------|------|----------|
| If the credit rating of my firm was to improve I will hold less cash      | 0.0%              | 14.3%    | 21.4% | 64.3%          | 3.00 | 1.00     |
| There is easy access to Capital/Debt markets so I don’t need to hold a lot of cash | 0.0%              | 78.6%    | 7.1%  | 14.3%          | 2.00 | 1.00     |
| Costs of financial distress/Bankruptcy are high so I hold large cash balances to be in control | 57.1%             | 28.6%    | 14.3% | 0.0%           | 2.00 | 1.00     |
| When in financially distress firms are more likely to use excess cash flows to increase cash holdings instead of paying down debt | 57.1%             | 28.6%    | 7.1%  | 7.1%           | 2.00 | 1.00     |
| We will reduce our cash holding if our debt levels reduce                 | 57.1%             | 28.6%    | 7.1%  | 7.1%           | 2.00 | 1.00     |

Average 2.20 1.00
3.7.1.4. Effect of Cash Flow on Cash Holdings of the Firms

Table 3.6 shows that 50 percent disagreed while another 50 percent agreed on the assertion that firms with higher levels of internally generated cash flows tend to hold more cash. It was so held by 50 percent of the respondents that the primary cause for a firm's excess cash balances is the accumulation of internally generated cash flows. Further, the results indicate that 78.6 percent of the respondents disagreed with the assertion that financially constrained firms are more likely to save cash from internally generated cash flows to fund future investment opportunities, while 21.4 percent asserted that this was true and as a result firms that are financially constrained are held internally generated cash flows so as to fund future investment opportunities. Finally, 85.7 percent disagreed that if the firms accumulated more debt they were likely to increase their cash holding while 14.2 percent agreed. The results are further indicative that cash flow has an effect on cash holdings of the firms as indicated by a mean average of 2.50.
Table 3.6: Pilot study result effect of Cash flow on cash holding

| Statement                                                                 | Strongly Disagree | Disagree | Agree | Strongly Agree | Mean | Std Dev. |
|---------------------------------------------------------------------------|-------------------|----------|-------|----------------|------|----------|
| Firms with higher levels of internally generated cash flows tend to hold more cash | 0.0%              | 50.0%    | 50.0% | 0.0%           | 3.00 | 1.00     |
| The primary cause for a firm's excess cash balances is the accumulation of internally generated cash flows | 0.0%              | 50.0%    | 14.3% | 35.7%          | 3.00 | 1.00     |
| Financially constrained firms are more likely to save cash from internally generated cash flows to fund future investment opportunities | 0.0%              | 78.6%    | 0.0%  | 21.4%          | 2.00 | 1.00     |
| If we accumulate more debt we will increase our cash holding              | 7.1%              | 78.6%    | 7.1%  | 7.1%           | 2.00 | 1.00     |
| **Average**                                                               | **2.50**          |          |       |                |      |          |

3.7.1.5. Effect of Interests on Cash Holdings of the Firms

Table 3.7 shows the extent of agreement and disagreement on the effect of interest rates on the cash holdings of the firm. 78.6 percent of the respondents disagreed with the assertion that firms would hold large cash balances if interest rates are expected to rise, while 21.4
percent agreed. The results further indicated that 21.4 percent disagreed that if Interest rates in the market were stable firms would hold less cash while 78.6 percent of the respondents agreed with this assertion. Finally, the results also indicated that 85.7 percent of the respondents disagreed on the assertion that in times of fluctuations in interest rates the firms increased their holding of cash and marketable securities while 14.3 percent agreed. Further, the average for these statements is 2.33 and thus this indicates that the respondents felt that that Interests had no effect on cash holdings of the firm. Despite these observation descriptive statistics cannot be concluded to be adequate on making the assertion without subjecting the data to more rigorous analytical tests.

Table 3.7: Pilot study result on the effect of Interest rates on cash holding

| Statement                                                                 | Strongly Disagree | Disagree | Agree | Strongly Agree | Mean | Std Dev. |
|---------------------------------------------------------------------------|-------------------|----------|-------|----------------|------|----------|
| I will hold large cash balances if interest rates are expected to rise    | 14.3%             | 64.3%    | 21.4% | 0.0%           | 2.00 | 1.00     |
| If Interest rates in the market were stable firms would hold less cash    | 0.0%              | 21.4%    | 64.3% | 14.3%          | 3.00 | 1.00     |
| In times of fluctuations in interest rates we increase our holding of cash and marketable securities | 0.0%              | 85.7%    | 14.3% | 0.0%           | 2.00 | 0.00     |
| **Average**                                                               | **2.33**          | **1.00** | **2.33** | **1.00**       | **2.33** | **1.00** |

3.7.1.6. Effect of Industry or Sector Differences on Cash Holdings of the Firms

Table 3.8 indicates the effect of industry/sector differences on cash holding by the firms. The results indicate that whereas 28.6 percent disagreed, 71.4 percent agreed with the assertion
that if the firm’s business involved huge outlay in capital assets (Plant equipment and technology) they could hold higher levels of cash. Also, 35.7 percent disagreed while on the other hand, 71.4 percent agreed that because firm business is diversified they are able to hold less cash. Lastly, the results showed that 64.3 percent agreed while 35.7 percent disagreed that if their firm were operating in a different industrial/economic sector they would change their cash holding policy. The mean average to all the statements on the effect of industry/sector differences on cash holdings of the firm is 3.00 as indicated in the Table below suggesting that respondents held the view that the industry/sector differences, had an influence on cash holdings.

**Table 3.8: Pilot study result on effect of industrial sector on cash holding**

| Statement                                                                 | Strongly Disagree | Disagree | Agree | Strongly Agree | Mean | Std Dev. |
|--------------------------------------------------------------------------|-------------------|----------|-------|----------------|------|----------|
| If our business involved huge outlay in capital assets (Plant equipment and technology) we could hold higher levels of cash | 0.0%              | 28.6%    | 64.3% | 7.1%           | 3.00 | 1.00     |
| If our firm was operating in a different industrial/economic sector we would change our cash holding policy | 0.0%              | 35.7%    | 64.3% | 0.0%           | 3.00 | 0.00     |
| Because our firm business is diversified we are able to hold less cash   | 0.0%              | 28.6%    | 64.3% | 7.1%           | 3.00 | 1.00     |
| **Average**                                                             |                   |          |       |                | **3.00** | **1.00** |

In conclusion it can be inferred from the results of the pilot study above that respondents agreed that Market to Book ratio, Cashflow and Industry sector had an impact on their companies’ cash holding. This is consistent with previous findings by Kim (1998), Opler et al (1999) and Powel and Baker (2010). They however felt size, Leverage and Interest rates
were not significant determinants of cash holding. With the findings from the study the questionnaire was adjusted especially on the demographics and questions relating to market to book ratio and the revised tool was used in the main study whose findings are discussed in chapter 4.

3.7.2. Reliability of Instruments

To examine whether the data collected was adequate and appropriate for inferential statistical tests such as the factor analysis, two main tests were performed namely; Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett’s Test of Sphericity. For a data set to be regarded as adequate and appropriate for statistical analysis, the value of KMO should be greater than 0.5 (Field, 2000). Findings in Table 3.9 showed that the KMO statistic was which was significantly high for all the variables in the study; that is greater than the critical level of significance of the test which was set at 0.5 (Field, 2000). In addition to the KMO test, the Bartlett’s Test of Sphericity was also highly significant. These results provide an excellent justification for further statistical analysis to be conducted.

Table 3.9: KMO Sampling Adequacy and Bartlett's Sphericity Tests

| Sampling Adequacy Tests                  | Kaiser-Meyer-Olkin | Bartlett's Test of Sphericity | df  | Sig.  |
|-----------------------------------------|--------------------|--------------------------------|-----|-------|
| Market-to-Book Ratio                    | 0.726              | 429.804                        | 15  | 0.00  |
| Firm Size                               | 0.574              | 47.845                         | 3   | 0.00  |
| Leverage                                | 0.722              | 137.676                        | 10  | 0.00  |
| Cash Flows                              | 0.629              | 130.612                        | 6   | 0.00  |
| Interest Rates                          | 0.546              | 36.212                         | 3   | 0.00  |
| Industry Specific Characteristics       | 0.597              | 21.054                         | 3   | 0.00  |

3.7.3. Validity of Instruments

Validity refers to the degree in which the other measuring instrument is truly measuring what we intended it to measure. It is concerned with accuracy of measurement. The measures to be
used for determinants of cash are measures that have been used in related studies and therefore are expected to yield the accurate results. The questionnaire to be used in this study has been modified from the one used by Powell and Baker (2010) in a similar study and in addition the use of the two methods (primary and secondary data) will provide a check on any validity concerns that may arise due to use of a single measure.

3.7.4. Administration of Instruments

The researcher will self-administer the questionnaires, collect secondary data, perform initial data preparation and some aspects of data analysis but a suitable STATA and SPSS research assistant will be sought to help in carrying out the complex data analysis.

3.7.5. Ethical Considerations

Clough and Nutbough (2002) comment that researchers must enter into chattered intimacies, open themselves to their subject’s feeling worlds, whether this worlds are congenial to them or repulsive.

Throughout this study the researcher strived to adhere to ethical research considerations and professional guidelines. The researcher adhered to the regulations and guidelines prescribed by United States International University of Africa (USIU-A) for the preparation of theses and dissertations. These regulations related to content, organization, and overall requirements. The USIU-A information policy concerns itself with the maintenance of ethical standards and protection of research subjects. Relevant procedures were followed at the commencement to the end of the research process. These included permission to conduct the study which was obtained from the University. The researcher weighed sensitivity of the topic in designing the data collection instruments and determined what was permissible.

The researcher adhered to the principles of ethical research by ensuring that people not be coerced into participating in research, they were fully informed of the procedures and risks involved in the research in the cover later of the questionnaires. The researcher did not foresee any harm to the participants from engaging in the study. Confidentiality was maintained during and after the study by ensuring that only parties directly involved in the study have access to information collected in the study.
Anonymity of the participants was ensured and personal identification of the participant was not be required during the research

Permission to collect data was sought from the Capital Market Authority (CMA) which is the regulator of the listed companies in Kenya. A letter seeking permission to collect data was mailed to the Chief Executive officer together with copies of a letter from the University and an abstract of the study proposal. Sample letter is attached in the appendices.

The researcher avoided acts of misconduct in research, such as data fabrication, falsification and plagiarism.

3.8 Data analysis Methods

The determinants of cash holdings are studied using two different regression methodologies: OLS model with year and industry dummies and panel data model (both using fixed effects and random effects approaches) this is similar to Saddour (2007), Garcia-Teruel and Martinez-Solano (2008) among others. OLS model uses firms for which there is data for at least one year and includes year and industry dummies. Panel data model is the same for all firms and includes industry dummies (industry classification affects cash holdings). Given that the data had both time and cross-sectional dimensions, the study estimated a linear panel regression as proposed by Green (2008). Panel data analysis is more useful than either cross sectional or time series alone because it allows the researcher to account for observable heterogeneity. In determining the best approach to use the use is made of diagnostic tests to ensure non violation of the Gaussian Markov assumptions and the results are reported in the next section.

Using the Ordinary Least Square (OLS) regression analysis measurements of the independent and dependent variables are as follows:

\[ \text{Cash holding } i,t = \alpha + \beta_1 \cdot \text{MTB} + \beta_2 \cdot \text{Size} + \beta_3 \cdot \text{Leverage} + \beta_4 \cdot \text{Cashflow} + \beta_5 \cdot \text{Interest Rates} + \beta_6 \cdot \text{Industry Dummy} + \mu_{i,t}\beta \]  

\[ \text{MTB}_{i,t} \equiv \frac{(\text{Book value of assets} - \text{Book value of Equity} + \text{Market value of equity})}{\text{Book value of assets}} \]  

Using the Ordinary Least Square (OLS) regression analysis measurements of the independent and dependent variables are as follows:

\[ \text{Cash holding } i,t = \alpha + \beta_1 \cdot \text{MTB} + \beta_2 \cdot \text{Size} + \beta_3 \cdot \text{Leverage} + \beta_4 \cdot \text{Cashflow} + \beta_5 \cdot \text{Interest Rates} + \beta_6 \cdot \text{Industry Dummy} + \mu_{i,t}\beta \]  

\[ \text{MTB}_{i,t} \equiv \frac{(\text{Book value of assets} - \text{Book value of Equity} + \text{Market value of equity})}{\text{Book value of assets}} \]  

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Size (Firm size of firm i in time t - independent variable) = Natural log of total assets of firm

Leverage (Leverage for firm i in time t - independent variable) = Total debt / (Total assets - Cash and equivalents)  

Cash flow,t (Cash flow to net asset ratio for firm i in time t - independent variable) = (After tax profit + Depreciation) / (Total assets - Cash and cash equivalents)  

Cash holding i,t (Cash ratio for firm i in time t – dependent variable) = Cash and cash equivalents / (Book value of assets - Cash and equivalents)  

IndDum i,t (Industry dummy for firm i in time t - independent variable) = IndDum is used as industry code  

μi,t = the error term  

β0 is the intercept  

β1 – β6 are the independent variable coefficients  

The variables in the equation are explained in the following paragraphs;  

The dependent variable in this study firms cash holdings (CASH) which is defined as the ratio of total cash and equivalents to net assets, where net assets are computed as assets less total cash and equivalents (Opler, et al., 1999). The higher the value of this ratio, the higher the firm’s cash holding level.  

With regard to the determinants of cash holdings Market-To-Book ratio (MTB) is taken as a proxy for the firm’s value or opportunity set as explained in chapter 2.  

Firm size (SIZE) is used as a proxy for its ability to access capital markets. It is computed as the natural logarithm of total assets. (Almeida, Campello and Weisbach, 2002).  

Leverage is measured as the ratio of total debt (long and short-term debt) to the book value of total assets (LEV). The ratio of cash flow to net assets (CF/Net Assets) is used to test the relationship between cash flow and cash holdings. Cash flow is defined as net operational income plus depreciation.
3.8.1 Diagnostic Tests

The researcher conducted various diagnostic tests to ensure that the assumptions of Classical Linear regression model (CLRM) were not violated and to choose the appropriate models for analysis in the event that CLRM assumptions were compromised. This section presents the results of the following diagnostic tests; test of multi collinearity, Auto correlation test, heteroskedasticity test, panel root test, , random and fixed effects test and test for normality of residuals

3.8.1.1. Test for Multi Collinearity in Independent Variables

One of the key assumption stipulated for regression models is that the variables (independent variables) should not be correlated. Failure to account for perfect multi-collinearity result into indeterminate regression coefficients and infinite standard errors. Large standard errors affect the precision and accuracy of rejection or failure to reject the null hypothesis. To ensure that this was complied with the study adopted the variance inflation factors (VIF) test for Multi-collinearity. Computationally, VIF is defined as the reciprocal of tolerance: 1/(1-R²). A lower VIF is generally desirable. Multi-collinearity is considered a concern when the Variance inflation factors are in excess of 10 or the tolerance levels (usually the reciprocal of the variance inflation factors values) are less than 0.10. (Kennedy, 1992). The Table 3.10 below indicates that the Variance inflation factors for all the variables used in the model are less than ten and it was thus concluded that the variables are not correlated or multi-collinear and as a result the data was suitable for estimating using the model under consideration.

Table 3.10: Test for Multi Collinearity

| Variable             | Variance Inflation Factor (VIF) | Tolerance (1/VIF) |
|----------------------|-------------------------------|-------------------|
| Market-to-Book Ratio | 1.23                          | 0.787490          |
| Leverage             | 1.17                          | 0.857891          |
| Firm Size            | 1.13                          | 0.814322          |
| Cash Flow            | 1.27                          | 0.884233          |
| **Mean VIF**         | **1.69**                      |                   |
3.8.1.2. Test for Autocorrelation

In order to check whether the error terms were correlated across time, tests for serial correlation were performed. Serial correlation causes the standard errors of the coefficients to be smaller than they actually are and higher R-squared. According to Wooldridge (2002), failure to identify and account for serial correlation in the idiosyncratic error term in a panel model would result into biased standard errors and inefficient parameter estimates. The study performed the Wooldridge test for autocorrelation of panel data to test for serial or autocorrelation where the null hypothesis is that there is no autocorrelation. The results indicated that the residuals are not auto correlated (p-value=0.1473) and its F-stat was 2.194 as reported in table 3.11

Table 3.11: Woolridge Test for Autocorrelation

| .xtserial  | CASH  | MTB   | SIZE  | LEV   | CF  |
|------------|-------|-------|-------|-------|-----|
| wooldridge test for autocorrelation in panel data |                |
| H0: no first-order autocorrelation |                |
| F( 1, 36) = 2.194 |                |
| Prob > F = 0.1473 |                |

3.8.1.3. Test for Heteroskedasticity in Model Residuals

The regression assumptions also requires that residuals or error terms are homoscedastic (have constant variance/ errors). If the error variance is not constant then there is heteroskedasticity in the data. Running a regression model without accounting for heteroskedasticity would lead to unbiased parameter estimates but the invalid standard errors. To check for the consistency with this requirement the study adopted the Breusch-Pagan otherwise known as the Cook-Weisberg test for Heteroskedasticity. The null hypothesis of the test states that “the residuals are homoscedastic.” The results indicated that the residuals are heteroskedastic in nature as indicated by a p-value less than the 5% critical value (p-value=0.01) and a chi-square value of 0.9288 as reported in Table 3.12. Since the assumption of homoscedastic residuals is not violated.
Table 3.12: Breusch-Pagan Test for Heteroskedasticity

```
. estat hettest
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of CASH

    chi2(1)     =  0.01
    Prob > chi2 =  0.9288
```

3.8.1.4. Panel Unit Root Tests

Since panel data has both cross sectional and time series, as a first step for carrying out regression analysis the study carries out a univariate analysis to investigate stationarity properties for each of the series of the variables employed in the study. Estimating models without taking in to account the non-stationarity nature of data can lead to spurious results (Gujarati, 2003). The test of unit root tests for panel data in this study was conducted using the Fisher-unit root test, specifically; the Augmented Dickey fuller test was conducted. Several panel unit root tests currently exist. The purpose of checking for unit roots is informed by the fact that the existence of unit roots often leads to spurious regression results and thus the estimates that would be obtained from regression analysis would be inefficient. The null hypothesis under this test is; “Ho: All panels contain unit roots” while the alternative hypothesis states that; “Ha: At least one panel is stationary”. The results in Table 3.6 indicates that the null hypothesis of the presence of the unit root in the series is rejected and thus being concluded that the series are stationary. This is indicated by the Inverse chi-squared, inverse normal, Inverse Logit and the Modified inverse chi-squared statistics for all the variables as indicated in the Table 3.13.and further reinforced by the p-values of each variable being found to be significant (for instance all the reported p-values are less than 5 percent level of significance).
Table 3.13: Panel Unit Root Tests using Augmented- Dickey-Fuller Test (ADF)

|                                | Cash | Mtb | Size  | Leverage | Cash flow | Interest Rates |
|--------------------------------|------|-----|-------|----------|-----------|----------------|
|                                | Stat | P   | Stat  | P        | Stat      | P              | Stat | P         |
| Inverse chi-squared(24)        | 129.3| 0.00| 302.8 | 0.00     | 174.8     | 0.00           | 136.5| 0.00      | 294.7 | 0.00| 267.7 | 0.00|
| Inverse normal                 | -6.6 | 0.00| -8.8  | 0.00     | -0.8      | 0.20           | -3.2 | 0.00      | -10.2 | 0.00| -11.1 | 0.00|
| Inverse logit t(64)            | -8.1 | 0.00| -12.5 | 0.00     | -3.2      | 0.00           | -3.4 | 0.00      | -12.4 | 0.00| -11.8 | 0.00|
| Modified inv. X² Pm            | 11.9 | 0.00| 18.8  | 0.00     | 8.3       | 0.00           | 5.1  | 0.00      | 18.1  | 0.00| 15.9  | 0.00|

Ho: All panels contain unit roots

Ha: At least one panel is stationary

3.8.1.5. Test for Fixed or Random effects

When using panel data analysis, one has to determine whether to run a fixed effects or Random effects model. The decision on the type of model to be run is based on the Hausman specification test. This test is mainly based on the consistency and efficiency of the random and fixed effects estimators depending on the correlation between the individual effects and the regressors. The Hausman specification test seeks to determine whether there is significant correlation between the unobserved firm specific random effects and the regressors. If no such correlation exists then the random effects model may be more powerful. In the presence of such a correlation, however, then random effects model would be inconsistently estimated and the fixed effects model would be more appropriate (Greene, 2008). Thus, if the Hausman test identifies the fixed effects model as appropriate, then the researcher would test for inclusion of the time fixed effects in the study estimation.

The study conducted a Hausman test where the null hypothesis indicates that the preferred model is random effects vs. the alternative the fixed effects. The Hausman test basically tested whether the unique errors (ui) are correlated with the regressors. Table 3.14 below illustrates the results of the Hausman test. A resultant p value of 0.782 for model implied that the null hypothesis could not be rejected and thus the appropriate model in this case would be a Random Effects model.
Table 3.14: Hausman Test Results

| Test period random effects | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|---------------------------|------------------|--------------|-------|
| Period random             | 3.8623           | 5            | 0.782 |

3.8.1.6. Test for Normality of residuals

Normality in data is a condition where the data is free from outliers or extreme variables. A normality test therefore checks whether the distribution of the data obeys the normality assumption. Regression analysis requires normal data since the standard errors and regression coefficients calculation require the use of a mean. The test for Normality of error terms were performed by use of the skewness and kurtosis test (SK test) also commonly referred to as the Jarque-Bera test for normality. The results presented in Table 3.15 indicates that the residuals are normally distributed except for Size which has slightly higher P values.

Table 3.15: Jarque-Bera Test for Normality

```
. sktest MTB SIZE LEV CF INT

| Variable | Obs | Pr(Skewness) | Pr(Kurtosis) | adj chi2(2) | joint Prob>chi2 |
|----------|-----|--------------|--------------|-------------|-----------------|
| MTB      | 527 | 0.0000       | 0.0000       | .           | 0.0000          |
| SIZE     | 527 | 0.7257       | 0.7303       | 0.24        | 0.8861          |
| LEV      | 527 | 0.0000       | 0.0000       | .           | 0.0000          |
| CF       | 525 | 0.0000       | 0.0000       | .           | 0.0000          |
| INT      | 527 | 0.2504       | 0.1045       | 3.96        | 0.1382          |
```
3.8.2. Test for moderation effect of interest rates on corporate cash holding

Moderation occurs when the effect of an independent variable on a dependent variable varies according to the level of a third variable, termed a moderator variable, which interacts with the independent variable (Baron & Kenny, 1986)

Run the multivariate regression with interaction of independent variables and the moderator (interest rate)

\[ y = \beta_0 + \beta_1 x_1 x_5 + \beta_2 x_2 x_5 + \beta_3 x_3 x_5 + \beta_4 x_4 x_5 + \epsilon \]  \hspace{1cm} (6)

Y = Corporate cash holding

X = All the independent variables

X6 = Interest rate

X*X5 = Interaction of all the independent variables and interest rate

3.8.3. Testing for differences in Cash holding among sectors

In order to examine whether there is any significant difference in the cash holding between sectors of non-financial firms listed on the NSE, the thesis employed panel regression of the dependent and the independent variable with industry sectors as dummy variables’. The industries were also tested for any mediation effect on the relationship between the independent and the independent variables.
Table 3.16: Summary of Data analysis Techniques

| Hypothesis | Dependent Variable | Independent Variable | Measurement | Test and acceptance criteria |
|------------|--------------------|----------------------|-------------|-----------------------------|
| 1          | Cash holding       | Market-To-Book ratio | Cash and cash equivalents / Net Assets | Panel Data regression Analysis. Reject HO if p value>0.05 |
| 2          | Cash holding       | Leverage             | (Total debt / Net assets). | Panel Data regression Analysis Reject HO if p value>0.05 |
| 3          | Cash holding       | Size                 | Natural logarithm of total assets of firm | Panel Data regression Analysis Reject HO if p value>0.05 |
| 4          | Cash holding       | Cash flow            | (After tax profit + Depreciation) /Net Assets. | Panel Data regression Analysis Reject HO if p value>0.05 |
| 5          | Cash holding       | Interest Rates       | Short-term interest rate, measured as 91 days Treasury bills | Panel Data regression Analysis Reject HO if p value>0.05 |
| 6          | Cash holding       | Industry             | Industry codes as per NSE classification | t-tests and panel graphs. Reject HO if p value>0.05 |

Source: Researcher (2015)
3.9. Chapter Summary

The chapter described the methodology that will be used in conducting the study. It was explained that the research conforms to the post positivist research paradigm as it involves the establishment of relationships between variables which though not conforming to pure science norms can be expressed in quantitative terms.

The research design was be correlational in nature and will focus on establishing the determinants of cash holding among nonfinancial firms listed on the Nairobi Securities Exchange. The research population comprise will constitute of 44 non-financial firms. All the firms will be studied in the survey. The study was done in two parts secondary data was collected from company annual reports and a self-administered questionnaire were developed as a primary data collection instruments and piloted tested before a refined one was administered to the respondents. Data was be summarized using descriptive statistics and analyzed using regression analysis and presented in form of tables and graphs.

Given that the study involves examination of multiple firms over an eleven year time period (has both cross sectional and time series components), the panel data model will be used for regression. Three different regression approaches will be used to make inferences. This is because when applying panel data regression diagnostic tests have to be carried out on the data to determine which model is best suited to depict the relationship between the variables. The three regression approaches pooled time series cross section regression analysis, Least squares dummy variable (LSDV) and within effect estimation methods and The feasible generalized least squares (FGLS) method for random effects.

The main statistical software programs (SPSS and STATA) were used to run the tests.
CHAPTER FOUR

4.0. FINDINGS

4.1. Introduction

This chapter presents the findings of the study and discussions of the results. The findings are presented in form of tables and narrations.

4.2. General Information

This section describes the basic characteristics of the sample used in the study.

4.2.1. Industry Information

4.2.1.1. Descriptive Statistics for All non-financial firms

The Table 4.1 below shows the descriptive statistics for all non-financial companies listed at the Nairobi Securities Exchange that were studied. The total number of observations on all non-financial firms across the period covered by the study was 529. The mean cash ratio of the full sample was 0.077 meaning that firms held about 7.7% of their net assets in the form of cash and cash equivalents. The minimum average cash holding was -2.447 percent highlighting the fact that some firms had financial difficulties leading to negative cash holding. The mean average market to book ratio was 1.256. This ratio above 100% implies that the market perception of the firms was positive by pacing a premium on the net asset values (NAV) of the firms in the sample. The variation in the MTB from a low of 26.1% to a high of about 800% indicate that the favorable perception was not universal across firms. The results further indicated that the mean of firm size (natural logarithm of total assets) for sampled firms was 8.679 with a standard deviation of 1.648. The mean value of leverage was 0.529 indicating that firms financed over fifty percent of their assets with debt while that of cash flows was 0.088 indicating that the average cash generated from operation for a typical nonfinancial firm was in a year was equivalent to about 10 percent of their net assets and that of interest rates was 0.079. As table 4.1 shows there were extremes where some firms had negative position over the period or were over leveraged up to almost 350 percent of the net assets where as some had negative cash flow from operations.
Table 4.1: Descriptive Statistics for All Quoted Companies

| Variables   | N   | Min   | Max   | Mean  | Std. Dev. |
|-------------|-----|-------|-------|-------|-----------|
| Cash        | 529 | -2.347| 0.752 | 0.077 | 0.188     |
| MTB         | 529 | 0.261 | 8.645 | 1.636 | 1.256     |
| SIZE        | 529 | 3.876 | 12.841| 8.679 | 1.648     |
| Leverage    | 529 | -0.738| 3.359 | 0.529 | 0.320     |
| CF          | 529 | -0.606| 0.550 | 0.090 | 0.138     |
| Interest rates | 529 | 0.016 | 0.148 | 0.079 | 0.027     |

The descriptive statistics broken down by industry are explained in the following sections;

4.2.1.2. Descriptive Statistics for the Agricultural Sector

The Table 4.2 below shows the descriptive statistics of the agricultural sector companies listed at the Nairobi Securities exchange. The number of observations under this case was 79 and the mean cash ratio of the agricultural firms for the period 2003-2017 was 0.083 with a standard deviation of 0.109 and the maximum and minimum values being 0.402 and -0.143 respectively. Comparatively this indicates that agricultural sector firms held higher cash balances than the average firm during the study period. The mean market-to-book ratio was 1.412 with a standard deviation of 1.590 and the maximum and minimum values being 8.588 and 0.388 respectively. The results further indicated that the mean of firm size (natural logarithm of total assets) for the sector was 7.465 with a standard deviation of 1.514. The maximum firm size for this sector was 9.683 while the minimum was 3.876. The mean value of leverage was 0.346 meaning firms in this sector had lower gearing than the standard firm in the study while that of cash flows was 0.062 with standard deviations of 0.17 and 0.067 respectively. Finally the mean value of interest rates was 0.078.
Table 4.2: Descriptive Statistics for the Agricultural Sector

| Sector     | Variable | N  | Min   | Max   | Mean  | Std. Dev |
|------------|----------|----|-------|-------|-------|----------|
| Agricultural | Cash     | 79 | -0.143| 0.402 | 0.083 | 0.109    |
|            | MTB      | 79 | 0.388 | 8.588 | 1.412 | 1.590    |
|            | SIZE     | 79 | 3.876 | 9.683 | 7.465 | 1.514    |
|            | Leverage | 79 | 0.099 | 1.228 | 0.346 | 0.170    |
|            | CF       | 79 | -0.056| 0.261 | 0.062 | 0.067    |
|            | Interest rates | 79 | 0.019 | 0.146 | 0.078 | 0.027    |

4.2.1.3. Descriptive Statistics for the Automobile Sector

The Table 4.3 below shows the descriptive statistics of the Automobile Sector companies listed at the Nairobi Securities Exchange. The number of observations under this case was 32 and the mean cash ratio of the Automobile Sector was 0.015 with a standard deviation of 0.067. This means most firms in this sector were illiquid and run on bank overdraft most of the time. The mean market-to-book ratio was 1.181 with a standard deviation of 0.626. This shows that despite the apparent illiquid position of some of the average firm in the automobile sector, investors have a positive outlook on the industry as indicated by a positive MTB of over 100%. Perhaps they perceive the illiquidity as a temporary condition rather than as a sigh of long-term insolvency. The results further indicated that the mean of firm size (natural logarithm of total assets) for the sector was 8.043 with a standard deviation of 0.714. The mean value of leverage was 0.552, the leverage is within that of the average firm in the total sample while that of cash flows was 0.013 with standard deviations of 0.462 and 0.073 respectively. This average cash flow from operations is comparatively lower than that of the standard firm and could explain why the average cash balances are comparatively low for this sector. The mean value of interest rates was 0.080 with a max rate of 0.146 and minimum rate of 0.016. The standard deviation was 0.027.
Table 4.3: Descriptive Statistics for the Automobile Sector

| Sector  | Variable     | N  | Min  | Max  | Mean | Std. Dev. |
|---------|--------------|----|------|------|------|-----------|
|         | Cash         | 32 | -0.134 | 0.156 | 0.015 | 0.067     |
|         | MTB          | 32 | 0.664 | 2.773 | 1.181 | 0.626     |
|         | SIZE         | 32 | 6.330 | 9.180 | 8.043 | 0.714     |
|         | Leverage     | 32 | 0.128 | 2.543 | 0.552 | 0.462     |
|         | CF           | 32 | -0.187 | 0.196 | 0.013 | 0.073     |
|         | Interest rates | 32 | 0.019 | 0.146 | 0.077 | 0.027     |

4.2.1.4. Descriptive Statistics for the Commercial Sector

The Table 4.4 below shows the descriptive statistics of the Commercial Sector companies listed at the Nairobi Securities Exchange. The number of observations under this case was 112 and the mean cash ratio of the Commercial Sector was 0.086 with a standard deviation of 0.190. The mean market-to-book ratio was 1.972 with a standard deviation of 1.200. The high MTB indicates that the commercial sector was viewed very favorably by the market. The results further indicated that the mean of firm size (natural logarithm of total assets) for the sector was 8.527 with a standard deviation of 1.514. The mean value of leverage was 0.666 which is the highest leverage level among the studied sectors. This could indicate that because of the favorable market perception as indicated by the MTB above, the firms in this sector exploited the positive sentiments to seek financing from the capital and money markets. The mean cash flow was 0.085 with standard deviation of 0.158 respectively (This was in line with the average firm in the study). Finally the mean value of interest rates was 0.080 and its standard deviation being 0.027.
Table 4.4: Descriptive Statistics for the Commercial Sector

| Sector    | Variable     | N  | Min    | Max    | Mean  | Std. Dev. |
|-----------|--------------|----|--------|--------|-------|-----------|
| Commercial| Cash         | 112| -0.265 | 0.590  | 0.086 | 0.190     |
|           | MTB          | 112| 0.611  | 6.618  | 1.972 | 1.200     |
|           | SIZE         | 112| 5.808  | 12.112 | 8.527 | 1.514     |
|           | Leverage     | 112| 0.155  | 1.765  | 0.666 | 0.315     |
|           | CF           | 111| -0.606 | 0.488  | 0.085 | 0.158     |
|           | Interest rates| 112| 0.016  | 0.146  | 0.080 | 0.027     |

4.2.1.5. Descriptive Statistics for the Construction

The construction industry descriptive statistics are summarized in Table 4.5. There were 80 observations in this sector. The results show that the mean cash ratio of the construction firms for the period 2003-2017 was 0.062 which is lower than the sample average. However there was significant variability in the cash ratios as can be inferred from the minimum and maximum observations of -0.094 and 0.422 respectively. The mean market to book ratio was 1.593 indicating a premium placed on the firms in this sector by the market. The results further indicated that the mean of firm size (natural logarithm of total assets) for the sector was 8.897. Firms in the construction sector were also relatively highly geared with a mean leverage was 0.585 which is higher than for the average nonfinancial firm in the study. The mean cash generated from operation by firms in this sector was 0.085 which was in line with the average for the study sample and lastly the mean value of interest rates was 0.074.
Table 4.5: Descriptive Statistics for the Construction

| Sector       | Variable | N  | Min  | Max  | Mean | Std. Dev. |
|--------------|----------|----|------|------|------|-----------|
| Construction | Cash     | 80 | -0.094 | 0.422 | 0.062 | 0.110     |
|              | MTB      | 80 | 0.517 | 4.827 | 1.593 | 0.831     |
|              | SIZE     | 80 | 5.801 | 10.858 | 8.897 | 1.280     |
|              | Leverage | 80 | 0.227 | 1.418 | 0.585 | 0.233     |
|              | CF       | 80 | -0.118 | 0.349 | 0.085 | 0.098     |
|              | Interest rates | 80 | 0.016 | 0.146 | 0.074 | 0.026     |

4.2.1.6. Descriptive Statistics for the Energy and Petroleum

The Table 4.6 below shows the descriptive statistics of the Energy and Petroleum Sector companies listed at the Nairobi Securities Exchange. The number of observations under this case was 60 and the mean cash ratio of the Energy and Petroleum sector was 0.066 this was lower than the sample average of 0.077. The market to book ratio was 1.119 which again indicate favorable market outlook of firms in the sector. The results further indicated that the mean of firm size (natural logarithm of total assets) for the sector was 10.695 with a standard deviation of 1.192. Firms in the energy and petroleum sector were significantly larger when compared to the average firm in the sample that had a natural log of 8.679. The mean value of leverage was 0.635 showing a higher dependency on debt of firms in this sector to finance their operations as compared to the average firm in the sample studied. The mean cash flow from operations for firms in this sector was 0.069 which is lower than the overall sample average of 8.8 percent and this could explain why firms in this sector have a high gearing as compared to the overall sample mean. The average interest rate was 0.079.
Table 4.6: Descriptive Statistics for the Energy and Petroleum Sector

| Variable | N  | Min  | Max   | Mean | Std. Dev. |
|----------|----|------|-------|------|-----------|
| Cash     | 60 | -0.222 | 0.434 | 0.066 | 0.128     |
| MTB      | 60 | 0.641  | 8.645 | 1.119 | 1.036     |
| SIZE     | 60 | 7.973  | 12.841| 10.695| 1.192     |
| Leverage | 60 | 0.376  | 1.500 | 0.635 | 0.178     |
| CF       | 60 | -0.322 | 0.333 | 0.069 | 0.117     |
| Interest rates | 60 | 0.016  | 0.146 | 0.079 | 0.030     |

4.2.1.7. Descriptive Statistics for the Investment Sector

The Investment industry descriptive statistics are contained in Table 4.7. The observations under this sector were 43. The mean cash ratio of the Investment firms for the period 2003-2017 was 0.037. This is a very low cash level however since firms in this sector generally hold investments in other companies and are accounted for using the equity method. The cash needs of the investment firms may not be high as compared to its net assets as it does not directly expend a lot of cash on supporting the day to day operations of the investee firm. The average market to book ratio was 1.010 indicating the market did not perceive the firm quite favorably compared to other sectors studied here. The results further indicated that the mean of firm size (natural logarithm of total assets) for the sector was 8.239. This indicates the average firm in the investment sector was slightly smaller than the average firm in the overall sample. The mean value of leverage was 0.439 which is higher than that of the average firm but definitely not the highest. The mean cash flow from operations was 0.032 indicating lower than market cash generation ability by firms in this sector when compared with other sectors. Finally the mean value of interest rates was 0.083.
Table 4.7: Descriptive Statistics for the Investment

| Sector | Variable     | N  | Min | Max  | Mean | Std. Dev. |
|--------|--------------|----|-----|------|------|-----------|
|        | Cash         | 43 | -0.174 | 0.184 | 0.037 | 0.077     |
|        | MTB          | 43 | 0.261  | 3.634 | 1.010 | 0.571     |
|        | SIZE         | 43 | 5.420  | 11.389 | 8.239 | 1.583     |
|        | Leverage     | 43 | 0.008  | 3.359 | 0.439 | 0.527     |
|        | CF           | 43 | -0.116 | 0.254 | 0.032 | 0.076     |
|        | Interest rates | 43 | 0.023  | 0.129 | 0.083 | 0.026     |

4.2.1.8. Descriptive Statistics for the Manufacturing Sector

Table 4.8 shows the descriptive statistics of the Manufacturing Sector companies listed at the Nairobi Securities Exchange. The number of observations under this case was 112 and the mean cash ratio of the Manufacturing sector was 0.119 which was the highest among the sectors indicating manufacturing sector firms held on average two times the cash holding of the average firm in the overall sample. The mean market to book ratio was 2.014 showing favorable market standing of firms in this sector consistent with the high cash holding and cash flow from operations discussed below. The results further indicated that the mean of firm size (natural logarithm of total assets) for the sector was 8.574 with a standard deviation of 1.303 which is within the overall sample average. The mean value of leverage was 0.461 meaning firms in this sector relied on debt financing to fund over forty percent of their assets. This is lower than the average firm in the sample studied that relied of debt financing of about fifty three percent of their net assets. The manufacturing companies also generated the highest cash flow from normal operations over the study period with a mean cash flow of 0.143 that was more than one and half ties that of the average firm of 0.088. The average applicable interest rate was 0.079.
Table 4.8: Descriptive Statistics for the Manufacturing

| Sector     | Variable  | N  | Min       | Max      | Mean   | Std. Dev. |
|------------|-----------|----|-----------|----------|--------|-----------|
| Manufacturing | Cash      | 112| -2.347    | 0.752    | 0.119  | 0.313     |
|            | MTB       | 112| 0.475     | 5.529    | 2.014  | 1.400     |
|            | SIZE      | 112| 6.396     | 11.112   | 8.574  | 1.303     |
|            | Leverage  | 112| -0.738    | 1.569    | 0.461  | 0.293     |
|            | CF        | 112| -0.481    | 0.550    | 0.143  | 0.153     |
|            | Interest rates | 112| 0.016    | 0.148    | 0.079  | 0.028     |

4.2.1.9. Descriptive Statistics for the Telecommunication Sector

The telecommunication industry descriptive statistics are shown in Table 4.9. There were 9 observations in this sector. This is because the sector had only one listed firm which was listed for part of the study period. The mean cash ratio of the telecommunication firm for the period 2003-2017 was 0.027. This was lower than the average firm in the sample which held 0.077 in cash. The mean market to book ratio was 3.307 indicting that the market placed a premium on firms in this sector. The results further indicated that the mean of firm size (natural logarithm of total assets) for the sector was 11.760 which is larger than the average firm. The mean value of leverage was 0.373 which was comparable to that of the average firm in the study. The average net cash flows generated from operations by firms in this sector was 0.346 with a standard deviation of 0.109. This was more than two and half times the average cash flow of the overall sample and indicates a very high cash generation capacity by firms in this sector. And could explain why the market placed the highest premium on the firm in this sector. The mean value of interest rates was 0.087.
Table 4.9: Descriptive Statistics for the Telecommunication Sector

| Sector       | Variable  | N | Min     | Max     | Mean    | Std. Dev. |
|--------------|-----------|---|---------|---------|---------|-----------|
| Telecommunication | Cash     | 9 | -0.191  | 0.151   | 0.027   | 0.120     |
|               | MTB       | 9 | 1.442   | 4.796   | 3.307   | 1.413     |
|               | SIZE      | 9 | 11.422  | 11.993  | 11.760  | 0.200     |
|               | Leverage  | 9 | 0.277   | 0.460   | 0.373   | 0.059     |
|               | CF        | 9 | 0.195   | 0.511   | 0.346   | 0.109     |
|               | Interest rates | 9 | 0.027   | 0.129   | 0.087   | 0.029     |

4.2.2. Company Information

This section presents results of the demographic profiles of the respondents, in particular, it presents the results of the sectors in which the firms operates in, number of employees within the firms surveyed, firm size as well as the positions held by the respondents.

4.2.2.1. Sectors of Operations

4.2.2.2. Number of Employees

The Figure 4.1 below shows the number of employees for the surveyed firms. It was established as indicated in the figure below that over 65 percent of the companies had employees over 500 while those with employees between 100 and 500 were 35 percent. No firm had less than 100 employees.
Figure 4.1: Number of Employees

4.2.2.3. Turnover

The results in the Figure 4.2 below shows the firm size and it can be established that 14 (33 percent) of the firms had average turnover of 1-5 billion while 19 percent had average turnover of below a billion. Seven firms had turnover of between 5-10 billion. Four firms had turnover of between 10 and 20 billion. The survey also indicated that 2 and 3 firms had average turnover of between 20-30 billion and 30-50 billion respectively. Only 4 firms had average turnover of above 50 billion over the research horizon.

Figure 4.2: Size of the Firm( Average turnover)
4.2.2.4. Cash holding

Figure 4.3 shows the Cash Ratio trend for the non-financial companies from the year 2002 to 2017. The trend line indicates that cash ratio trend has been on the decline as indicated by a negative slope of the linear (cash ratio) trend line fitted for the cash ratio values over the period. However we observe a cyclical increase in cash holding for non-financial firms that sort of peaks around the periods 2002, 2007, 2012 and 2017. These were election years and it could be that firms shower up their cash balances due to uncertainty related to the electioneering period. The overall decline is puzzling as it seems not consistent with trends in cash holding in other markets where previous studies have indicated a general increase in cash holding. However as explained below in absolute terms there was an increase.

![Figure 4.3: Cash Ratio Movements (2002-2017)](image)

y = 0.0012x - 2.2926

The average cash holding is highest in 2005 at 7.9 percent and lowest in 2010 at 2.09 percent of average net assets. The sharp decline in the 2010 can be attributed to the effects of the 2007/8 post-election violence in the country in that lead to an economic growth rate slowdown in the following two years with the GDP falling. Whereas the rise of average cash holding over the study period from an average of 6.8 percent in 2002 to 7.8 percent in 2013 doesn’t appear dramatic, the 14.7 percent growth represents gradual growth in cash holding over time and this compares with growth reported in other studies. Saddour(2007) observe
that the mean cash ratio for French firms over their study period and describe it as stable between 1998 and 1999; it represents about 16 percent of the net assets. It declines from 15 percent in 2000 to about 13 percent in 2002. Bates et al (2009) report cash ratio increases from 10.5 percent in 1980 to 23.2 percent in 2006, peaking in 2004 for their US sample firms. Garcia-Teruel and Martinez-Solano (2008) the cash holdings over assets changed from 6.7 percent to 7.1 percent (an increase of only 5.97 percent over the same period) between 1996 to 2001 for their sample of Spanish SME’s. Song and Lee (2012) find that East Asian firms almost double their median cash holdings over the 10-year period after the Asian financial crisis by increasing from 6.7 percent in 1996 to 12.1 percent in 2006.

4.2.2.5. Market to book ratio

Figure 4.4 shows the Market-to-book ratio (MTB) trend for the non-financial companies from the year 2002 to 2013. The trend line indicates that Market to book ratio has been on the decline as indicated by a negative slope coefficient for the trend line over the period (β=-0.0288). The increase between 2002 to 2007 mainly consider with the first term of the National Rainbow Coalition (NARC) government under former president Mwai Kibaki over which there was a general pick in economic activity that peaked in 2007 with a GDP of 7.1 percent during this period there was improvement in performance of the stock exchange with seven new initial public listing done. The post 2007 period show a sharp decline of the stock market that characterized the post 2007 election violence which was further amplified by the global financial crisis that resulted in worldwide investor apathy. The most important finding however is that investors had a favorable view of the non-financial firms across the period with the Market to book ratio averaging over 1 throughout the period.
4.2.2.6. Firm size

The study further looked at the size of non-financial firms over the study period and Figure 4.5 shows the trend from the year 2002 to 2017. The trend line indicates that firm size has been on an increase as indicated by a positive slope of the linear (firm size) trend line fitted for the firm size values over the period. This indicates that the size of non-financial firms listed on the NSE has been increasing over time. This may be consistent with the economic growth during the period as the economy has consistently returned positive GDP growth since 2002.
4.2.2.7. Leverage

Figure 4.6 shows the leverage trend for the non-financial companies from the year 2002 to 2017. The trend line indicates that leverage trend has been on a slight decline as indicated by a negative slope of the linear (leverage) trend line fitted for the leverage values over the period. The trend line indicates that most of the non-financial companies have been reducing their debt levels over the period. With the negative mediating effect of interest rates it is possible that the increase in interest rates over the period has reduced firm’s ability to increase debt levels. Increase in interest rates in the period 2003-2007 could indicate firm’s reliance on debt to finance expansion in the face of improved economic conditions after the change in government in 2003.
4.2.2.8. Cash Flow

Figure 4.7 shows below the cash flows trend for the non-financial companies from the year 2002 to 2017. The trend line indicates that cash flows generated from operations have increased over the period as indicated by a positive slope of the linear (cash flows) trend line fitted for the cash flows values over the period. The results show that Non-financial companies listed on the NSE have been gradual generating more cash flows from their operations over the period which is consistent with the other trends we have observed such as reduction in leverage and increase in size.
4.2.2.9. Interest Rates

Figure 4.8 shows below the interest rates prevailing between 2002-2017. The trend line indicates that there has been a general increase in interest rates over the period. The highest interest rate of 14.6% is reported in 2012 which is characteristic of the tight monetary stance adopted by the Central Bank of Kenya to stem both inflation and currency depreciation that had been witnessed towards the end of 2011 and early 2012. The lowest interest rate is reported in 2014 this is during the early years of the new government where due to fiscal disciplinary measures adopted interest rates reduced to record low levels. This period was followed by a period of relatively stable interest rates from 2005 to 2010.

\[ y = -0.001x + 0.0796 \]
4.2.3. Respondents in the primary study

4.2.3.1. Response rate

Primary data was collected between April and June 2015 using a questionnaire while a data collection tool in table format was used to collect secondary data. 168 questionnaires were sent to 38 companies sampled for study. The response rate obtained was 56% as 119 questionnaires were filled and returned. The response rate is considered adequate given the recommendations by Mugenda and Mugenda (2003) who suggested that a response rate exceeding 50% is adequate while also Hager, Wilson, Pollack and Rooney (2003) recommend 50%. Based on these assertions, this implies that the response rate for this study was adequate.

4.2.3.2. Position Held

The figure 4.9 further shows the position held in the company by the respondent’s interviewed. As indicated majority of the respondents, accounting for 57 percent were either finance managers/chief accountants/financial controller. Further, the results indicated that 22 percent of those interviewed were general manager or the chief finance officer and further 21 percent of them were managing directors.
4.2.3.3. Sectors of Operation

The Figure 4.10 indicates the sectors from which the study was conducted. The results indicate that among all the surveyed firms 24 percent were within the commercial sector, 18 percent in the automobile sector, 14 percent were in the energy and petroleum sector, 13 percent were in the construction sector 8 percent were in the agricultural sector, telecommunication industry and the investment sectors while another 7 percent of these firms were within the manufacturing sector as indicated in the Figure 4.10.
4.3. Effect of Market to Book Ratio (Value of the Firm) On Firm Cash Holding

The first objective of the study was to establish whether the Market to Book ratio (value of the firm) affect cash holding. The objective was assessed by use of secondary data obtained from the NSE over the year 2002 to 2013 for the non-financial firms as well as primary data. The analysis to establish whether the Market-to-Book ratio (value of the firm) affect cash holding of non-financial firms listed on the NSE Kenya was guided by the hypothesis that the Market to book ratio (MTB) is positively related to cash holdings.

4.3.1. Panel Regression Analysis on Effect of Market-to-Book Ratio on Cash Holdings

To establish the effect of market-to-book ratio on the cash holdings of a firm panel regression model was estimated, in particular the random effects and the pooled OLS regressions were adopted. The three models were run so as to allow for comparison between the models. The results in the Table 4.10 indicates that the market to book ratio is positively related to cash holdings of the firm as estimated under OLS with a coefficient of 0.0241576 and Random effects model with a coefficient of 0.0134991. Although the relationship was significant under the OLS model the same was not the case under the random effects model and thus the hypothesis that market to book ratio is positively related to corporate cash holding of non-financial firms listed on NSE is rejected.

Table 4.10: Regression Analysis on Effect of Market-to-Book Ratio on Cash Holdings

|                      | OLS Regression Model | Random Effects Regression Model |
|----------------------|----------------------|---------------------------------|
| Market-to-Book Ratio | 0.0241576***         | 0.0134991                       |
|                      | (0.000)              | (0.067)                         |
| Constant             | 0.03754              | 0.0542793                       |
|                      | (0.005)              | (0.014)                         |
| Number of Observations | 527                  | 527                             |
| Coefficient of Determination ($R^2$) | 0.026                |                                 |

$t$ statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
4.3.2. Industry Effect of MTB on Cash holding

The relationship between the MTB and Corporate cash holdings for non-financial firms is negative when broken down by industry under both the OLS and well as RE regression models. Whereas none of the relationship is significant under the RE model.

Table 4.11 below indicate significant negative relationships between cash holding and MTB for the Automobile, Commercial, Energy and telecommunication sector at 99.9% confidence level, and Construction and Investment sectors at 99% confidence level where as the relationship is significant at 95% confidence level in the case of Manufacturing sector all under the OLS model.

**Table 4.11: Regression Analysis on Effect of Market-to-Book Ratio on Cash Holdings by Industry.**

| Industry                        | OLS Regression Model | t-stat  | Random Effects Regression Model | t-stat  |
|---------------------------------|----------------------|---------|----------------------------------|---------|
| Agricultural                    | 0.022**              | 0.006855| .0125867                         | 0.007562|
| Automobile                      | -0.063               | 0.038954| -.0640518                        | 0.100617|
| Construction                    | -0.010               | 0.027559| .0029569                         | 0.06901 |
| Commercial                      | -0.025               | 0.029488| -.0220725                        | 0.076064|
| Energy and petroleum            | -0.010               | 0.031872| -.0136038                        | 0.08089 |
| Investment                      | -0.037               | 0.035309| -.0364213                        | 0.082819|
| Manufacturing                   | 0.023                | 0.0276  | .022762                          | 0.06912 |
| Telecommunication               | -0.098               | 0.066625| -.078801                         | 0.136669|
| _cons                           | 0.051**              | 0.023032| .0640524                         | 0.054894|

*Number of Observations* | 527

*Coefficient of Determination (R²)* | 0.0438

* p < 0.05, ** p < 0.01, *** p < 0.001
4.3.3. Results of Factor Analysis

Factor analysis was conducted after successful sampling using KMO coefficient. Factor analysis was conducted using Principal Components Method (PCM) approach. The extraction of the factors followed the Kaiser Criterion where an Eigen value of 1 or more indicates a unique factor. Total Variance analysis indicates that the 6 statements on the influence of market-to-book ratio on cash holdings be factored into 1 factor. The total variance explained by the extracted factor is 60.355 percent as shown in Table 4.12.

Table 4.12: Market to Book Ratio Constructs Total Variance Explained

| Component | Initial Eigenvalues | Extraction Sums of Squared Loadings |
|-----------|---------------------|-------------------------------------|
|           | Total               | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1         | 3.621               | 60.355        | 60.355       | 3.621 | 60.355        | 60.355       |
| 2         | 1.082               | 18.04         | 78.395       |
| 3         | 0.483               | 8.045         | 86.44        |
| 4         | 0.375               | 6.255         | 92.695       |
| 5         | 0.339               | 5.646         | 98.341       |
| 6         | 0.1                 | 1.659         | 100          |

Extraction Method: Principal Component Analysis.

Table 4.13 shows the factor loadings for sub-constructs of market-to-book ratio. All the statements attracted coefficients of more than 0.4 hence all the statements were retained for analysis. According to Rahn (2010) and Zandi (2006) a factor loading equal to or greater than 0.4 is considered adequate. This is further supported by Black (2002) who asserts that a factor loading of 0.4 has good factor stability and deemed to lead to desirable and acceptable solutions.
Table 4.13: Factor Loading for Market to Book Ratio Constructs

| Component                                                                 | Component |
|---------------------------------------------------------------------------|-----------|
| Firms strive to hold optimal levels of cash that trade off the opportunity | 0.823     |
| costs of holding too much cash against the trading costs of holding too   |           |
| little                                                                    |           |
| Firms with greater uncertainty in their future cash flows tend to hold    | 0.767     |
| more cash to prevent underinvestment in future profitable projects        |           |
| Firms with abundant investment opportunities hold higher levels of cash   | 0.421     |
| to insulate future capital expenditures from the variability of internally |           |
| generated cash flows                                                     |           |
| I prefer larger cash balances to provide me with more discretion in my   | 0.901     |
| firm's spending and capital expenditure decisions                         |           |
| Firms with abundant investment opportunities hold excess cash in order    | 0.883     |
| to maintain their competitive positions                                   |           |
| We hold high cash balances because to support our share price             | 0.766     |

4.3.4. Results from primary study

This section tested the knowledge of the respondents on Market to Book Ratio Constructs. Table 4.14 shows that 21 percent agreed that the firms strive to hold optimal levels of cash that trade off the opportunity costs of holding too much cash against the trading costs of holding too little, 34.50 percent agreed that the firms with greater uncertainty in their future cash flows tend to hold more cash to prevent underinvestment in future profitable projects and 60.5 percent agreed that firms with abundant investment opportunities hold higher levels of cash to insulate future capital expenditures from the variability of internally generated cash flows. 19.3 percent agreed that firm prefer larger cash balances to provide them with more discretion in my firm's spending and capital expenditure decisions and a very low 9.3 percent agreed that firms with abundant investment opportunities hold excess cash in order to
maintain their competitive positions. This finding is consistent with Baker and Powel (2010) who also reported results contrary to arguments by Baskin (1987), Froot (1993), and Chen et al. (2009) that firms hold excess cash for competitive reasons.

It was also established that 14.30 percent agreed that they held high cash balances because to support our share price. The mean score for the responses was 2.20 which indicate that many respondents disagreed to the statements regarding Market to Book Ratio Constructs. The findings do not support the tradeoff theory of cash holding.

**Table 4.14: Descriptive Statistics of Effect of Market to Book Ratio Constructs**

| Statement                                                                 | Strongly Disagree | Disagree | Agree | Strongly Agree | Mean | Std. Dev |
|---------------------------------------------------------------------------|-------------------|----------|-------|----------------|------|----------|
| Firms strive to hold optimal levels of cash that trade off the opportunity costs of holding too much cash against the trading costs of holding too little. | 46.20%            | 32.80%   | 9.20% | 11.80%         | 1.87 | 1.01     |
| Firms with greater uncertainty in their future cash flows tend to hold more cash to prevent underinvestment in future profitable projects. | 5.00%             | 60.50%   | 20.20%| 14.30%         | 2.44 | 0.80     |
| Firms with abundant investment opportunities hold higher levels of cash to insulate future capital expenditures from the variability of internally generated cash flows. I prefer larger cash balances to provide me with more discretion in my firm’s spending and capital expenditure decisions. | 5.90%             | 33.60%   | 51.30%| 9.20%          | 2.64 | 0.73     |
| Firms with abundant investment opportunities hold excess cash in order to maintain their competitive positions. We hold high cash balances because to support our share price. | 18.50%            | 62.20%   | 10.90%| 8.40%          | 2.09 | 0.79     |
| Total                                                                     | 16.52%            | 57.00%   | 16.67%| 9.82%          | 2.20 | 0.78     |
4.3.5. Overall Results of the Hypothesis test of effect of MTB on Cash holdings

It was hypothesized that MTB is positively related to cash holding. Our findings above from both the secondary study where we got an insignificant relationship and in the primary study where 70 percent of the respondents disagreed with the construct that MTB and cash holding are positively related, we therefore reject the null hypothesis that MTB for non-financial firms listed on the NSE is positively related their Cash holding are positively related.

4.4. Effect of Firm Size on Cash Holdings

The second objective of the study was to determine whether there is a relationship between cash holding and the size of non-financial firms listed on the NSE and it was further hypothesized that firm Size is negatively related to cash holdings.

4.4.1. Panel Regression Analysis on Effect of Firm Size on Cash Holdings

To establish the effect of Firm Size on Cash Holdings of a firm panel regression model was estimated, in particular the fixed effects, random effects and the pooled regressions were adopted. The results in Table 4.15 reveal that firm size was positively related to the cash holdings for the firm as indicated by the three regression models (OLS, fixed effects and random effects models). However, the positive relationship was established to be insignificant. R Squared of less than 1 % indicates that cash holding of firms listed of NSE is not significantly related to their relative sizes.

Table 4.15: Regression Analysis on Effect of Firm Size on Cash Holdings

|                  | OLS Regression Model | Random Effects Regression Model |
|------------------|----------------------|---------------------------------|
| Firm Size        | 0.0044415            | 0.001322                        |
|                  | (0.373)              | (0.868)                         |
| Constant         | 0.0385673            | 0.0651047                       |
|                  | (0.383)              | (0.364)                         |
| Number of Observations | 527                  | 527                             |
| Coefficient of Determination ($R^2$) | 0.0015               |                                 |

$t$ statistics in parentheses

*p* < 0.05, **p** < 0.01, ***p** < 0.001
The null hypothesis is thus rejected. The findings therefore indicate that the Cash holding for Kenyan Non-financial firms does not reduce as they grow in size as was hypothesized.

4.4.2. Industry Effect of Firm Size on Cash Holdings

Table 4.16: Regression Analysis on Effect of Firm Size on Cash Holdings

|                          | OLS Regression Model | t-stat | Random Effects Regression Model | t-stat |
|--------------------------|----------------------|--------|---------------------------------|--------|
| Agricultural             | 0.009                | 1.47   | 0.003                           | 0.3    |
| Automobile               | -0.073               | -1.85  | -0.069                          | -0.67  |
| Construction             | -0.006               | -0.23  | 0.007                           | 0.1    |
| Commercial               | -0.033               | -1.08  | -0.024                          | -0.31  |
| Energy and petroleum     | -0.046               | -1.21  | -0.027                          | -0.31  |
| Investment               | -0.053               | -1.47  | -0.044                          | -0.51  |
| Manufacturing            | 0.026                | 0.93   | 0.026                           | 0.37   |
| Telecommunication        | -0.094               | -1.33  | -0.067                          | -0.46  |
| _cons                    | 0.016                | 0.32   | 0.062                           | 0.71   |
| Number of Observations   | 527                  | 527    |                                 |        |
| Coefficient of Determination ($R^2$) | 0.0281               |        |                                 |        |

$t$ statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4.16 depicts the relationship between cash holding and the company size of nonfinancial firms listed on the NSE broken down by industry. Using the RE model as our benchmark, the finding indicate that Firm size is negatively related to Cash holdings of the firms in the Automobile, Commercial construction, Energy, Investments and telecommunications sector and positively related to the Agricultural and Manufacturing sectors. The relationship as explained above is however not significant for any sector.

4.4.3. Results of Factor Analysis

Factor analysis was conducted after successful sampling using KMO coefficient. Factor analysis was conducted using Principal Components Method (PCM) approach. The extraction of the factors followed the Kaiser Criterion where an Eigen value of 1 or more indicates a unique factor. Total Variance analysis indicates that the 3 statements on the
influence of firm size on cash holdings are factored into 1 factor. The total variance explained by the extracted factor is 56.629 percent as shown in Table 4.17.

**Table 4.17: Firm Size Constructs Total Variance Explained**

| Component | Initial Eigenvalues | Extraction Sums of Squared Loadings |
|-----------|---------------------|-------------------------------------|
|           | Total % of Variance | Cumulative % | Total % of Variance | Cumulative % |
| 1         | 1.699               | 56.629      | 56.629               | 1.699        | 56.629       | 56.629     |
| 2         | 0.833               | 27.771      | 84.4                 |              |              |            |
| 3         | 0.468               | 15.6        | 100                  |              |              |            |

Table 4.18 shows the factor loadings for sub-constructs of firm size. All the statements attracted coefficients of more than 0.4 hence all the statements were retained for analysis. According to Rahn (2010) and Zandi (2006) a factor loading equal to or greater than 0.4 is considered adequate. This is further supported by Black (2002) who asserts that a factor loading of 0.4 has good factor stability and deemed to lead to desirable and acceptable solutions.

**Table 4.18: Factor Loading for Firm Size Constructs**

|                           | Component   |
|---------------------------|-------------|
| I hold less cash because my firm is large | 0.804       |
| Large firms have leverage with lenders and investors and are therefore able to hold less cash | 0.584       |
| We held more cash when our company was small | 0.843       |

Extraction Method: Principal Component Analysis.
4.4.4. Results from Primary study

This section tested the knowledge of the respondents on Firm Size Constructs. Table 4.19 shows that 21 percent agreed that the they held less cash because my firm is large, 67.30 percent agreed that the Large firms have leverage with lenders and investors and are therefore able to hold less cash and 15.90 percent agreed that they held more cash when their company was small. The mean score for the responses was 2.10 which indicate that many respondents disagreed to the statements regarding firm size constructs.

Table 4.19: Descriptive Statistics of Effect of Firm Size Constructs

| Statement                                              | Strongly Disagree | Disagree | Agree | Strongly Agree | Mean | Std. Dev |
|--------------------------------------------------------|-------------------|----------|-------|----------------|------|----------|
| I hold less cash because my firm is large              | 46.20%            | 32.80%   | 9.20% | 11.80%         | 1.87 | 1.01     |
| Large firms have leverage with lenders and investors and are therefore able to hold less cash | 5.00%             | 27.70%   | 55.50%| 11.80%         | 2.74 | 0.73     |
| We held more cash when our company was small           | 53.80%            | 30.30%   | 9.20% | 6.70%          | 1.69 | 0.90     |
| Total                                                  | 35.00%            | 30.27%   | 24.63%| 10.10%         | 2.10 | 0.88     |

4.4.5. Overall Results of Hypothesis Test on the Effect of Firm Size on Cash holding

It was hypothesized in chapter one that firm size is inversely related to cash holding of nonfinancial firms listed on the NSE. The results of the regression analysis of the secondary data indicate a positive coefficient that is insignificant at 1% and 5% significance level and a low coefficient of determination of 0.1%. This is collaborated by the results of the primary study where 65 percent of the respondents disagreed with the firm size and cash holding constructs. The null hypothesis that firm’s size and cash holding of firms listed on the NSE are negatively related is rejected.
4.5. Effect of Leverage on Cash Holdings

The third objective of the study was to investigate the relationship between the cash holdings and leverage for non-financial firms listed on the NSE and it was thus hypothesized that leverage is negatively related to cash holdings.

4.5.1. Panel Regression Analysis on Effect of Leverage on Cash Holdings

To establish the effect of leverage on Cash Holdings of a firm panel regression model was estimated, in particular the random effects and the pooled regressions were adopted. The results in Table 4.20 indicate that leverage is positively related to the cash holdings of the firm under the benchmark random effects regression. Concurrently, the result indicates that the positive relationship between leverage and cash holdings is significant at 99.9% level of confidence level. As a result the null hypothesis of a negative relationship between the two variables is thus affirmed we therefore fail to reject the null hypothesis that cash holding and leverage are negatively related. The coefficient of determination is low at 1% which indicates a generally weak relationship between the independent and dependent variable.

Table 4.20: Regression Analysis on Effect of Leverage on Cash Holdings

|                      | OLS Regression Model | Random Effects Regression Model |
|----------------------|----------------------|---------------------------------|
| Leverage             | 0.018023             | 0.0907501***                   |
|                      | (0.483)              | (0.000)                        |
| Constant             | 0.067614             | 0.0284581                      |
|                      | (0.000)              | (0.216)                        |
| Number of Observations | 527                  | 527                            |
| Coefficient of Determination ($R^2$) | 0.001                |                                 |

$t$ statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
4.5.2. Industry effect of Leverage on Cash Holdings

Table 4.21: Regression Analysis on Effect of Leverage on Cash Holdings by Industry

| Industry               | OLS Regression Model | t-stat | Random Effects Regression Model | t-stat |
|------------------------|----------------------|--------|---------------------------------|--------|
| Agricultural           | 0.025                | 0.93   | 0.094***                        | 3.72   |
| Automobile             | -0.073               | -1.84  | -0.087                         | -0.85  |
| Construction           | -0.005               | -0.18  | -0.019                         | -0.27  |
| Commercial             | -0.027               | -0.88  | -0.043                         | -0.56  |
| Energy and petroleum   | -0.024               | -0.73  | -0.045                         | -0.55  |
| Investment             | -0.048               | -1.35  | -0.054                         | -0.65  |
| Manufacturing          | 0.033                | 1.2    | 0.017                          | 0.25   |
| Telecommunication      | -0.056               | -0.86  | -0.058                         | -0.42  |
| _cons                  | 0.074***             | 3.2    | 0.050                          | 0.9    |
| Number of Observations | 527                  |        | 527                            |        |
| Coefficient of Determination ($R^2$) | 0.0257               |        |                                |        |

$t$ statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4.21 show the relationship between cash holding and the leverage of nonfinancial firms listed on the NSE broken down by industry. Using the RE model, the finding indicate that leverage is positively and significantly related to the Agricultural sector and insignificantly negatively related to Cash holdings of the firms in the Automobile, Commercial construction, Energy, Investments and telecommunications sector. It’s also positive but insignificant to the in the manufacturing sector. Under the OLS model the relationship is negative and positively insignificant at varied levels of confidence across the different industries.
4.5.3. Results of Factor Analysis

Factor analysis was conducted after successful sampling using KMO coefficient. Factor analysis was conducted using Principal Components Method (PCM) approach. The extraction of the factors followed the Kaiser Criterion where an Eigen value of 1 or more indicates a unique factor. Total Variance analysis indicates that the 5 statements on the influence of leverage on cash holdings be factored into 1 factor. The total variance explained by the extracted factor is 49.216 percent as shown in Table 4.22.

Table 4.22: Leverage Constructs Total Variance Explained

| Component | Initial Eigenvalues | Extraction Sums of Squared Loadings |
|-----------|---------------------|-------------------------------------|
|           | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1         | 2.461 | 49.216        | 49.216       | 2.461 | 49.216        | 49.216       |
| 2         | 0.888 | 17.76         | 66.976       |
| 3         | 0.834 | 16.675        | 83.651       |
| 4         | 0.429 | 8.579         | 92.23        |
| 5         | 0.389 | 7.77          | 100          |

Table 4.23 shows the factor loadings for sub-constructs of leverage. All the statements attracted coefficients of more than 0.4 hence all the statements were retained for analysis. According to Rahn (2010) and Zandi (2006) a factor loading equal to or greater than 0.4 is considered adequate. This is further supported by Black (2002) who asserts that a factor loading of 0.4 has good factor stability and deemed to lead to desirable and acceptable solutions.
**Table 4.23: Factor Loading for Leverage Constructs**

| Statement                                                                 | Component |
|---------------------------------------------------------------------------|-----------|
| If the credit rating of my firm was to improve I will hold less cash      | 0.637     |
| There is easy access to Capital/Debt markets so I don’t need to hold a lot of cash | 0.843     |
| Costs of financial distress/Bankruptcy are high so I hold large cash balances to be in control | 0.519     |
| When in financially distress firms are more likely to use excess cash flows to increase cash holdings instead of paying down debt | 0.626     |
| We will reduce our cash holding if our debt levels reduce                 | 0.827     |

**4.5.3. Results of Primary Study**

The study sought to establish the influence of leverage on the cash holdings of the firm and the results Table 4.24 indicate that 21 percent agreed that if the credit rating of their firm was to improve they would hold less cash, 29.40 percent agreed that there is easy access to Capital/Debt markets so they didn’t need to hold a lot of cash and 14.20 percent agreed that costs of financial distress/Bankruptcy are high so they hold large cash balances to be in control. 35.3 percent of the respondents agreed that when in financial distress firms are more likely to use excess cash flows to increase cash holdings instead of paying down debt. The results further indicated that 21.80 percent were in agreement that they would likely reduce their cash holding if their debt levels reduced. The mean score for the response in this section was 1.98 which indicates that majority of the respondents disagreed with statements in regard to influence of leverage on the cash holdings.
Table 4.24: Descriptive Statistics of Effect of Leverage Constructs

| Statement                                                                 | Strongly Disagree | Disagree | Agree | Strongly Agree | Mean | Std. Dev |
|----------------------------------------------------------------------------|-------------------|----------|-------|----------------|------|----------|
| If the credit rating of my firm was to improve I will hold less cash       | 46.20%            | 32.80%   | 9.20% | 11.80%         | 1.87 | 1.01     |
| There is easy access to Capital/Debt markets so I don’t need to hold a lot of cash | 2.50%             | 68.10%   | 10.10%| 19.30%         | 2.46 | 0.83     |
| Costs of financial distress/Bankruptcy are high so I hold large cash balances to be in control | 50.40%            | 35.30%   | 13.40%| 0.80%          | 1.65 | 0.74     |
| When in financial distress firms are more likely to use excess cash flows to increase cash holdings instead of paying down debt | 37.80%            | 26.90%   | 28.60%| 6.70%          | 2.04 | 0.97     |
| We will reduce our cash holding if our debt levels reduce                 | 47.90%            | 30.30%   | 9.20% | 12.60%         | 1.87 | 1.03     |
| **Total**                                                                 | **36.96%**        | **38.68%**| **14.10%**| **10.24%**      | **1.98** | **0.92** |

4.5.4. Overall results of the hypothesis test on effect of Leverage on Cash holding

The relationship between leverage and cash holding of non-financial firms listed on the NSE was hypothesized to be positive. The results from the regression analysis of the secondary
data indicate a positive and significant relationship on the overall sample as well as at industry sector level using the Random effects model. The results of the primary study however do not support the relationship hypothesized as 75.64 percent of the respondents disagreed with the effect of leverage on cash holding constructs. Since the secondary data regression is more objective than the respondents in the primary study and covered much more data sets over a period of 15 years. It is concluded that we reject the null hypothesis and therefore affirm the statement that cash holding of nonfinancial firms quoted on the NSE is positively related to leverage.

**4.6. Effect of Cash Flows on Cash Holdings**

The fourth objective of the study was to establish the relationship between Cash flow and cash holding of non-financial firms listed on the NSE and it was also hypothesized that corporate cash holdings are positively related to cash flow.

**4.6.1. Panel Regression Analysis on Effect of Cash Flows on Cash Holdings**

To establish the effect of leverage on Cash Holdings of a firm panel regression model was estimated, in particular the random effects and the pooled regressions were adopted. The results presented in the Table 4.25 indicate that cash flows are positively and significantly related to the cash holdings of the firm. The coefficient is both positive and significant at 99.9 % confidence level indicating strong relationship. Compared to the other variables studied the coefficient of determination of about 9.08 percent further indicates the relative strength of the relationship. We thus fail to reject the null hypothesis assertion that cash holding of Kenyan non-financial firms are positively related to cash flow.
Table 4.25: Regression Analysis on Effect of Cash Flows on Cash Holdings

|                  | OLS Regression Model | Random Effects Regression Model |
|------------------|----------------------|---------------------------------|
| **Cash Flows**   | 0.410154***          | 0.2119958***                    |
|                  | (0.000)              | (0.000)                         |
| **Constant**     | 0.0398364            | 0.0574844                       |
|                  | (0.000)              | (0.001)                         |
| **Number of Observations** | 527          | 527                              |
| **Coefficient of Determination (R²)** | 0.0908      |                                  |

$t$ statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.6.2. Industry Effect of Cash Flows on Cash Holdings

Table 4.26 depicts the relationship between cash holding and the cash flow from operations of nonfinancial firms listed on the NSE broken down by industry. Using the RE model as our benchmark, the finding indicate that cash flow is positively related to Cash holdings of the firms in the Agricultural sector, Construction sector and Manufacturing. It was negative for Automobile, Investment, Energy and Telecommunications sectors. The relationship as shown below is only significant for the agricultural sector. Using the OLS model the relationship is significant Telecommunication and Agricultural sectors and insignificant for Automobile, Construction, Investment, Energy and Manufacturing. The R squared of 0.1099 indicates that cash flow explains up to 11% of changes in corporate cash holding of the non-financial firms studied.
Table 4.26: Regression Analysis on Effect of Cash Flows on Cash Holdings by Industry

| Industry                  | OLS Regression Model | t-stat | Random Effects Regression Model | t-stat |
|---------------------------|----------------------|--------|---------------------------------|--------|
| Agricultural              | 0.428***             | 7.06   | 0.2175***                       | 3.64   |
| Automobile                | -0.046               | -1.23  | -0.0565                         | -0.72  |
| Construction              | -0.009               | -0.33  | 0.0042                          | 0.08   |
| Commercial                | -0.030               | -1.04  | -0.0248                         | -0.42  |
| Energy and petroleum      | -0.027               | -0.87  | -0.0224                         | -0.35  |
| Investment                | -0.033               | -0.96  | -0.0354                         | -0.54  |
| Manufacturing             | 0.002                | 0.08   | 0.0143                          | 0.26   |
| Telecommunication         | -0.177***            | -2.71  | -0.1169                         | -1.07  |
| _cons                     | 0.056***             | 2.71   | 0.0685                          | 1.63   |
| Number of Observations    | 525                  |        | 525                             |        |
| Coefficient of Determination ($R^2$) | 0.1099              |        |                                 |        |

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
4.6.3. Results of Factor Analysis

Factor analysis was conducted after successful sampling using KMO coefficient. Factor analysis was conducted using Principal Components Method (PCM) approach. The extraction of the factors followed the Kaiser Criterion where an Eigen value of 1 or more indicates a unique factor. Total Variance analysis indicates that the 4 statements on the influence of Cash Flows on cash holdings be factored into 1 factor. The total variance explained by the extracted factor is 56.176% as shown in Table 4.27.

Table 4.27: Cash Flows Constructs Total Variance Explained

| Component | Initial Eigenvalues | Extraction Sums of Squared Loadings |
|-----------|---------------------|-------------------------------------|
|           | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1         | 2.247 | 56.176 | 56.176 | 2.247 | 56.176 | 56.176 |
| 2         | 0.963 | 24.077 | 80.253 |
| 3         | 0.475 | 11.866 | 92.119 |
| 4         | 0.315 | 7.881  | 100 |

Table 4.28 shows the factor loadings for sub-constructs of Cash Flows. All the statements attracted coefficients of more than 0.4 hence all the statements were retained for analysis. According to Rahn (2010) and Zandi (2006) a factor loading equal to or greater than 0.4 is considered adequate.
Table 4.28: Factor Loading for Cash Flows Constructs

| Description                                                                 | Component |
|----------------------------------------------------------------------------|-----------|
| Firms with higher levels of internally generated cash flows tend to hold more cash | 0.773     |
| The primary cause for a firm's excess cash balances is the accumulation of internally generated cash flows | 0.823     |
| Financially constrained firms are more likely to save cash from internally generated cash flows to fund future investment opportunities | 0.858     |
| If we accumulate more debt we will increase our cash holding                | 0.485     |

Extraction Method: Principal Component Analysis.

4.6.4. Results of Primary study

The other objective of the study was to establish the influence of cash flows on cash holdings. Results on Table 4.29 indicate that 42.0 percent agreed that firms with higher levels of internally generated cash flows tend to hold more cash, 36.2 percent agreed that the primary cause for a firm's excess cash balances is the accumulation of internally generated cash flows and 25.20 percent agreed that financially constrained firms are more likely to save cash from internally generated cash flows to fund future investment opportunities. In addition, 20.2 percent agreed that if they accumulated more debt we will increase our cash holding. The mean score for responses for this section was 2.36 which indicates that minority of the respondents agreed cash flows had an influence on cash holdings.
Table 4.29: Descriptive Statistics of Cash Flows Constructs

| Statement                                                                                     | Strongly Disagree | Disagree | Agree  | Strongly Agree | Mean | Std. Dev |
|-----------------------------------------------------------------------------------------------|-------------------|----------|--------|----------------|------|----------|
| Firms with higher levels of internally generated cash flows tend to hold more cash            | 3.40%             | 54.60%   | 36.10% | 5.90%          | 2.45 | 0.66     |
| The primary cause for a firm's excess cash balances is the accumulation of internally generated cash flows | 6.70%             | 57.10%   | 11.80% | 24.40%         | 2.54 | 0.94     |
| Financially constrained firms are more likely to save cash from internally generated cash flows to fund future investment opportunities | 12.60%            | 62.20%   | 7.60%  | 17.60%         | 2.30 | 0.91     |
| If we accumulate more debt we will increase our cash holding                                 | 13.40%            | 66.40%   | 12.60% | 7.60%          | 2.14 | 0.74     |
| **Total**                                                                                    | **9.03%**         | **60.08%** | **17.03%** | **13.88%** | **2.36** | **0.81** |

4.6.5. Overall Results of the Hypothesis Test on Effect of Cash flow on cash holding

The fourth hypothesis in this study was that cash flow generated from operations are positively related to cash holding of non-financial firms listed on the NSE. The result of the regression analysis of secondary data indicated a positive coefficient that is significant at 0.1% level of significance. The results of the primary study do not seem to support the same finding as 69 percent of the respondents seem to disagree with the effect of cash flow on cash holding constructs. Using the results of the secondary study we conclude that the null hypothesis is not rejected and therefore cash flow of non-financial firms listed on the NSE are positively related to the cash holding. The results of the primary study seem not to support the assertion and more research may be needed to establish the reasons for this phenomenon.

4.7. Moderating effect of Interest Rates on the relationship between firm characteristics and Cash holding.

The fifth objective of the study was to determine moderating effect of the prevailing interest rates on the relationships between firm characteristics and cash holding of nonfinancial firms.
listed on the NSE. The null hypothesis was that prevailing interest rates does not significantly moderate the relationship between the independent variables and the dependent variable.

4.7.1. Panel Regression Analysis on Interest Rates on Cash Holdings

In order to achieve this objective the research first tested the paths between the independent variable and the dependent variable, between the independent variables and the mediator and between the mediator and the dependent variable, was statistically significant. To establish the moderating effect of Interest Rates on Cash Holdings of nonfinancial firms, panel regression model was estimated, in particular the fixed effects, random effects and the pooled regressions were adopted. The results in the Table 4.30 thus show that the relationship between interest rates and cash holdings are positively and insignificantly related under all the three methods. The coefficient of determination(R squared) is miniscule at 0.1% showing very little correlation between the two variables among firms listed on the Nairobi Securities Exchange. This finding is at variance with the views of managers as reported in the primary study as reported in the next section. The possibility direct relationship between interest rates and corporate cash holding of non-financial firms is rejected.

Table 4.30: Regression Analysis on Effect of Interest Rates on Cash Holdings

|                          | OLS Regression Model | Random Effects Regression Model |
|--------------------------|----------------------|-------------------------------|
| Interest Rates           | 0.163                | 0.163                         |
|                          | (0.53)               | (0.53)                        |
| Constant                 | 0.0459               | 0.0459                        |
|                          | (1.86)               | (1.86)                        |
| Number of Observations   | 408                  | 408                           |
| Coefficient of Determination ($R^2$) | 0.001               |                                |

$t$ statistics in parentheses

$p < 0.05$, $** p < 0.01$, $*** p < 0.001$
4.7.2. Panel Regression Analysis on the moderating effect of Interest Rates on independent variables.

The results in the Table 4.31 shows the moderating impact of interest rates in the relationships between cash holding and the independent variables. The results are mixed with for the different variables. Under the OLS model the moderating effect is positive and significant for cash flow. Overall therefore the relationship between interest rates and independent factors are negative for MTB, Size, and cash flow but positive for Leverage. Further, the results showed that interest rate moderation has a significant effect on the relationship between cash holding CF at 95% confidence level but was established to have insignificant moderation effect on the relationship between cash holding and MTB, Size and Leverage.
Table 4.31: Regression Analysis on Effect of Interest Rates on Cash Holdings

|                          | OLS Regression Model | t-stat | Random Effects Regression Model | t-stat |
|--------------------------|----------------------|--------|---------------------------------|--------|
| Cash                     |                      |        | Cash                            |        |
| MTB                      | 0.0111               | 0.49   | 0.0078                          | 0.39   |
| SIZE                     | 0.0151               | 0.96   | 0.0163                          | 1.08   |
| Leverage                 | -0.0387              | -0.48  | 0.0071                          | 0.1    |
| CF                       | 0.5573**             | 2.55   | 0.3104                          | 1.61   |
| Interest Rate Moderation on MTB | -0.0447            | -0.16  | -0.0569                         | -0.24  |
| Interest Rate Moderation on Size | -0.2326            | -1.25  | -0.2515                         | -1.57  |
| Interest Rate Moderation on Leverage | 1.1435             | 1.12   | 1.3274                          | 1.48   |
| Interest Rate Moderation on CF | -1.7222            | -0.67  | -0.7325                         | -0.33  |
| Constant                 | -0.1155              | -0.83  | -0.1199                         | -0.9   |
| Number of Observations   | 525                  |        | 525                             |        |
| Coefficient of Determination ($R^2$) | 0.1075              |        |                                 |        |

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.7.3. Results of Factor Analysis

Factor analysis was conducted using Principal Components Method (PCM) approach. The extraction of the factors followed the Kaiser Criterion where an Eigen value of 1 or more indicates a unique factor. Total Variance analysis indicates that the 3 statements on the influence of Interest Rates on cash holdings be factored into 1 factor. The total variance explained by the extracted factor is 53.671% as shown in Table 4.32.
Table 4.32: Interest Rates Constructs Total Variance Explained

| Component | Initial Eigenvalues | Extraction Sums of Squared Loadings |
|-----------|---------------------|-------------------------------------|
|           | Total               | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1         | 1.61                | 53.671        | 53.671       | 1.61  | 53.671        | 53.671       |
| 2         | 0.86                | 28.762        | 82.433       |       |               |              |
| 3         | 0.52                | 17.567        | 100          |       |               |              |

Table 4.33 shows the factor loadings for sub-constructs of Interest Rates. All the statements attracted coefficients of more than 0.4 hence all the statements were retained for analysis.

Table 4.33: Factor Loading for Interest Rates Constructs

| Statement                                                                 | Component |
|--------------------------------------------------------------------------|-----------|
| I will hold large cash balances if interest rates are expected to rise   | 0.654     |
| If Interest rates in the market were stable firms would hold less cash   | 0.838     |
| In times of fluctuations in interest rates we increase our holding of    | 0.692     |
| cash and marketable securities                                          |           |

4.7.4. Results from primary study

The fifth objective of the study was to determine the effects of interest rates on firm’s cash holdings. Table 4.34 shows that 67.3 Percent agreed that they would hold large cash balances if interest rates are expected to rise, 68 percent agreed that if interest rates in the market were stable firms would hold less cash and 20.2 percent agreed that in times of fluctuations in interest rates they increase their holding of cash and marketable securities. The mean score for responses for this section was 2.60 which indicates that majority of the respondents agreed that interest rates was a major factor in on firm’s cash holdings.
Table 4.34: Descriptive Statistics of Interest Rates Constructs

| Statement                                                                 | Strongly Disagree | Disagree | Agree | Strongly Agree | Mean | Std. Dev |
|--------------------------------------------------------------------------|-------------------|----------|-------|----------------|------|----------|
| I will hold large cash balances if interest rates are expected to rise   | 5.00%             | 27.70%   | 55.50%| 11.80%         | 2.74 | 0.73     |
| If Interest rates in the market were stable firms would hold less cash   | 0.00%             | 31.90%   | 48.70%| 19.30%         | 2.87 | 0.71     |
| In times of fluctuations in interest rates we increase our holding of   | 5.00%             | 74.80%   | 16.80%| 3.40%          | 2.18 | 0.57     |
| cash and marketable securities                                           |                   |          |       |                |      |          |
| **Total**                                                                | 3.33%             | 44.80%   | 40.33%| 11.50%         | 2.60 | 0.67     |

4.7.5. Overall Results of the Hypothesis test on the moderating effect of Interest rates on Cash holding.

In chapter 1 we hypothesized that interest rates moderate the relationship between Cash holding and the independent variable (MTB, Size, Leverage and Cash flow). From the results of the panel regression of interest rates against cash flow we established that there is an insignificant relationship between cash holding and interest rates for nonfinancial firms listed on the NSE. This is at variance with the popular assertion by managers in the primary study which indicated that interest rates are an important consideration in the cash holding decisions. Delving further into analysis of the moderating effect we find that the impact is significant on Cashflow (positive impact) and is insignificant on MTB, Size Leverage and cash flow. In conclusion we partly fail to reject the null hypothesis as far as the impact of interest rates on the relationship between (i) cash and size (ii) cash and Leverage. The null hypothesis is however rejected in relation to impact of interest rates on cash and MTB and Cash and Size and Cash and leverage are concerned.
4.8. Moderating effect of Industry Sectors on Cash Holdings

The sixth objective of the study was to establish whether there are industry/sector differences in the cash holding practices of non-financial firms listed on the NSE and it was thus hypothesized that there is a statistically significant difference in cash holding across industry sectors.

4.8.1. Panel Regression Analysis on Effect of Industry Sectors on Cash Holdings

To establish the effect of Industry Sectors on Cash Holdings of a firm panel regression model was estimated, in particular the fixed effects, random effects and the pooled OLS regressions were adopted. The results as presented in the Table 4.35 indicate that the cash holdings across industries are significantly different at 99% confidence level and thus the null hypothesis is affirmed. The implication is that the cash holding of non-financial firms listed on the NSE is influenced by the industry sector in which it operates.

Table 4.35: Regression Analysis on Effect of Industry Sectors on Cash Holdings

|                     | OLS Regression Model | Random Effects Regression Model |
|---------------------|----------------------|---------------------------------|
| Sector              | 0.0125**             | 0.0125**                        |
|                     | (3.01)               | (3.01)                          |
| Constant            | 0.00717              | 0.00717                         |
|                     | (0.38)               | (0.38)                          |
| Number of Observations | 527                  | 527                             |
| Coefficient of Determination ($R^2$) | 0.022               |                                 |

$t$ statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
4.8.2. Panel Regression Analysis on the moderating effect of industry sector on the independent Variables

Further to the results in section 4.8.2 the study tested for the moderating effect of industry on the relationship between Cash holding and the firm characteristics. The results are presented in the Table 4.36, Where _Iindustrys_2, _Iindustrys_3, _Iindustrys_4, _Iindustrys_5, _Iindustrys_6, _Iindustrys_7 and _Iindustrys_8 are industry dummy variables. These represents the automobile, commercial, construction, energy and petroleum, investment, manufacturing and telecommunication sectors respectively with the base case being the agricultural sector. The results show that the industry sector moderation on the MTB, Size, Leverage and CF is not significant. This is indicated by t-statistics below the two standard deviations (±1.96).

Table 4.36: Regression Analysis on Effect of Industry Sectors on Cash Holdings

|                | OLS Regression Model | t-stat | Random Effects Regression Model | t-stat |
|----------------|----------------------|--------|----------------------------------|--------|
| MTB            | 0.0103               | 1.44   | 0.0035                           | 0.45   |
| Size           | 0.0049               | 0.82   | 0.0017                           | 0.2    |
| Leverage       | 0.0486               | 1.76   | 0.1021***                       | 3.81   |
| CF             | 0.4212***            | 6.48   | 0.2468***                       | 4.09   |
| Industries     |                      |        |                                  |        |
| _Iindustrys_2  | -0.0571              | -1.5   | -0.0762                          | -0.93  |
| _Iindustrys_3  | -0.0350              | -1.24  | -0.0310                          | -0.54  |
| _Iindustrys_4  | -0.0501              | -1.66  | -0.0529                          | -0.84  |
| _Iindustrys_5  | -0.0534              | -1.47  | -0.0564                          | -0.79  |
| _Iindustrys_6  | -0.0371              | -1.08  | -0.0479                          | -0.7   |
| _Iindustrys_7  | -0.0146              | -0.53  | -0.0045                          | -0.08  |
| _Iindustrys_8  | -0.2169***           | -3.09  | -0.1419                          | -1.18  |
| _cons          | -0.0120              | -0.24  | 0.0138                           | 0.18   |
| Number of Observations | 525          |        | 525                              |        |
| Coefficient of Determination ($R^2$) | 0.1228           |        |                                  |        |

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
4.8.3. Results of Factor Analysis

Factor analysis was conducted using Principal Components Method (PCM) approach. The extraction of the factors followed the Kaiser Criterion where an Eigen value of 1 or more indicates a unique factor. Total Variance analysis indicates that the 3 statements on the influence of Industry Sectors on cash holdings be factored into 1 factor. The total variance explained by the extracted factor is 50.208% as shown in Table 4.37.

Table 4.37: Industry Sectors Constructs Total Variance Explained

| Component | Initial Eigenvalues | Extraction Sums of Squared Loadings |
|-----------|---------------------|-------------------------------------|
|           | Total % of Variance | Cumulative %                        |
|           | Total % of Variance | Cumulative %                        |
| 1         | 1.506 50.208         | 50.208                              |
|           | 1.506 50.208         | 50.208                              |
| 2         | 0.81 26.997          | 77.205                              |
| 3         | 0.684 22.795         | 100                                 |
| Extraction Method: Principal Component Analysis. |

Table 4.38 shows the factor loadings for sub-constructs of Industry Sectors. All the statements attracted coefficients of more than 0.4 hence all the statements were retained for analysis. According to Rahn (2010) and Zandi (2006) a factor loading equal to or greater than 0.4 is considered adequate.
Table 4.38: Factor Loading for Industry Sectors Constructs

| Statement                                                                 | Component |
|--------------------------------------------------------------------------|-----------|
| If our business involved huge outlay in capital assets (Plant equipment and technology) we could hold higher levels of cash | 0.683     |
| If our firm was operating in a different industrial/ economic sector we would change our cash holding policy | 0.679     |
| Because our firm business is diversified we are able to hold less cash    | 0.761     |

Extraction Method: Principal Component Analysis.

4.8.4. Results from primary study

The last objective of the study was to establish whether there is a significant difference in firm’s cash holdings due to industry sectors. Table 4.40 indicates that 58.80 percent agreed that if their business involved huge outlay in capital assets (Plant equipment and technology) they could hold higher levels of cash, 64.70 Percent agreed that there if their firm was operating in a different industrial/ economic sector they would change their cash holding policy and 71.40 percent agreed that because their firm business is diversified they are able to hold less cash. The mean score for responses for this section was 2.67 which indicates that majority of the respondents agreed that industry sectors was a key driver of firm’s cash holdings. The findings are similar to those by Opler et al., (1999), Saddour(2007) and Gill and Shah(2012).
| Statement                                                                 | Strongly Disagree | Disagree | Agree | Strongly Agree | Mean | Std. Dev |
|--------------------------------------------------------------------------|-------------------|----------|-------|----------------|------|----------|
| If our business involved huge outlay in capital assets (Plant equipment and technology) we could hold higher levels of cash | 8.40%             | 32.80%   | 52.10%| 6.70%          | 2.57 | 0.74     |
| If our firm was operating in a different industrial/economic sector we would change our cash holding policy | 0.00%             | 35.30%   | 64.70%| 0.00%          | 2.65 | 0.48     |
| Because our firm business is diversified we are able to hold less cash   | 0.00%             | 28.60%   | 64.70%| 6.70%          | 2.78 | 0.55     |
| Total                                                                    | 2.80%             | 32.23%   | 60.50%| 4.47%          | 2.67 | 0.59     |

4.8.5. Overall results of the Hypothesis test of the moderating effect of industry sector on Cash holding.

The sixth hypothesis of this study was that industry sector of operation influenced the cash holding of nonfinancial firms listed on the NSE. The results above from panel regression of the secondary data indicated that cash holding was a significant determinant of cash holding at 99 percent confidence level. Further the results from primary survey indicate that over 65 percent of the respondents agreed with the effect of industry on cash holding constructs and therefore affirmed our hypothesis. The conclusion is we fail to reject the null hypothesis and therefore industry sector is a determinant of cash holding for non-financial firms listed on the NSE. The results of the moderation effect of the industry sector on the relationship between the relationship of cash holding and the independent factors was inconclusive as the results of the regression were not significant.
4.9. Overall Regression of effect of independent variables on Cash Ratio

The Table 4.40 below indicates results for the overall regression model fitted. The regression results thus show that leverage and Cash flows are significantly positively related to cash holding of the firms. Thus cash flow and leverage have a significant positive relationship with Cash holding of the non-financial companies listed on the NSE. Consistent with the result on individual characteristics we do not find a high Rsquared (0.1019) which indicates that only 10.19 percent of the changes in the cash holding of the firms studied are explained by changes in the explanatory variables making up the model. This therefore indicates there are other factors that explain the changes in cash holding of non-financial firms listed on the NSE, Kenya.

Table 4.40: Regression Model Based OLS and Random Effects Models

|               | OLS Regression Model | t-stat | Random Effects Regression Model | t-stat |
|---------------|----------------------|--------|---------------------------------|--------|
| MTB           | 0.0085               | 1.22   | 0.0033                          | 0.44   |
| Size          | -0.0022              | -0.42  | -0.0032                         | -0.4   |
| Leverage      | 0.0441               | 1.66   | 0.1011***                      | 3.82   |
| CF            | 0.4154***            | 6.45   | 0.2450***                      | 4.1    |
| INT           | 0.1817               | 0.61   | 0.1380                          | 0.54   |
| Industry      | -0.0017              | -0.44  | -0.0006                         | -0.08  |
| _constant     | 0.0145               | 0.3    | 0.0149                          | 0.21   |
| Number of Observations | 525     | 525    |
| Coefficient of Determination ($R^2$) | 0.1019 |        |
4.10. Chapter Summary

In this chapter we detailed the research findings both from the primary and secondary Data. Demographic attributes of the sample used in the study were presented both at industry and company level. Trends in the cash holding of firms was presented indicating a general increase in cash holding of the studied firms over the period by over 14%. The detailed results of the regression analysis of the secondary study were presented and discussed. The result of the factor analysis of the primary study were then presented. The overall conclusion on each hypothesized relationship was discussed in light of the findings from both the primary and secondary study. The overall results of the study are presented in table 4.41 which indicate that Leverage and cash flow are significant determinants of cash holding, Interest rate has a moderating effect on the relationship between cash(the dependent variable) and Size and Leverage(dependent variable), that there were significant differences in cash holding across different industry sectors. We thus failed to reject Hypotheses three, four, five and six. There was however insignificant relationships between cash holding and Market to book ratio and Cash holding and size of the firm therefore we rejected the null hypotheses one and two. There were instances where the results of the primary did not necessarily tally with those of the secondary study and there is therefore need to study it further to understand why this was the case.
Table 4.41: Summary of Test of Hypothesis Tests

| Hypothesis number | Causal relationship                                                                 | Test Results                                                                                     |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| i)                | The Market to book ratio (MTB) is positively related to cash holdings.              | Reject H0 hence Market to book ratio is not as positively related to cash holding.              |
| ii)               | Firm size is negatively related to cash holdings                                    | Reject H0 hence firm size is not negatively related to cash holding.                             |
| iii)              | Leverage is negatively related to cash holdings.                                    | Reject H0 hence leverage is positively related to cash holding.                                   |
| iv)               | Corporate cash holdings are positively related to cash flow.                        | Fail to Reject H0 hence cash holding is positively related to cash flow.                          |
| v)                | Prevailing interest rates does not moderate the relationship between corporate cash holdings and firm characteristics | Fail to Reject H0 hence interest rates have moderating effect on some of the determinants of cash holding |
| vi)               | There is a statistically significant difference in cash holding across industry sectors | Fail to Reject H0 hence there are difference in cash holding across different industrial sectors. |
CHAPTER FIVE

5.0. SUMMARY, DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

This chapter presents summary of the study, it also presents the conclusions drawn, and the recommendations made and suggested areas for further research.

5.2. Summary of study

Companies need cash to support their day to day operations/transactions, take care of unforeseen circumstances as well as take advantage of available opportunities. What determines the cash holding of a firm has been a continuous debate that has been reignited by the recent financial crisis and research that has pointed out that firms are holding large cash balances and that the same has been increasing overtime. Generally research has centered on establishing which firm characteristics determine cash holding and research finding have returned mixed findings. Cash holding has received considerable international attention due to concern that firms are holding “too much” liquidity and that this has been increasing. This is in spite of the fact that cash is a low return asset. Recent research has been centered on establishing what firm characteristics determine its cash holding. Due to the mixed results in the findings in the studies carried out on the international scene and limited research on the subject locally there is need for research on the determinants of cash holding by Kenyan companies.

The main purpose of this study was to evaluate the determinants of cash holding for non-financial firms listed on the Nairobi Securities Exchange. This study applied co-relational and Non-experimental research design.

A census of 44 nonfinancial firms listed on the Nairobi Securities Exchange for the period 2002- 2017 was undertaken. The methodology applied was be OLS model with year and industry dummies and panel data model to test for the determinants of cash holding using the trade off, pecking order and the free cash flow theories.
The study used secondary data in the form of annual reports and financial statements which are readily available on the respective companies’ websites and the NSE and also self-administered questionnaires for primary data collection for management views on the determinants of cash holding. 168 questionnaires were sent out to senior and finance executives in the sample companies with a 56 percent response rate.

The results of the study presented in chapter four have confirmed some of our study objectives while for some the results are inconclusive.

Market to book value was found to have insignificant negative relationship with cash holding in the secondary study with 70 percent of the respondents in the primary study also negating the constructs that market to book ratio are positively related.

The result on the test of the second hypothesis on the relationship between cash holding and size indicated a positive insignificant relationship with an R squared of 0.1%, the results of the primary study were in agreement with secondary study with over 65 percent disagreeing with the statements proposing a negative relationship between cash and firm size.

Regression analysis on the relationship between cash holding and leverage returned a significant positive relationship at 95 percent confidence level. Primary study results were however in disagreement with majority respondents not agreeing that leverage is negatively related to cash holding. Similar findings were reported on cash flow where secondary study findings suggested a positive and significant positive relationship between cash holding and cash flow from operations but the results from primary study did not concur with 69 percent of the respondents not affirming the hypothesized relationship.

Interest rates were found to have an insignificant moderation effect on the relationship between cash holding and all independent variables. Primary study results indicate 53 percent of the respondents in the primary study indicated that interest rates was a significant determinant of cash holding with 43 were not in agreement.

On the final research objective industry sector was found to be a significant determinant of cash holding at 99 percent confidence level and 65 percent of the respondents in the primary study also affirmed the hypothesized relationship.
Overall therefore the result indicate that cash holding is positively related to cash flow and leverage and its was further established that the cash holding of nonfinancial companies listed on the NSE, Kenya are not significantly related to the Market to book ration and size of the firm. The study thus concluded that Market to Book ratio and Size are not significant determinants of cash holding of non-financial firms listed on the NSE.

The following sections discuss the results in-depth and provide the main conclusions on the research questions developed in chapter 1.

5.3. Discussions of Results

5.3.1. Effect of MTB on Corporate cash holding.

The first objective of the study was to investigate the relationship between Markets to book ratio on Cash holding of non-financial companies listed on the NSE. Using OLS, REGLS, market to book ratio is positively related to cash holdings of the firm as estimated under OLS and Random effects model. In both methods it was established that the relationship was not statistically significant and thus the hypothesis is rejected. These results were further collaborated by the primary study findings that indicated that most respondents disagreed with the Market to value ratio constructs with an average mean of 2.20. The hypothesized positive relationship between cash holdings and market-to-book ratio was thus rejected.

Majority of previous studies find a positive and significant relationship between Market to Book value ratio (MTB) and corporate cash holding. (Kim et al., 1998; Opler et al., 1999; Ferreira and Vilela, 2004; Ozkan and Ozkan, 2004; and Alam et al., 2011). Positive relationship has been found to support the trade off and pecking order theories in that firms with plenty of investment opportunities will hold more cash.

But inverse relationship of growth opportunities with corporate cash holdings is reported in numerous studies (Ferreira and Vilela, 2004; Jani et al., 2004; Bates et al., 2009), which corresponds to agency theory. Afza and Adnan (2007) study conducted in Pakistan indicated that the Cash holding and Market-to-book ratio of the firms are negatively related. Gill and Shah (2012) also found a negative relationship between cash holding and MTB of Canadian firms.
The cash holding of Kenyan companies do not therefore support the Trade off and Pecking order theories which predict a positive relationship between cash holding and available investment opportunities represented by the Market to book ratio.

The findings could however support the free cash flow theory where the market-to-book ratio is expected to have a negative relationship with the cash holdings of the firm. Such conclusion is not absolute as the coefficient was not statistically significant.

The inconclusive nature of our findings could also be explained by the findings by Dittmar & Duchin (2009) where they explain that when shareholder protection is poor, factors that generally drive the need for cash holdings, such as investment opportunities and asymmetric information, actually becomes less important.

In their studies, Song and Lee (2012) split their sample into financially constrained and those that are not financially constraint and find a difference in relative cash holding behavior but direction of firm value and stock of cash holding is consistent. Similar findings are reported by Saddour (2006) when he splits his sample into growth and mature companies and finds positive relationship between firm value and cash holdings. In this research when the sample is split into the respective industry sector of the main business activities of the companies it is established that the results under the OLS model point to a negative and significant relationship as discussed in 4.3.1 and this might point to the existence of agency problem in such firms however the same cannot be proved as the results under the RE model are not significant.

It was concluded therefore that for financial companies listed on the NSE there was no relationship between cash holding and The MTB during the study period.

5.3.2. Effect of Firm Size on Corporate cash holding.

The second objective was to analyze the effect of firm Size on the cash holding of firms listed on the NSE. The study measured size by the Natural Logarithm of total assets. Size was used as a proxy for access to capital markets. Meaning as firms grow in size they build economies of scale that they can leverage to attract external funding at comparatively favorable terms than are small companies that are yet to prove their mettle. The study
established that there is an insignificant positive relationship between size and cash holding. Meaning Size was not a significant determinant of cash holding of Non-financial firms listed on the NSE. Inverse relationship between cash firm size and cash flow supports the tradeoff theory Dittmar et al., (2002), Ferreira and Vilela (2004), and Guney et al., (2003). However positive relationship between cash holding and real size is expected under the pecking order theory because as explained by Saddour(2006) that larger firms have high level of operational cash flow. Therefore they increase their cash holdings and the relationship between cash holdings and size is expected to be positive. The finding above are not consistent with previous findings by Ferreira & Vilela (2004),Nguyen(2005) and Drobetz and Gruninger (2007) all who reported negative relationship between cash holding and size of the firm. These study findings support the Tradeoff theory assertion on cash holding. The Financial hierarchy (Pecking order) theory and the free cash flow (Agency) theory of cash however predict a positive relationship between cash holding and Size. Saddour(2006) found that for growing companies cash holding was negatively related to size whereas for mature companies in his study of French companies cash holding was positively related to firm size.

Previous studies by Kim et al. (1998), Guney et al. (2003), and Ozkan and Ozkan (2004) have not confirmed the idea that smaller firms maintain higher cash levels either, in spite of the intuitive attraction of the argument that small firms have greater information asymmetry problems, financial difficulties or financial constraints that make it more difficult and more expensive for them to obtain external financing. This may be because, as Ozkan and Ozkan (2004) point out, other factors may affect the way in which a company’s size affects its cash holding decisions.

**5.3.3. Effect of Leverage on corporate Cash holding.**

The third objective of the study was to investigate the effect of leverage on the cash holding of nonfinancial companies listed on the NSE, Kenya. Leverage was measured by the ratio of total debt to net assets (debt ratio). The findings indicate that a significant positive effect between leverage and cash holding. The results were significant both for the whole sample (at 95% confidence level) and for the agricultural sectors. The implication is that as leverage increases the cash holding of non-financial firms’ increases and vice versa. With regard to the effects of leverage (LEV), empirical evidence for large firms (Kim et al., 1998; Opler et
al., 1999; Ferreira and Vilela, 2004; and Ozkan and Ozkan, 2004) shows that more highly leveraged firms should maintain lower cash holdings because they incur higher interest rates (Baskin, 1987) and have easier access to the capital markets (John, 1993). García-Teruel and Martínez-Solano (2008).

The results reported in this study are not consistent with previous results in other parts of the world such as Saddour (2006) France, Afzan and Adan (2007) and Rizwan and Javed (2010) all in Pakistan, Hardin III et al (2009) USA and Megisnson and Wei (2010) for Chinese companies who all found negative relationship.

Positive relationship between leverage and cash holding have been reported in a few studies such as one on American SMEs by Faulkender (2004) who reported positive relationship and García-Teruel and Martínez-Solano (2008) who indicated in their study of SME’s in Spain that it appears that SMEs prefer to keep high cash levels rather than use the cash to reduce their debt, given their greater difficulty in gaining access to the capital markets. On the other hand, Ozkan and Ozkan (2004) also consider that more highly leveraged firms may keep more cash in order to lower their default risk.

According to the trade-off theory, leverage can have a positive or a negative effect on the cash level; however pecking order theory and free cash flow stipulates a negative one. The results show a positive relation between cash holding and leverage for non-financial companies listed on the NSE. This finding does not support the three theories.

5.3.4. Effect of Cash flow on Corporate Cash holding

The fourth objective was to establish the effect of cash flow on the cash holding of the nonfinancial firms whose shares are quoted on the NSE. Cash flow was measured by the ratio of cash flow from operations divided by the net assets of the firm. The results of the study indicate a positive relationship between the cash flow and cash holding. Increase in cash flow from operations was related to higher cash holding of the firms.

This relationship therefore implies that an increase in the cash flows leads to an increase in cash holdings of the firm.
The tradeoff theory predicts a negative relationship between cash flow and cash holding this is because firms can use their cash flow as a source of cheap funds to finance their investments needs. Under this theory cash flow from the firm’s main operations is considered a substitute to cash holding and therefore the inverse relationship.

The pecking order theory predicts a positive relationship between cash holding and cash flow. Under this theory cash holding is seen a stocking of cash flow from operations that is then applied to finance new profitable projects, to repay external debts, to pay dividends to shareholders and whatever remains builds up new cash balances. Because cash flow from operations is the main source of cash balances the two are expected to show positive relationship.

The finding supports the pecking order theory of cash but not the tradeoff theory which predicts a negative relationship between cash flow and cash holding. The results are consistent with those of Ferreira and Vilela (2004), Afza and Adnan (2007), Alam et al. (2011), Ongudipe, et al (2012) and Al-Armerneh(2013) all who found positive relationship between cash holding and cash flow.

Kim et al. (1998) claim that the relation is in fact negative, as they consider that cash flows represent an additional source of Liquidity for the firm and can therefore substitute cash (Garcia-Teruel et al, 2008).

5.3.5. Moderating Effect of Interest Rates on the cash holding and Independent Variables

The fifth objective was to establish whether prevailing interest rates had a mediating effect on between the independent variables and cash holding of non-financial firms listed on the NSE. The results shows that the interest rates has insignificant moderation on the relationship between cash holding and the independent variables.

Tobin (1956) finds a negative relationship between cash and interest rates and attributes it to the availability of higher return on short-term investments when interest rates are high and vice versa. He advances the short-term investment view which holds that when interest rates are high firms shift resources from uncertain new physical investment projects(usually long-
term) to shorter term investments in say treasury bills that yield higher returns at lower comparative risk. Meltzer (1963) explains that the rate of change in cash balances is influenced largely by the companies expected rate of return and the prevailing interest rates.

Ferreira, et al. (2005) reports increase in the cash levels increase during economic down times and more so for distressed firms. Garcia-Teruel and Martinez-Solano (2008) found an inverse relationship between interest rates and cash holding. Similar results were reported by Bates, et al. (2009). In their study however they used the logarithm of the cash ratio as the dependent variable.

In the primary study managers agreed that interest rate is a key determinant of cash holding which seems to be consistent with the findings of this previous studies.

Whereas the test on the moderation of interest rates of the relationship between cash holding and the independent variables is novel and hence the insignificant relationship has no comparison. It is puzzling that the direct regression analysis between the interest rate did return an insignificant relationship contrary to established theory.

5.3.6. Moderating effect of Industry Sectors on Cash Holdings.

The sixth objective investigated if there were any significant differences between sectors regarding the cash holding practices. The results show that there are significant cash holding among firms in the different sectors. However when moderation effect of industry sector on the independent variables was tested, the results showed that the industry sector moderation on the MTB, Size, Leverage and Cash flow is not significant.

Other empirical studies have confirmed an influence of industry sector on cash holding. Zhou (2009) author concludes that high technology firms increased their cash holdings more significantly, but from 2000 the increase in cash holdings has come to be generalized, as a response to adverse macroeconomic shocks (Ehling & Haushalter, 2013).Nguyen (2005) Cash holding is positively associated with firm level but negatively related to industrial risk for Japanese companies.
Bates *et al.*, (2009) report that the average cash ratio of high-tech firms is greater than the average cash ratio of manufacturing firms by a factor of over two times. Fresard (2010) report that firms in highly competitive industries leverage their cash levels as a strategic weapon to gain market share. From the findings industry sector is thus more of a direct determinant of the cash holding of firms rather than a moderating factor.

5.4. Conclusions

The following conclusions can be made from the research findings.

5.4.1. Effect of MTB on Corporate cash holding

It was established that the cash holding of nonfinancial companies listed on the NSE, Kenya are not significantly related to the Market to book ratio. The study thus concluded that MTB is not a significant determinants of cash holding of non-financial firms listed on the NSE.

5.4.2. Effect of Firm Size on Corporate cash holding

From the study results it was established that the cash holding of nonfinancial companies listed on the NSE, Kenya are not significantly related to the size of the firm. The study thus concluded that Size is not a significant determinant of cash holding of non-financial firms listed on the NSE.

5.4.3. Effect of Leverage on corporate Cash holding

A significant positive effect between leverage and cash holding was established in the study. The implication is that as leverage increases the cash holding of non-financial firms’ increases also, conversely when the leverage of the companies studied decrease the cash holding reduces. The findings are not consistent with the Tradeoff, pecking order and free cash flow theories of cash holding.

5.4.4. Effect of Cash flow on Corporate Cash holding

Both primary and secondary data findings support the relationship between cash holding and Cash flow. Positive significant relationship between cash flow and cash holding was
confirmed for nonfinancial firms listed on the NSE. This lends support to the pecking order theory behavior.

5.4.5. Moderating Effect of Interest Rates on the cash holding and Independent Variables

Of the two control factors used in the study it was established that prevailing interest rates are not a significant moderator of the relationship between cash holding and MTB, Size, Cash flow and Leverage.

5.4.6. Moderating effect of Industry Sectors on Cash Holdings.

Whereas industry sector was not a significant mediator between the dependent and independent variable, both the primary and secondary study findings indicated that industry sector is a significant determinant of cash holding decisions of non-financial companies listed on the NSE.

5.5. Recommendations

The recommendations are based on the findings on the objectives of the study.

5.5.1. Suggestions for Improvement

5.5.1.1. Effect of MTB on Corporate cash holding.

Firms’ cash holding decisions have to be aligned to value maximization and therefore firms should hold cash according to their investment needs. We established that this is not the case for non-financial firms listed at the NSE. It will be important for Managers in Non-financial firms listed on the NSE to review their cash holding practices to conform to best practice that advocate for alignment between investment objectives and cash holding patterns.

5.5.1.2. Effect of Firm Size on Corporate cash holding.

It was established from the trend analysis that the average size of the Nonfinancial firm listed on the NSE has been growing over the study period. This gives the firms some economies of scale and leverage when dealing with capital and money market players. The larger firms should thus be holding relatively less cash than the smaller ones due to their size value. This
is not the case from the finding and therefore managers of large companies listed at the NSE are not sweating their value optimally. It’s recommended therefore that managers in this firm should review their cash holding policies with the aim of optimizing on the holding. Investors and policy makers will be interested in investigating why managers in large firms are still holding cash balances equivalent to those of relatively smaller counterparties with less bargaining power.

5.5.1.3. Effect of Leverage on corporate Cash holding.

It was established that leverage and cash holding are positively related which is not consistent with theory and therefore managers in nonfinancial listed firms should change their cash management policies to optimize value.

5.5.1.4. Effect of Cash flow on Corporate Cash holding

It was established that company cash holdings were positively related to cash flow from operation. Meaning the higher the cash a firm generated from its operation the higher were its cash balances. Managers were also in agreement that they accumulated cash balances from their internally generated cash. findings suggest that the behavior of Nonfinancial Firms listed on NSE are heavily influenced by borrowing constraints and that financial sector development would induce non-financial firms to invest more in physical assets and do less saving in the form of cash holdings

5.5.1.5. Moderating effect of prevailing interest rates on corporate cash holdings and firm characteristic

Prevailing interest rates have an insignificant moderation on the cash holding and firm characteristics relationships. On its own however interest rates do not significantly impact cash holding of non-financial listed firms. Managers however hold the view that it does and may thus engage in sub optimal cash management practices in reaction to interest rate movement in the market. It’s therefore recommended that managers cash holding practices be aligned just to the mediation effect based on the firm characteristics rather than as a stand-alone determinant as is perceived today.
5.5.1.6. Moderating effect of Industry Sectors on Cash Holdings.

Managers in nonfinancial listed companies correctly acknowledge that their cash holding decisions are determined in part by the industry sector in which they are playing. The managers continue aligning their cash decisions in line with industry sectors as any failure to observe this rule may impact on their operations adversely.

5.5.2. Suggestions for Further research

From the results of our study there are various opportunities for further study in the cash holding space. Some of the results in this study did not support previous findings on the study variables as predicted and will thus call for further analysis and investigation to understand the finding. Some of the areas to enrich research findings would be to bring in study variables that consider corporate governance attributes such as ownership concentration, Board size and board independence. The overall R squared in the study was low indicating existence of other factors that influence cash holding a study could be carried out to establish the relationship between cash and other firm characteristics that were not considered such as dividend payments, Sales ratio and working capital. It would also be useful for a study to be extended to Private firms to compare the results with the sample of public firms. Finally a comparative study can be done on the determinants of cash holdings across the East Africa Community (EAC) countries as the current study was limited to companies operating in Kenya only.
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Appendix 1: Authority Letter

National Commission for Science, Technology and Innovation (NACOSTI)  
Nairobi, Kenya.

02nd August, 2016

Dear Sir/Madam,

RE: RESEARCH INTRODUCTION LETTER – BARASA, CONSTANTINE MULONDANOME

I am pleased to inform you that the above student Barasa, Constantine Mulondanome (student no. 638582) is a Doctorate candidate at the United States International University (USIU) – Africa.

He is currently conducting a Research Dissertation on: "Determinants of Cash Holding in Emerging Market Firms: Evidence from Nairobi Securities Exchange", which has been approved by the United States International University-Africa academic board. He has also been assigned two supervisors who will guide him through this process.

Kindly, accord him the desired assistance and contact the undersigned should you have any queries.

Sincerely,

GeAchoki

Dr. George Achoki,  
Dean - Chandaria School of Business (USIU),  
Tel: 3606 415  
Email: gachoki@usiu.ac.ke
Appendix 2: NACOSTI Letter

NATIONAL COMMISSION FOR SCIENCE,
TECHNOLOGY AND INNOVATION

Telephone: +254-20-22313471,
224349,3310571,2219420
Fax: +254-20-318245,318249
Email: dp@nacosti.go.ke
Website: www.nacosti.go.ke
when replying please quote
Ref: No. NACOSTI/P/17/54206/15382

9th Floor, Utalii House
Uhuru Highway
P.O. Box 36623-00100
NAIROBI KENYA

Date. 17th February, 2017

Constantine Mulondanome Barasa
United States International University
P.O. Box 14634– 00800
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on
“Determinants of corporate cash holding of nonfinancial firms listed in the
Nairobi Securities Exchange,” I am pleased to inform you that you have been
authorized to undertake research in Nairobi County for the period ending 16th
February, 2018.

You are advised to report the County Commissioner and the County
Director of Education, Nairobi County before embarking on the research
project.

On completion of the research, you are expected to submit two hard copies
and one soft copy in pdf of the research report/thesis to our office.

[Signature]

DR. STEPHEN K. KIBIRI, PhD.
FOR: DIRECTOR-GENERAL/CEO

Copy to:
The County Commissioner
Nairobi County.

The County Director of Education
Nairobi County.
Appendix 3: NACOSTI Permit

THIS IS TO CERTIFY THAT:
MR. CONSTANTINE MULONDBANOME BARASA
of United States International University- Africa, 24381-100 Nairobi, has been permitted to conduct research in Nairobi County on the topic: DETERMINANTS OF CORPORATE CASH HOLDING OF NON-FINANCIAL FIRMS LISTED IN THE NAIROBI SECURITIES EXCHANGE for the period ending 16th February, 2018.

Applicant’s Signature

Director General
National Commission for Science, Technology & Innovation

CONDITIONS
1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit.
2. Government Officer will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two (2) hard copies and one (1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice.

National Commission for Science, Technology and Innovation
RESEARCH CLEARANCE PERMIT

Serial No.: 123430

CONDITIONS: see back page
### Appendix 4: Non-Financial Companies Listed on the Nairobi Securities Exchange

| Sector/Segment                  | Company                        |
|--------------------------------|--------------------------------|
| Agricultural                   | Eaagads                        |
|                                | Kakuzi ltd                     |
|                                | Kapchorua tea                  |
|                                | Limuru Tea Co                  |
|                                | Sasini ltd                     |
|                                | Williamson Tea                 |
| Automobiles and Accessories    | Car and General                |
|                                | Sameer Africa.                 |
| Commercial and Services        | Deacons EA ltd                 |
|                                | Express Ltd                    |
|                                | Kenya Airways                  |
|                                | Longhorn Kenya ltd             |
|                                | Nation media group             |
|                                | Nairobi Business Ventures      |
|                                | WPP Scan group                 |
|                                | Standard group                 |
|                                | TPS EA(Serena)                 |
|                                | Uchumi Supermarkets            |
| Construction and Allied        | Athi River Mining              |
|                                | Bamburi Cement                 |
|                                | Crown Paints Kenya             |
|                                | E.A cables                     |
|                                | E.A Portland Cement            |
| Energy and petroleum           | Kengen Ltd                     |
|                                | Kenolkobil ltd                 |
|                                | Total Kenya Ltd                |
|                                | Kenya Power and lighting       |
| Industry                           | Company Name                     |
|-----------------------------------|----------------------------------|
| Investments                       | Umeme Ltd                        |
|                                   | Centum investment                |
|                                   | Home Africa                      |
|                                   | Kurwitu Ventures                 |
|                                   | Nairobi Securities Exchange       |
|                                   | Olympia Capital Holding          |
|                                   | Trans Century                    |
| Manufacturing and allied          | Flame tree group                 |
|                                   | B.O.C Kenya                      |
|                                   | British American tobacco Kenya    |
|                                   | Carbacid Investments Ltd         |
|                                   | East African Breweries            |
|                                   | Eveready EA Ltd                  |
|                                   | Kenya orchards                   |
|                                   | Mumias Sugar                     |
|                                   | Unga group                       |
| Telecommunications and Technology | Safaricom Ltd                    |

Source: Nairobi Securities Exchange (2017)
Appendix 5: Secondary data collection tool

Name of the Company-------------------------------------------------------------

Segment-----------------------------------------------------------------------

| Year | Cash holding | Market to book ratio | Firm size | Leverage | Cash flow/Net Assets | Interest rates | Industry sector |
|------|--------------|----------------------|-----------|----------|----------------------|----------------|-----------------|
| 1998 |              |                      |           |          |                      |                |                 |
| 1999 |              |                      |           |          |                      |                |                 |
| 2000 |              |                      |           |          |                      |                |                 |
| 2001 |              |                      |           |          |                      |                |                 |
| 2002 |              |                      |           |          |                      |                |                 |
| 2003 |              |                      |           |          |                      |                |                 |
| 2004 |              |                      |           |          |                      |                |                 |
| 2005 |              |                      |           |          |                      |                |                 |
| 2006 |              |                      |           |          |                      |                |                 |
| 2007 |              |                      |           |          |                      |                |                 |
| 2008 |              |                      |           |          |                      |                |                 |
| 2009 |              |                      |           |          |                      |                |                 |
| 2010 |              |                      |           |          |                      |                |                 |
| 2011 |              |                      |           |          |                      |                |                 |
| 2012 |              |                      |           |          |                      |                |                 |
| 2013 |              |                      |           |          |                      |                |                 |
| 2014 |              |                      |           |          |                      |                |                 |
| 2015 |              |                      |           |          |                      |                |                 |
| 2016 |              |                      |           |          |                      |                |                 |
| 2017 |              |                      |           |          |                      |                |                 |
Appendix 6: Questionnaire on managements views on determinants of cash holding.

Survey on the motives and determinants influencing cash holding decisions of nonfinancial corporations

Dear Respondent

I am a post-graduate student studying towards my DBA (Doctor of Business Administration) at the United States International University Africa (USIU-A) in Nairobi. The aim of my study is to establish the key factors that influence cash holding decisions of non-financial firms listed on the Nairobi Securities Exchange. I believe that my study would make a contribution to improving cash management practices of nonfinancial firms and therefore improve efficiency of their operations.

You are part of our selected sample of respondents whose views we seek on the above-mentioned matter. We would therefore appreciate it if you could answer a few questions. It should not take more than twenty minutes of your time and we want to thank you in advance for your co-operation.

There are no correct or incorrect answers. Please answer the questions as accurately as possible. For each statement, tick (with a cross X) the number which best describes your experience or perception. For example, if you strongly agree with the statement, tick against it and likewise for the other options that best describe your opinion. **Tick only one answer for each statement and answer all questions please. We guarantee that all information will be handled with the STRICTEST CONFIDENTIALITY.**

Thank you very much.

Constantine Barasa (Student no. 638582)
Section 1: Company and Respondent Information

1. Name of Company



2. Main sector of operations

   Agricultural ( ), Automobile ( ), Commercial ( ), Construction ( ), Energy & Petroleum ( ), Investment ( ), Manufacturing ( ), Telecommunication ( ),

3. Size in terms of turnover (Annual in Kenya Shillings).

   Below 1 billion( )
   Between 1- 5 billion ( )
   Between 5- 10 billion ( )
   Over 10 billion ( )

4. What is the number of employees in your organization

   0- 50 ( ) 50- 100 ( ) 100- 500 ( ) over 500 ( )

5. Years in existence

   0- 10 ( ), 10- 20 ( ) over 20 Year ( )

6. Position of respondent

   Chief Executive/ Managing Director ( )
   Director/General Manager/ Chief Finance Office ( )
   Finance Manager/ Chief Accountant/ Financial Controller etc. ( )
Section 2: Determinants of Corporate Cash holding

1. Firms strive to hold optimal levels of cash that trade off the opportunity costs of holding too much cash against the trading costs of holding too little.

   Strongly Disagree ( )    Disagree ( )    Agree ( )    Strongly Agree ( )

2. Firms with greater uncertainty in their future cash flows tend to hold more cash to prevent underinvestment in future profitable projects.

   Strongly Disagree ( )    Disagree ( )    Agree ( )    Strongly Agree ( )

3. Firms with higher levels of internally generated cash flows tend to hold more cash.

   Strongly Disagree ( )    Disagree ( )    Agree ( )    Strongly Agree ( )

4. Firms with abundant investment opportunities hold higher levels of cash to insulate future capital expenditures from the variability of internally generated cash flows.

   Strongly Disagree ( )    Disagree ( )    Agree ( )    Strongly Agree ( )

5. I prefer larger cash balances to provide me with more discretion in my firm's spending and capital expenditure decisions.

   Strongly Disagree ( )    Disagree ( )    Agree ( )    Strongly Agree ( )

6. I will hold large cash balances if interest rates are expected to rise.

   Strongly Disagree ( )    Disagree ( )    Agree ( )    Strongly Agree ( )
7. I hold less cash because my firm is large  
   Strongly Disagree ( )  Disagree ( )  Agree ( )  Strongly Agree ( )

8. If the credit rating of my firm was to improve I will hold less cash  
   Strongly Disagree ( )  Disagree ( )  Agree ( )  Strongly Agree ( )

9. There is easy access to Capital/Debt markets so I don’t need to hold a lot of cash  
   Strongly Disagree ( )  Disagree ( )  Agree ( )  Strongly Agree ( )

10. Costs of financial distress/Bankruptcy are high so I hold large cash balances to be in control  
    Strongly Disagree ( )  Disagree ( )  Agree ( )  Strongly Agree ( )

11. If our business involved huge outlay in capital assets(Plant equipment and technology) we could hold higher levels of cash.  
    Strongly Disagree ( )  Disagree ( )  Agree ( )  Strongly Agree ( )

12. Firms with abundant investment opportunities hold excess cash in order to maintain their competitive positions.  
    Strongly Disagree ( )  Disagree ( )  Agree ( )  Strongly Agree ( )

13. Large firms have leverage with lenders and investors and are therefore able to hold less cash.  
    Strongly Disagree ( )  Disagree ( )  Agree ( )  Strongly Agree ( )
14. The primary cause for a firm's excess cash balances is the accumulation of internally generated cash flows
   Strongly Disagree ( )   Disagree ( )   Agree ( )   Strongly Agree ( )

15. Financially constrained firms are more likely to save cash from internally generated cash flows to fund future investment opportunities.
   Strongly Disagree ( )   Disagree ( )   Agree ( )   Strongly Agree ( )

16. When in financially distress firms are more likely to use excess cash flows to increase cash holdings instead of paying down debt.
   Strongly Disagree ( )   Disagree ( )   Agree ( )   Strongly Agree ( )

17. We will reduce our cash holding if our debt levels reduce
   Strongly Disagree ( )   Disagree ( )   Agree ( )   Strongly Agree ( )

18. We held more cash when our company was small
   Strongly Disagree ( )   Disagree ( )   Agree ( )   Strongly Agree ( )

19. If Interest rates in the market were stable firms would hold less cash
   Strongly Disagree ( )   Disagree ( )   Agree ( )   Strongly Agree ( )

20. If we accumulate more debt we will increase our cash holding
   Strongly Disagree ( )   Disagree ( )   Agree ( )   Strongly Agree ( )

21. We hold high cash balances because to support our share price
   Strongly Disagree ( )   Disagree ( )   Agree ( )   Strongly Agree ( )
22. If our firm was operating in a different industrial/economic sector we would change our cash holding policy

   Strongly Disagree ( )  Disagree ( )  Agree ( )  Strongly Agree ( )

23. In times of fluctuations in interest rates we increase our holding of cash and marketable securities

   Strongly Disagree ( )  Disagree ( )  Agree ( )  Strongly Agree ( )

24. Because our firm business is diversified we are able to hold less cash

   Strongly Disagree ( )  Disagree ( )  Agree ( )  Strongly Agree ( )

Section C: Other Factors

Kindly list any other factors that influence your cash holding policy decisions.

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