AUDIT COMMITTEE CHARACTERISTICS AND EARNINGS MANAGEMENT OF LISTED FOOD AND BEVERAGES FIRMS IN NIGERIA

BY

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BEING A THESIS SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, ZARIA IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTERS OF SCIENCE (M.Sc.) IN ACCOUNTING AND FINANCE

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DECLARATION

I hereby declare that this thesis entitled 'Audit Committee Characteristics and Earnings Management of listed Food and Beverages Firms in Nigeria' is solely conducted by me under the supervision of Dr. Hassan Ibrahim and Dr. Salisu Abubakar. To the best of my knowledge, this research work has never been presented anywhere for the award of any educational certificate. All materials used from other sources are duly and properly acknowledged. I take full responsibility of the errors contained herein.

_____ _____

Hussaini BALA **Date**

CERTIFICATION

This is to certify that this thesis entitled 'Audit Committee Characteristics and Earnings Management of listed Food and Beverages Firms in Nigeria' by Hussaini BALA meets the regulations governing the award of the degree of Master of Science (M.Sc.) in Accounting and Finance of Ahmadu Bello University Zaria, and is therefore approved for its contribution to knowledge and literary presentation.

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ABSTRACT

There exists divergence of opinions in the literature on the relationship between Audit Committee characteristics and earnings management. The mix of opinions makes the direction of their relationship ambiguous. This study investigated the relationship between Audit Committee characteristics and earnings management of listed food and beverages Firms in Nigeria. The study covered the period of six years from 2007 to 2012. Data for the study were extracted from the Firms' annual reports and accounts. After running the OLS regression, a robustness test was conducted for validity of statistical inferences. The dependent variable was generated using two steps regression in order to determine the discretionary accrual of the sample Firms. Multiple regression was employed to run the data of the study using Random Model. The results from the analysis revealed significant association between audit committee characteristics and earnings management of the Firms. While audit committee size and committees' financial expertise showed inverse relationship with earnings management, committee's independence and frequency of meetings are positively and significantly related to earnings management. In line with the findings, the study recommended among others that listed food and beverages Firms in Nigeria should strictly comply with the provision of Companies and Allied Matters Act (CAMA) and SEC Code of Corporate Governance on the issues regarding Audit Committees. And regulators such as SEC should increase the minimum number of Audit Committee members with financial expertise and also have a statutory position on the maximum number of Audit Committees meetings, which should not be greater than four meetings in a year as SEC code of corporate governance is silent on this.

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CHAPTER ONE
INTRODUCTION

1.1 Background to the Study

Financial scandals and the collapse of some multi-national corporations can be as a result of the unethical Accounting practices. One of such unethical issues in Accounting is earnings manipulations that come under the umbrella of earnings management and serves as a strategic tool used by management under the pretext of maximizing firm's value and reducing risks. This is possible by distorting and/or manipulating the application of Generally Accepted Accounting Principles (GAAP).

Earnings management is seen as an attempt by management to induce, or influence or manipulate reported earnings by using specific accounting method or changing methods; recognizing one-time non current items, deferring or increasing expenses or revenue transactions or using other methods designed to influence short term earnings (Rahman, Muniruzzaman & Sharif 2013). This practice, according to Levitt (1998) "causes in erosion in the quality of earnings, and consequently the quality of financial reporting will lose out to illusion".

The importance of accounting earning to stakeholders of any given firm cannot be over emphasized as the entire faith of the firm and consequently of its stakeholder relies on it. In addition, from the accounting point of view, earning is the final product of the entire accounting process. It will thus be of interest for accounting scholars to observe that their most important variable continue to maintain its relevance in the decision making of various users for varying applications. It is believed that earning is said to be relevant if only it can be relied upon (Iyire 1966). On the other hand, earnings management reduces the needed reliability and hence it

relevance (Bugshan 2005). For earning to maintain its importance, there is hence the need to device ways that can be used to enhance the practice of reporting quality earnings. After the recent world major financial crisis in 2008, there is ever increasing need to look up for indicators of earnings reliability.

The reality facing stakeholders of financial reporting is that corporate financial reporting failure has been on the increase, especially in the past decades. Window dressed accounts generated concerns in the USA with the collapse of the energy corporation (ENRON) in 2001. The company filed for bankruptcy after adjusting its accounts. WorldCom, Global Crossing and Rank Xerox are other companies in the USA with similar problems. In Italy, parmalat failed in 2003 when it engaged in accounting scandals worth eight billion Euros (Demaki, 2011 and Norwani, et al., 2011).

Nigeria has had its own share of financial reporting failure with the problems in Cadbury Nigeria Plc in 2009, Afribank Nigeria Plc faced problem of financial reporting in 2009, and Intercontinental Bank Plc in 2009. With this development, most countries all over the world decided to set codes of best practice as guideline to address governance and financial reporting anomalies. Thus, reports like Cadbury report in United Kingdom and Sarbanes Oxley in the United States of America were produced. Similarly, Day Report in Canada, the Vienot Report in France, the Olivencia Report in Spain and the Kings Report in South Africa were all produced. In the same vein, the principles and guidelines on corporate governance in New Zealand and the Cromme code in Germany were produced. The goal of these regulations was to improve firms' corporate governance environment (Bhagat and Bolton 2009).

In Nigerian, the regulatory authorities have responded by compelling companies to comply with stringent corporate governance codes. Idornigie (2010) reported that Nigeria has multiplicity of code of corporate governance with distinctive dissimilarities namely; Security and Exchange Commission (SEC) code of corporate governance 2003 to guide the operation of public companies listed in the Nigerian Stock Exchange, which was reviewed in 2011, Central Bank of Nigeria (CBN) code of 2006 and National Insurance Commission (NAICOM) code of 2009. Owing to the above, every public company in Nigeria is required under section 359(3) and (4) of the CAMA to establish an audit committee. It is the responsibility of the Board to ensure that the committee is constituted in the manner stipulated and is able to effectively discharge its statutory duties and responsibilities. At least one board member of the committee should be financially literate; and members of the committee should have basic literacy and should be able to read financial statements. In addition, at least one member should have knowledge of accounting or financial management, whenever necessary; and the committee may obtain external professional advice.

Audit committees have been regarded as integral to quality financial reporting. Companies establish audit committees to improve quality of financial reporting practices and earning, (Ramsay; 2001). The basic functions of audit committee are to oversee the financial reporting process and to monitor managers tendencies to manipulate earnings, regulators in recent years have questioned the effectiveness of audit committee in ensuring that financial statement are fairly stated, and are without earning management.

Studies have been conducted on the role of audit committee in monitoring management (Nelson & Jamil, 2012). These studies provide different opinions on the direction of their association. The outcome of the studies, which are mostly, conducted in developed nations motivated more studies in the area in order to investigate whether audit Committee characteristics can reduce earnings management in different economies. This is because despite the attention given by practitioners and regulators to corporate failure, it has become the order of the day. This further necessitates the need to investigate the likely impact of audit committee characteristics on earnings management of listed foods and beverages Firms in Nigeria.

By focusing on the listed Food and Beverages Firms in Nigeria, the study identifies a suitable context in which earnings management may be more easily carried out. This is can be clearly deduced from the accounting scandal by Cadbury Nigeria plc which is one of the firms of listed Food and Beverages; where the company's share price declined from ₦86.52 per share as at December, 2005 to ₦8.65 as at October, 2009. This scandal according to Okaro and Okafor (2013) "has since been euphemistically dubbed as Nigerian's Enron equivalent". Hence, studying audit committee attributes and earnings management in the subsector of manufacturing of Food and Beverages is expected to be of great importance considering the fact that it has larger number of Firms.

1.2 Statement of the Problem

Financial Statements are a major means through which companies communicate to its users its financial results as well as its position. Financial analysts cum investors make use of financial statement to make rational decisions. The Nigerian Accounting Standards Boards, now Financial

Reporting Council, in its statement of accounting standards, states that the objective of financial statements is to provide information about the reporting entity's financial performance and position that are useful for assessing the stewardship of the entity's management and making economic decision. Some of the qualitative characteristics of this information are reliability, relevance and understandability. To achieve quality of financial reporting, a monitoring committee is often put in place to serve as a watchdog in ensuring that companies produce relevant and reliable information which will eventually protect the interest of both existing and prospective investors. The most important of these monitoring committees is the Audit Committee, which is responsible for the review of audited and unaudited financial statements of organizations thereby improving the quality of such information and reducing the possibilities of unethical or abuse of accounting practices by management when preparing financial statements.

Despite the existence of this monitoring committee, there were a lot of corporate failures in recent years, for instance, the accounting scandals by Cadbury plc, Intercontinental Bank Plc, and Oceanic Bank Plc. This has brought about doubt in the minds of shareholders on the credibility and reliability of financial reports. It was as a result of the foregoing statements that researchers consider it of paramount importance to investigate the effect of this audit committee on earnings management. However, the literature on the relationship between audit committee characteristics and earnings management is inconclusive. Some studies found positive relationships (Beasley & Selterio, 2001), while others found negative associations (Yang & Krishman, 2005; Lin *et al*, 2006; Beasley & Salterio, 2001; and kuang & Sharma 2013). And yet, other researchers reported no relationships (Nelson and Jamil 2012). These mix findings make the direction of these relationships to be illusive, and to the best of our knowledge, there is no

study in Nigeria that has attempted to resolve the mixed result particularly in listed Food and Beverages Firms in Nigeria.

In Nigeria, studies in this area have ignored the financial expertise variable. The work of Leslie and Okoeguale (2013) and Ugbede, Lizam & Kaseri (2013) only used one independent variable (Audit committee size). Similarly, Fodio *et al*. (2013) used two variables (audit committee size and audit committee independence). Hassan (2012) used three independent variables. (Audit committee size, audit committee independence and audit committee meetings). The non-use of the financial expertise which is generally believed to play a significant role in the activities of audit committee provided a gap that needed to be filled.

Additionally, the time period covered by some of the previous studies leaves a gap. The works of Leslie and Okoeguale (2013) for instance, covered the period from 2005 to 2010. Hassan (2012) covered the period of 2008 to 2010, and Fodio *et al.* (2013) covered the period of 2007-2010. These periods can be regarded as not too current as a lot of activities have taken place, which include the changes in the current corporate governance code of 2011 by Nigeria Securities and Exchange Commission. Some of the findings of these studies may not be relied upon in view of the fact that the studies have been taken over by the changes. Similarly, the work of Hassan (2012) covered only three years, this considered too short to enable the generalization of findings. Furthermore, most studies in this area were either conducted in conglomerate sector or banking sector (see Uadiale 2012; Fodio *et al.* 2013; Okoeguale 2013 and Ugbede, Lizam & Kaseri; 2013), and none has specifically covered the listed Food and Beverages Firms in Nigeria.

In view of the above, there is the need to conduct a study with a view to filling these gaps that exist in the literature. This study will therefore seek to answer the question of how audit committee characteristics affect earnings management of Food and Beverages Firms in Nigeria.

1.3 Objectives of the Study

The main objective of this study is to empirically investigate the effect of audit committee characteristics on earnings management. Thus, the specific objectives are;

i. to determine the influence of audit committee size on earnings management of Listed Food and Beverages Firms in Nigeria.

ii. to find out the effect of audit committee independence on earnings management of Listed Food and Beverages Firms in Nigeria.

iii. to ascertain the extent to which audit committee financial expertise affects earnings management of Listed Food and Beverages Firms in Nigeria..

iv. to examine the influence of audit committee meetings on earnings management of Listed Food and Beverages Firms in Nigeria..

1.4 Research Hypotheses

In order to achieve the above mentioned objectives and to empirically solve the problem of this study following null hypotheses were formulated.

H_{01} Audit committee size has no significant effect on earnings management of Listed Food and Beverages Firms in Nigeria.

H_{02} Audit committee independence has no significant impact on earnings management of Listed Food and Beverages Firms in Nigeria.

H_{03} Audit committee financial expertise has no significant effect on earnings management of Listed Food and Beverages Firms in Nigeria.

H_{04} Audit committee meetings have no significant influence on earnings management of Listed Food and Beverages Firms in Nigeria.

1.5 Scope of the Study

The study covers the period of six years from 2007 to 2012. The data used for the study was purely from secondary sources extracted from the annual reports and accounts of listed food and beverages Firms in Nigeria. The variables of the study include audit committee characteristics representing the independent variables, the proxies of which are audit committee size, audit committee independence, audit committee meetings and audit committee financial expertise, and the dependent variable represented by earnings management proxy by discretionary accruals measured by modified Jones model by Dechow *et al.* (1995).

1.6 Significance of the Study

This study titled audit committee characteristics and earnings management will contribute immensely to the existing literature. Even though there are lots of literature on the audit committee characteristics and earnings management around the globe, there is limited evidence from prior literature that empirically investigates the relationship between audit committee and earnings management of Listed Food and Beverages Firms in Nigeria. This will therefore serve as a reference for further researchers in this area, by critically looking at the empirical finding thereby discussing the implication from the Nigerian perspective.

The study also has the potential to inform regulators, practitioners (auditors and forensic accountants) and board of directors who are responsible and more concerned with improving the oversight of public corporations, thereby reducing opportunities for managers and others to engage in financial fraud. In the same vein, it will also serve as a basis for formulation of laws and policy implications. For example, the Companies and Allied Matters Act 1990 has only recommended that company's audit committee should have at least one member with financial knowledge, not necessarily financial expert. In this regards, if it is found that there is significant relationship between audit committee financial expertise and earning management as hypothesized, a recommendation will follow, which may require those regulators to make use of the recommendation in an appropriate manner.

The study will also contribute to debate on the mix of opinion in the existing literature between audit committee characteristics (audit committee size, audit committee independence, audit committee expertise and audit committee meetings and earnings management. In that, the study will be among those that may provide additional evidence for future research.

The Government will find it very relevant, in the sense that earnings manipulation will in one way or the other affects the earnings of companies, which in turn affect their profit, from which the government is expected to receive its portion. For example if the company over estimates future provision for bad and doubtful (i.e. the cookie jar reverse technique), that will bring about lower profit figure, this will make them to pay low tax. When the government understands the negative implications of this, it will therefore force the regulators to formulate or review the existing policies which will be favorable to the entire economy.

The study will also serve as a guide to the existing and potential investors as well as financial analysts who are also the direct users of financial statements. Where earnings manipulation exists; shareholders would be negatively affected, in that, the study will recommend possible solutions to the identifiable problems that may affect those users and also suggest possible ways for policy implications that may protect the interest of investors.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter discusses the concept of audit committees, concept of earnings management, the techniques of earnings management as well as measurement of earnings management. It also reviews empirical literature that is relevant to the study, which includes the relationship between audit committee size and earnings management, audit committee independence and earnings management; audit committee financial expertise and earnings management and audit committee meetings and earnings management. Finally the chapter discusses the theoretical framework underpinning the study.

2.2. The Concept of Audit Committee

Audit committee varies according to the objectives, functions and responsibilities given to them. Arens, Elder and Besaly (2009) define audit committee as "a group of persons selected from members of the board of directors who are responsible for retraining independence of auditors". AL-Thuneibut (2006) defines audit committee as "that which is composed of non-executive directors in the establishment". The second definition may be defective as audit committee does constitute only non-executive directors, as (found in the sample of this study) most audit committees consist of executive and non-executive directors. Therefore, the primary objective behind the establishment of audit committee is to improve quality of audit and check the board of directors thereby increasing the quality of financial reporting.

In Nigeria, section 359(3) and (4) of the Companies and Allied Matters Act requires every public traded firm to establish an audit committee. It is part of their responsibility to assist in the oversight of the integrity of the company's financial statements, compliance with legal and other regulatory requirements, assessment of the qualification of independence of external auditors and performance of the company's internal audit function as well as that of external auditors. It is also meant to establish an internal audit function and ensure that there are other means of obtaining sufficient assurance of regular review or appraisal of the system of internal controls in the company, oversee management's process for the identification of significant fraud risks across the company and ensures that adequate prevention, detection and reporting mechanisms are in place.

In addition to audit committee statutory functions, Securities and Exchange Commission Code of Corporate Governance (2011) provides that audit committee shall assist in the oversight of the integration of company's financial requirements.

Furthermore, the committee also establishes an internal audit function and ensures that there are other means of obtaining sufficient assurance of regular review or appraisal of the system of internal controls in the company. In addition, it further ensures the development of a comprehensive internal control framework for the company, and obtains assurance and report annually in financial report, on the operating effectiveness of the company's internal control framework.

In the same vein, audit committee oversees the management process for identification of significant fraud risks across the company and ensures that adequate prevention, detection and reporting mechanisms are in place. At least, on annual basis the committee is required to obtain and review a report by the internal auditor describing the strength and quality of internal controls including any issues or recommendations for improvement raised by the most recent internal control review of the company (SEC Code of Corporate Governance, 2011). They also discuss policies and strategies with respect to risk assessment and management, meet separately and periodically with management, internal auditors and external auditors. Review and ensure that adequate whistle blowing procedures are in place and that a summary of issues reported are highlighted to the Chairman of the Board; any review with the external auditors, any audit scope, limitations or problems encountered and management's responses to same.

2.3 The Concept of Earnings Management

There is no consensus on the concept of earnings management. This is because different scholars define earnings management in different perspectives. To begin with, Schipper (1989:.2) defined earnings management as "a purposeful intervention in the external financial reporting process with extent of obtaining some private gain". Roman (2009) opined that "earnings management occurs when management has the opportunity to make accounting decisions that change reported income and exploit those opportunities". Additionally, Healy and Wahlen (1999) indicated that "earnings management occurs when managers use judgment in financial reporting and in structuring transaction to alter financial report either to mislead some stakeholders about the underlying economic performance of the company or influence contractual outcomes that depend on reported accounting numbers". On the other hand, Certified Fraud Examiners (1993)

described earnings management as "the deliberate misrepresentation of the financial condition of an enterprise accomplished through intentional misstatement or omission of amounts or disclosure in the financial statement to deceive financial statement users".

In another perspective, Levitt (1998) defined earnings management as ‘a gray area where the accounting is being perverted; where managers are cutting corners; and, where earnings reports reflect the desires of management rather than the underlying financial performance of the company.

More recently, Rahman *et al.* (2013) defined earnings management as "reasonable and legal management decision making and reporting intended to achieve stable and predictable financial results". This definition may be proved wrong when considering ethical practices or conventions in accounting. Looking at the materiality, it states that an item will be considered material if its omission or misstatement could distort the financial statement thereby influencing the economic decisions of users which was taken on the basis of such information. X-raying the global accounting setters, the Financial Accounting Standard Board (FASB) defined materiality in financial accounting concepts statement no 2, as ‘the magnitude of an omission or misstatement of accounting information that, in the light of surrounding circumstances, makes it possible that the judgment of a reasonable person relying on the information would have been changed or influenced by the omission or misstatement’. As such earnings management, creative accounting, financial engineering or aggressive accounting as they are being called are considered to be a deliberate attempts make by the management to arrive at a desired level of earnings, through whatever means, is an unethical practice (Bello 2011).

It is also believed that information asymmetry between management and external users of accounting information allow managers to use their discretion in preparing financial statements for their own advantage (Spohr 2005). Information asymmetry occurs when some parties in business transaction have information advantage over others (Scott 1997), and thus, management has the ability to deceive which is likely going to be difficult to detect. Sun *et al.* (2008) highlighted that the two principles of financial reporting- relevance and reliability directly reflect the role of accounting information which are aimed at resolving the fundamental problem of information asymmetry. They further stated that, the release information is relevant with respect to Firms' future prospect, and is reliable information free of material manipulation. As such, financial disclosure and judgments initially are aimed at reducing this information asymmetry between managers and outside users of financial information. This is supported by Trueman and Titman (1988) who reported that the existence of information asymmetry between managers and shareholders is a necessary condition for earnings management. For that earning management is persistence of information asymmetry and that the blocked communication can be eliminated through the enforcement of contractual arrangement (Schipper 1989). This means that information asymmetry increases earnings management. Thus, firms that disclose more information are likely to have less earnings management. This can be proved by the finding of Richardson (1998) who disclosed that earning management is positively associated with the level of information asymmetry.

Several presentations on earnings management also use the term in connection with managerial discretion that has the aim to communicate information to investors that is supposedly not opportunistic (Dechow & Skinner, 2000), and further stated that the clear definition of earnings

management is difficult to discern from pronouncement and/or statements and speeches by the regulators. This means that it requires the use of more sophisticated means of identifying earnings management before given a clear definition. In contrast, Subramanyam (1996) said earnings management exists only in relation to opportunistic behavior but not when managerial discretion is used to improve earnings persistence and predictability. An opportunistic behavior occurs when managers use information asymmetry between the outside users of accounting information and the inside users in order to maximize their satisfaction in dealing with compensation contract, debt contract and regulation, investors therefore are misled by such unreliable information reported (Sun & Rath, 2008). This indicates that even the concept of earnings management is controversial not to even talk of its likely effects on the components of corporate governance like the audit committee among others. Therefore, for the purpose of this research, this study adopts the definition forwarded by Healy and Wahlen (1999) as operational definition of the study.

Despite the significant attention given by regulators on earnings management and audit committee, academic research has shown limited evidence of earnings management, and still there are limited empirical evidences on the nature of their relationship most especially in developing countries like Nigeria. This creates a gap in literature which this study empirically addresses.

2.4 Measurement of Earnings Management

Various methods have been developed to measure and test earnings management. Healy and Wahlen (1999) and Sweeney (1994) used selection of accounting procedures and changes in accounting policies to detect earnings management. McMullen and Raghunandan (1996) use specific accounting transactions as a device for detecting earnings manipulations. Holland and Ramsey (2003) recommended the use of small earnings measures or small profits to detect whether Firms manage earnings in order to meet earnings bench-marking. Kothari et al (2003) suggested that a widely accepted measure of earnings management is the discretionary accruals; and this was adopted by, Chtourou *et al.* (2001) and Xie *et al.* (2003)

2.4.1 Discretionary accrual

The normal portion of accruals otherwise known as non-discretionary accruals is unlikely to reflect earnings management (Kaplan, 1985). Thus, the major concern in earnings management would be abnormal accruals otherwise known as discretionary accruals. This arose after subtracting estimated normal accruals from total accruals, Dechow *et al.* (1995) tested several models in order to partition total accruals into non discretionary and discretional components. Therefore, the study concludes that the modified Jones model is the most effective in measuring discretionary accruals that mostly reflect earnings management. According to Liu (2011) the original Jones Model explains the influence of economic environment change on non-discretionary accruals. It does not take into account that different industries have different influencing factors on non-discretionary accruals of the listed companies, and if most of non-discretionary accruals changes are caused by enterprise specific environment factors, then the industry model, which ignores differences in enterprises within the same industry, cannot

separate non-discretionary accruals and discretionary accruals accurately. This indicates that the Modified-Jones Model is superior in measuring earnings management. 'Following their findings, we adopted the modified Jones model, which estimates abnormal accruals (Discretionary accruals) as prediction error from ordinary least square regression.

2.5 Review of Previous Studies

Audit committee plays an important role in monitoring management to protect shareholders' interest. The code of best governance practice in Nigeria requires that the committee should be largely independent, highly competent and possess high level of integrity. It is responsible for the review of the integrity of financial reporting and oversee the independence and objectivity of the external auditors. Audit commitee vis-a-vis earnings management has been explored in prior literature using various constructs of audit committee effectiveness such as size of the board (Xie *et al.*, 2001), composition and independence (Klein, 2002), audit committee meetings (Beasley, Carcello, Hermanson & Neal ., 2009), financial expertise of committee members (Kalbers &Fogarty, 1993), and financial motivation of independent directors (Chtourou, Bedard & Corteau., 2001). In the existing literature, Hassan (2011), observed that more attention has been given to financial expertise as a construct of board competence. This, he observed, could be misleading as accounting expertise is much more relevant to the board members in the discharge of their duties as a monitoring mechanism.

The results of studies on the relationship between audit committee and opportunistic accounting are inconclusive. Xie *et al.* (2001) investigated the roles of the board and audit committee in earnings managment. Using a sample of 282 firm-year observations from the S&P 500 index of

each year of 1992, 1994 and 1996, they found that active committee of experienced members, that is members with some financial expertise and/or corporate background is associated with reduced level of discretionery accruals. The disparity in governance structures and regulatory frameworks call for an investigation of similar phenomenon in the Nigerian context.

Also, Chtourou, Bedard and Courteau (2001) investigated the impact of of corporate governance on earnings managment in U.S. Firms. Using a sample drawn from the population of U.S. Firms that appear on Compustat 1996, they found that financial expertise, independent directors and active committee (proxied by board meetings) are inversely related with discretionery accruals. The study uses current accruals in measuring earnings management.

Several studies on audit committee analyzed the quality of audit committee as one of the integral components of corporate governance which have influence in controlling earnings management, or improving financial reporting quality and earnings quality or audit quality. With reference to financial reporting quality, Hassan (2011) examined corporate governance and quality of financial reporting found that governance mechanisms have positively and strongly affected financial reporting quality. The study included audit committee governance as one of the proxies of governance mechanisms. With respect to improving earnings quality, the study of Baxter and Cotter (2012) revealed that the formation of an audit committee reduces intensive earnings management. For improving audit quality, Bala (2013) who studied corporate governance and audit quality, found that audit committee is positively and significantly associated with audit quality. This may not be a surprise, because reasonable attention was given by regulators and

practitioners on audit committee through constant review and reforms of the committee all over the globe.

Finally, if audit committee serves as an effective mechanism in monitoring managers and enhances the quality of financial reports as noted by Klein (2002), it is therefore predicted that it should be inversely related with earnings manipulation and positively related to pre-managed financial performance. Therefore, the following subheadings discuss the empirical findings between the attributes of the audit committees- size, independence, financial expertise, and meetings with earnings management.

2.5.1 Audit committee size and earnings management

Most of the regulations including that of Nigeria require the provision of equal number of shareholders and directors to run the audit committee. As highlighted earlier, section 359(6) of the Companies and Allied Matters Act (CAMA) requires every public company to have an audit committee which shall have a maximum of six members of equal representation by three shareholders and three directors.

There are different views in literature as to the relationship between audit committee size and earnings management. Nelson and Jamil (2011) examined audit committees and financial reporting quality following the government transformation program in Malaysia. They took the sample of 20 out 33 Firms for the period of 2003 to 2009. They also adopted Dechow and Dichev (2002) model to measure earnings quality. The study revealed a positive relationship between audit committee size and earnings management. This finding was supported by that of

Rahman and Ali (2006) who used discretionary accruals as proxy for earnings management and Ismail, Iskandar and Rahmat (2008).Sharma and Kuang (2013) investigated on voluntary audit committee characteristics incentives and earnings management in New Zealand. The study used a sample of 194 Firms out of 393 Firms listed in New Zealand Stock Exchange Market for the period 2004. They adopted performance adjusted modified Jones model in measuring discretionary accruals. Their finding showed a significant positive relationship between audit committee size and earnings management. This is consistent with the proposition by Jensen (1993) that streamlined boards can operate more effectively in maintaining management and can be extended to audit committee size. This indicates that smaller audit committee is more efficient in monitoring the financial reporting process, thereby reducing earnings management.

In Contrast, Yang and Krishman (2005) who analyzed the relationship between audit committees and earnings management in US using a sample of 896 firm-year observations for the period 1996-2000, found that audit committee size has negative significant relationship with earnings management. This is in consonance with the work of Lin *et al.* (2006) .This makes some researchers to posit that lager audit committees are better at maintaining the financial reporting process. For instance, Beasley and Salterio (2001) found that as audit committee size increases, Firms are more likely to include outside directors on the committee beyond the mandated minimum requirements, which enhances audit effectiveness. As such, it can be said that audit committee size constrains earnings management.

It could be argued that the above mentioned findings might not be generalized. This is because some of them lack strong evidence to be accepted. This may be due to the limited number of

years, which may create doubt as to the reliability and objectivity of their findings because, a data for only one or two years cannot give a clear picture of the desired outcomes. For example, the study conducted by kuang and Sharma (2013) on voluntary audit committee characteristics incentives and earnings management in New Zealand use only two years 2004 to 2005.

The studies conducted in Nigeria on the relation between audit committee characteristics and earnings management, Fodio *et al* (2013) who investigated corporate governance mechanisms and reported earnings quality in listed Nigerian insurance Firms, took the sample of 25 companies for the period 2007 to 2010. The study showed that audit committee size is negatively and significantly associated with earnings management. This supports the work of Leslie and Okoeguale (2013) who examined the evaluation of the implication of earnings management determinants in the banking industry. They focused on 18 banks out of the 23 listed for the period 2005 to 2010, and used Pearson product moment correction as technique for analysis. This study revealed that audit committee size is negatively correlated with earnings management. Even though Leslie and Okoeguale (2013) used Pearson product moment correlation in determining the association between audit committee size and earnings management which is not strong enough as it can only measure degree of relationship not causation as such it requires the use of strong and more sophisticated statistical tool of analyses like regression in order to measure the actual effect of audit committee and earnings management. Fodio *et al (2013)* still use discretionary accruals, measured by modified Jones model; in assessing the effect of corporate governance on reported earnings quality of insurance Firms in Nigeria. It is argued that modified Jones model is not applicable in some sectors like banks and insurance companies which was the domain of the researchers.

In another dimension, Baxter and Colter (2009) studied audit committees and earnings management of listed manufacturing companies in Australia. The study used 309 companies out of 500 listed companies in Australia in the year 2001, and employed the use of OLS using modified Jones model. Their study found no significant relationship between audit committee size and earnings management.

Taking the above finding into consideration, it can be observed that the period used for the study is not enough, for a one year study cannot be used for generalization as it only captures a single period of time thereby neglecting other periods that may be affected by some other factors like change in regulations, standards, financial crises among others. However, because of these different views provided by researchers and literature, the direction of relationship between audit committee size and earnings management is controversial.

2.5.2 Audit committee independence and earnings management

Prior literature provides divergent opinion on the relationship between audit committee independence and earnings management, but majority of these views concluded that an independent audit committee provides effective monitoring of financial statements which was provided by the management and ensure credibility of financial reporting. This is inconsistent with the findings of Nelson and Jamil (2012) that show that the magnitude of audit committee independence influences earnings management as a proxy of financial reporting quality.

Several studies support the negative association between audit committee independence and earnings management which include among others Chtourou *et al.* (2001) who investigated corporate governance and earnings management using two groups of US Firms, one with relatively high and one with relatively low levels of discretionary accruals in the year 1996 and showed that income increasing earnings management is negatively associated with a larger proportion of outside members who are not managers in other Firms, a clear mandate for overseeing both the financial statements and the external audits and a committee composed of only independent directors that meet more than twice a year. Consequently, audit committees composed of only independent directors will be negatively associated with earnings management.

This result supports the findings of Klein (2002) who examined audit committee, board of director characteristics and earnings management. She took a sample of 692 public US Firms and adopted modified Jones model to measure discretionary accruals. She found a negative relationship between abnormal accruals and the presence of outside directors on the audit committee, but no significant association was found between earnings management and the more stringent requirements of 100% audit committee independence. The result is consistent with Meca and Ballesta (2009) who studied corporate governance and earnings management. They adopted Meta analytic technique and analyzed 35 previous studies that examined the effect of corporate governance and earnings management. Their findings revealed that audit committee independence can constrain earnings management thereby improving investors' confidence.

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In the same line of thinking, Sharma and Kuang (2013) suggested that audit committee comprising, independent (non-executive) directors reduce the likelihood of aggressive earnings management, and their results show that independent directors serving on the board are associated with a lower likelihood of earnings management. This can clearly justify the suggestions by Bronson *et al.* (2009) who documented that financial statement frauds are more likely to occur in Firms with less audit committee independence. This also supports the result of Beasley *et al.* (1999) who found that an independent audit committee significantly reduces the likelihood of financial misstatement. This is consistent with the findings of Kuang (2007) who assessed audit committee characteristics and earnings management in New Zealand. He took a sample of 150 Firms out of 393 for the period 2004 to 2005 and used performance adjusted modified Jones model to measure discretionary accruals. The study found that an audit committee comprising majority of independent directors reduces the likelihood of earnings management.

Looking at the foregoing literature, it can be observed that most of them provide no evidence to support the provision of 100% audit committee independence; even though Kuang (2007) found that a completely independent audit committee is not associated with the likelihood of earnings management. This is supported by Klein (2002) who documented that in contrast with the new regulations, no significant association was found between earnings management and stringent requirement of 100% audit committee independence.

In another development, other researchers provided no evidence to support the relationship between audit committee independence and earning managements among which are Baker and

Cotter (2009) who found no significant association between audit committee independence and earnings management. This is also consistent with the findings of Nelson and Jamal (2011) who found a positive but not significant relationship between audit committee independence and earnings management.

Contrary to most findings of prior researches, in Nigeria, fodio *et al* (2013) found a positive significant relationship between audit committee independence and earnings management. Their finding is consistent with that of Xie *et al.* (2001) who studied earnings management and corporate governance, the role of the board and audits the committee, and found a positive association between audit committee independence and earnings management, and that of Shah *et al.* (2009) who studied corporate governance and earnings management from Pakistani listed companies. He took a sample from 53 listed companies for the year 2006. He employed modified Jones model in measuring earnings management. The finding revealed a positive association between audit committee independence and discretionary accruals.

In line with the above literature, it can be generally said that audit committee independence influence earnings management but the mix of opinion may be as a result of other issues that may negatively affect a general conclusion on the direction of this relationship, for instance Chtourou *et al.* (2001) used only two groups of US companies one with relatively high and the other with relatively low levels of discretionary accruals for the year 2006 only. Kuang (2007) considered only two years 2004 to 2005. Fodio *et al.* (2013) adopted modified Jones model to measure discretionary accruals of listed insurance companies when it is not applicable to financial sector, and Shah *et al.* (2009), used 2006 only as the period of the study. This may

create a vacuum for a single period of time because two groups of companies cannot be used for generalization. In that; it requires additional number of years and companies to see what will be the likely changes, and this is what this study tends out to find among others.

2.5.3 Audit committee financial expertise and earnings management

Most of the global financial regulations mandate that at least one member of the audit committee should be a financial expert. And also, the provision of Companies and Allied Matters Act (CAMA) Section 359 (3) and (4) required that at least one board member of the audit committee should be financially literate. Apart from regulatory requirements, the existing literature also confirms that; for instance, Beasley *et al.* (2009) documented that audit committees also face incentives to effectively monitor managers in form of legal liability in reputational work. As such, financial expertise is directly linked with better financial reporting quality (Krishnan & Visvanathan, 2008). Also Badalato, Denelson and Ege (2013) who studied the relationship between audit committee financial expertise and earnings management found that audit committee with both financial expertise and high relative status are more effective at determining earnings management as measured by accounting irregularities and abnormal accruals. The intuition is that higher levels of financial expertise are beneficial to audit committee. This is supported by Salterio (2001) who found that the accounting experience of audit committee members as well as their knowledge of auditing are positively associated with the likelihood that they will support auditors in an auditor- corporate management disputes. This means that financial competence of audit committee members decreases the likelihood of earnings management. This also explains the findings of Chtourou *et al.* (2001) who examined corporate governance mechanism and earnings management and found that the presence of at least one

audit committee member with financial expertise is negatively associated with the levels of earnings management. The result is in line with the work of Sharma and Kuang (2013) who investigated on the voluntary audit committee characteristics, incentives and aggressive earnings management in New Zealand and utilized a sample of 94 Firms from 393 Firms listed on the New Zealand Stock Exchange for the period of 2004 to 2005. They adopted performance modified Jones model to measure discretionary accruals. They also found that audit committee financial expertise is associated with a lower likelihood of aggressive earnings management. This means that the impact of financial literacy could be influenced by the independence of director as indicated above.

Looking at some of the above findings, it may be argued that the work of Kuang and Sharma (2013) on voluntary audit committee's characteristics, and aggressive earnings management in New Zealand used only two years 2004 and 2005. Therefore, the time frame is limited. For that the study needs to be revisited by including other periods that were not captured.

Furthermore, Yang and Krishnan (2005) investigated the relationship between audit committee and the magnitude of quarterly earnings management. They report weak association between audit committee financial expertise and earnings management. This result is supported by Nelson and Jamil (2012) who examined audit committee's effectiveness in Malaysia and took sample of 20 out of 33 Firms listed as at 31st December 2010 for the year 2003 to 2009. They used modified Jones model by Dechow and Dechev (2002). The study reported no evidence to support the effect of audit committee financial expertise on the magnitude of earnings management. This is also consistent with the findings of Xie *et al.* (2003) who found that financial expertise has no

significant association with earnings management. In similar studies, the findings of Abott, Parker and Peter (2004) showed that financially sophisticated members are not associated to the probability of financial fraud. Ruhaida (2011) examined the relationship between corporate government practices, audit quality and earnings management in UK. The study consists of two empirical studies, the first one had a sample of 167 Firms, and the second consists of 613 Firms all from the population of financial Time Stock Exchange. Modified Jones model was used to measure discretionary accruals as a proxy of earnings management. His findings revealed a positive but insignificant relationship between audit committee financial expertise and earnings management.

This therefore means that the foregoing findings contradict those of (Krishnan & Visvanathan, 2008), and also Badalato, Denelson and Ege (2013) among others, that audit committee financial expertise is negatively associated with earnings management. As such, more evidence is required on the relationship between audit committee financial expertise and earnings management

2.5.4 Audit committee meetings and earnings management

The audit committee meeting is essential in order to effectively perform its oversight function and monitor management's performance. This supports the finding of Collier and Gregory (1999) who studied audit committee activity and agency cost in UK. Using a sample from UK major companies listed on the London Stock Exchange for the year 1991, they documented that the frequency of audit meetings is assumed to increase the effectiveness of monitoring. This indicates that the more often an audit committee meets the more likely it is to have fewer financial problems (Menon & Williams 1994).

The practitioner, Price Water House (1993) suggests that audit committees should meet at least four times a year and make provisions for special meetings when necessary. Beasley (1996) also recommends that for audit committee to fulfill their monitoring responsibility effectively, they should meet at least once to review interim and annual sec filings. Chtourou *et al.* (2001) found that an audit committee meeting twice a year is positively associated with positive earnings management. Like other audit committees attributes, different opinions also exist in literature as to the relationship between audit committee meetings and earnings management. Xie *et al.* (2003) found that the frequency of audit committee meetings is negatively associated to current discretionary accruals. Chtourou *et al.* (2001) found that meeting more than twice a year is positively associated with positive earnings management.

Considering the recommendations of practitioners like price Water House (1993) and the findings of Beasley (1996), and Xie *et al.* (2001), several existing literatures provide evidence to support insignificant relationships between audit committee meetings and earnings management. (See Uzun, Szewczyk and Varma, 2004; Nelson and Jamil ,2011, 2012; Bedard *et al.* ,2004; Baxer and Colter, 2009). These mix results are required to be revisited so as to be able to identify the actual effect of these variables (audit committee meetings and earning management).

2.6 Theoretical Framework

This study has adopted agency theory to explain the relationship between audit committee and earnings management of listed Food and Beverages Firms in Nigeria. Agency theory originated from the work of Berle and Means (1932). They explored the concept of agency and the applications toward the development of large corporations. They found out how the interest of

the directors and managers differ from the owners of the firm, thereby using the concepts of agency- principal to explain the genesis of those conflicts.

Jensen and Meckling (1976), further on the work of Berle and Means (1932), to develop agency theory as a formal concept. They also formed a school of thought arguing that corporations are structured to minimize the costs of getting agents (agency costs) to follow the direction and interests of the principals. The theory essentially acknowledges that different parties involved in a given situation with same given goal will have different motivations, and these differences can manifest in divergent ways. This means that there will always be partial goal conflict among parties, because efficiency is inseparable from effectiveness, and thus information will always be somewhat asymmetric between principal and agent.

Agency theory is therefore concerned with contractual relationship between two or more persons called the agent(s) to perform some services on behalf of the principal. Both the agents and the principal are presumed to have entered into mutual agreement or contract motivated solely by self interest. The principal delegates decision making responsibility to agents (Chowdhury, 2004). It is a concept that explains why behavior or decisions vary when exhibited by members of a group. Specifically it describes the relationship between one party, called the principal that delegates work to another, called the agent. It explains their differences in behavior or decisions by noting the two parties often have different goals and, independent of their respective goals, different attitudes toward risk. Invariably, the agents' decision choices are assumed to have effect on both parties. These relationships, according to Bromwich (1992), are perceived in economic and business life and also generate more problems of contracting between entities in

the economy. This means that there is a contractual relationship between shareholders and directors and audit committee and shareholders or between audit committee and external auditors.

Considering earnings management practice, agency theory explains clearly the existence of the incentive for management to use earnings management. Therefore, Salah (2010) (in Abdul Rauf *et al.,* 2012) suggests that, management could use earnings to mislead shareholders by showing a different image of the company's earnings. Additionally, Sun and Rath (2008) pointed out that earnings management may arise as a result of information asymmetry or problem of agency conflicts that occur when equity ownership is separated from day to day operation of the corporation and managers have a comparative information advantage over shareholders and that this market imperfections create an environment for managers to engage in accounting discretion in order to promote their selfish interest at the expense of shareholders. At the same time, they also create an opportunity for managers to use that accounting discretion to communicate their companies' performance related information in appropriate manner with investors (Trueman & Titman, 1988; & Schipper, 1989). However, because of the opportunities behavior of agents it has been very paramount for organizations to provide a body that will serve as a watchdog in aligning the interest of agents and principal. One of such mechanisms is through the establishment of audit committee. In this regard, corporate governance framework of which audit committee is an integral part serves as an effective tool in achieving the expectations and the need of shareholders, thereby providing better monitoring of management which serves as an impetus of transparent and reliable reporting. For the purpose of this research, agency theory is adopted. This is due to the fact that it elucidates the relationship between the agents

(management) and the principal (shareholders). In the same vein, audit committee, apart from serving as monetary measures, equally represents the shareholders who are the principal since their composition constitutes equal number of shareholders and directors. The directors therefore are acting on behalf of the shareholders. While the other aspect of the agency theory are the management (agents) who are responsible for the preparation and fair presentation of financial statements in accordance with Nigerian Statement of Accounting Standard (SAS), they also assumed to make sure that the financial statements are free from material misstatement, whether due to fraud or error. This at the tail end is subject to confirmation, review and verification by the audit committee in order to make sure that the accounting policies are in line with the legal requirements and ethical practices. Therefore agency theory is found to be relevant because it explains the audit committee which functions as a monitoring mechanisms to reduce agency cost (Menon & Williams 1994).

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter consists of the methodology adopted for the study. Considering the nature of data, it also discusses the method and sources of data collection as well as the research design, population of the study, sample size and sampling technique, statistical tool for data analysis, variables measurement, model specification and justification of methodology.

3.2 Research Design

A correlational research design was adopted due to the fact that the study measures relationships between audit committee characteristics and earnings management of listed food and beverages Firms in Nigeria.

3.3 Population and Sample

The population consists of all listed food and beverages Firms in Nigeria for the period 2007-2012 (see Table 3.1). The study covers the period of six years (2007-2012). The choice of these companies (food and beverages Firms) was as a result of the model of the study (Modified Jones Model 1995) which is only applicable to non financial institutions. The study intended to take the entire population, but did not provide all the required information. For that, filtering is used as sampling criteria in the following manner that is the company must have published its financial statements for the period of the study (2007 to 2012). In line with the foregoings, that is, after the application of filtering criteria, eight companies were qualified, the remaining were filtered because they did not provide the available information required necessary for the study. The

following tables 3.1 and 3.2 contain the names of Firms that make up the population and sample of the study.

Table 3.1
LISTED FOOD AND BEVERAGES FIRMS IN NIGERIA AS AT 31/12/13, EXTRACTED FROM NSE FACT 2012

NAMES	**DATE LISTED ON STOCK EXCHANGE**
BEVERAGES: BREWERS/DISTILLERS	
Champion Breweries Plc	1st September,1983
Golden Guinea Breweries Plc	1979
Guiners Nigeria Plc	November, 1965
International Breweries Plc	6th April, 1995
Jos International Breweries Plc	30th March, 1992
Nigerian Breweries Plc	5th September, 1973
Premier Breweries Plc	1988
Breweries: Non-Alcoholic	
7up Bottling Company Plc	1986
Food Product	
Big Treat Plc	2007
Dangote Flourmills Plc	2008
Dangote Sugar Plc	2007
Flour Mills of Nigeria Plc	14TH August, 1979
Honeywell Flourmills Plc	20th October,2006
Multi- Trex Integrated Food Plc	1st November, 2010
Northern Nigeria Flourmills Plc	1978
National Salt Company of Nigeria Plc	20th October,1992
Ps Mandrides	February 1979,
Utc Nigeria Plc	1st January, 1972
Union Dicon Salt Plc	23rd September, 1993
Food Product Diversified	
Nestle Nigeria Plc	1976
Cadbury Nigeria Plc	20 April, 1979

Table 3.2 **NAMES OF THE SAMPLE FIRMS**

NAMES	**DATE LISTED ON STOCK EXCHANGE**
Guiners Nigeria Plc	November, 1965
Dangote Flourmills Plc	2008
Dangote Sugar Plc	2007
Flour Mills of Nigeria Plc	14TH August, 1979
Northern Nigeria Flourmills Plc	1978
National Salt Company of Nigeria Plc	20th October,1992
Nestle Nigeria Plc	1976
Cadbury Nigeria Plc	20 April, 1979

3.4 Sources and Method of Data Collection

This study adopted secondary sources of data collection. The data was obtained from the annual reports and accounts of the sampled Firms and Nigerian Stock Exchange Fact Book is used to find out the listed Firms for the period of 2007 to 2012. The adoption of the secondary source was prompted by the requirement of the model and tool of analysis adopted and that the variables of the study consist of audit committee attributes and components of accruals that are obtainable only in the annual reports or the Nigerian Stock Exchange Fact Book.

3.5 Technique of Data Analysis

Ordinary least square regression is adopted to empirically run the regress using STATA as tool of analysis. STATA was used because the study extracts the residual with it. The study uses correlation in order to determine the relationships between the variables of the study. Regression is employed because the study wants to determine the cause and effect of each variable. And finally, the study conducted robustness tests like, Hausman test and Heteroscedasticity test and Multicolinearity test in order to improve the validity of statistical inferences.

3.6 Variables Measurement and Model Specification

The variables of the study consist of Dependent Variable which is Earnings Management measured by discretionary accruals using modified Jones model by Dechow *et al.* (1995). This was done by conducting the analysis in two stages- extracting the residuals from the modified Jones model first and then run the regression with the model of the study.

The independent variables Audit Committee characteristics were proxied by Audit Committee size, audit committee independence, audit committee meetings and audit committee financial

expertise. This is shown in Table 3.1, which contains each variable with their respective definitions

Table 3.3 Variable Measurement and Definition

Variables	Definition and Measurement
Earnings Management	Measured by absolute values of the residuals (discretionary accruals) using Modified Jones model by Dehow *et al.* (1995). This will be explain bellow
Audit Committee Size(ACSIZ)	Measured as the total number of audit committee members
Audit Committee Independence (ACIDP)	Proportion of non executive directors in the audit committee to total number of the audit committee
Audit Committee Financial Expertise (ACFEP)	Proportion of audit committee members with financial expertise (financial knowledge) in the audit committee to total number of the audit committee
Audit Committee Meetings(ACMET)	The number of meetings held by the audit committee during the year
Firm Size(FSIZ)	A control variable measured as natural logarithm of the Firms total assets

As shown in Table 3.1, this study employs the modified Jones model, which estimates abnormal accruals (Discretionary accruals) as prediction error from ordinary least square regression as follows. $\frac{\text{TOTAL ACCRUALS}_{it}}{TA_{it-1}} = Q_{it} + \beta_{it}\left(\Delta\frac{REV_{it}}{TA_{it-1}} - \Delta\frac{REC_{it}}{TA_{it-1}}\right) + \beta_2\frac{PPE_{it}}{TA_{it-1}} + \varepsilon_{it}$ - - - (1)

Where:

$\text{TOTAL ACCRUALS}_{it}$ = NI-CFO

NI = Net operating income

CFO= Cash flow from operating activities

Q = Constant

B = Beta

ΔREV_{it} = Revenues in year t less revenues of firm i in year t -1

ΔREC_{it} = Receivables in year t less receivables of firm i in year t -1

PPE_{it} = Gross property plant and equipment of firm i in year t

TA_{it} = Total Asset

TAC_{it} = Total Accruals

ε= prediction error

After applying the modified Jones models, the abnormal accruals is the prediction error:

$$\text{Abnormal accruals}_{it} = \frac{TAC_{it}}{TA_{it}} - (\alpha + \beta_{it}\left[\frac{\Delta REV_{it}}{TA_{it}} - \frac{\Delta\, REC_{it}}{TA_{it}}\right] + \frac{PPE_{it}}{TA_{it}}) \quad (2)$$

Control variable

Finally, firm size is found to be relevant to the study on both the dependent and the independent variables- earnings management and audit committee characteristics, for it is mostly used in prior studies such as Fodio *et al.* (2013), Chtourou *et al.* (2001) among others. For that firm size was employed as control variable, which is measured as the natural logarithm of the firm's total assets and it presumes to be negatively associated with earnings management. This is because larger Firms are likely to have more effective internal control systems and face more scrutiny in the market (Bedard *et al.* 2004). This supports the findings of Dechow *et al.* (1995) and Klein (2002) who documented that larger Firms are negatively associated with earnings management because they are likely to have more effective internal control systems.

Model specification

The following is the model used to empirically test the hypotheses formulated. The adoption of this model was in line with the work of Nelson and Jamil (2011), Yang and Krishnan (2005) and Baxter and Cotter (2013).

$$\mathbf{DACC_{it} = \beta_{it}0 + \beta_{it}1\ ACSIZ_{it} + \beta 2ACINP_{it} + \beta 3ACFEP_{it} + \beta 4ACMET_{it}\ \beta 5FSIZ_{it} + \varepsilon_{it}}$$

Where**:**

β0= Constant

ACSIZ= Audit committee size of firm i in time t

ACINP= Audit Committee Independence of firm i in time t

ACFEP= Audit Committee Financial Expertise of firm i in time t

ACMET= Audit Committee meetings of firm i in time t

FSIZ= Firm Size of firm i in time t

ε= other factors that were not captured by the model

3.7 Robustness test

The following robustness tests were conducted in order to improve the validity of statistical inferences.

Multicolinearity test. Since the study employs multiple regression model, the association between the predictor variables is unavoidable. Where the association is highly correlated, multi Colinearity exists. This is tested to see the possibility of its existence or otherwise. This is done using variance inflation factor (VIF) and tolerance value

Heteroscedasticity test. The study deals with observations that constitute different sizes, some are in ratios while others in units, and that heteroscedasticity often occurs when there is a large difference among the sizes of the observations. For that, we have to run for Heteroscedasticity test. This is done using Breusch–Pagan test/Cook–Weisberg test.

3.8 Summary

This chapter highlights the introductory part, the research design, population and sampling, the sources and method of data collection, techniques of data analysis, variable measurement, and definition and the reason for the inclusion of control variable. The model specification and robustness test are also contained in this chapter.

CHAPTER FOUR
DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter covers the presentation, analysis and discussion of the results of the study. Results from the descriptive statistics of all the variables are presented, the correlation matrix, robustness tests, which include (Multi Colinearity test, Heteroscedasticity test, and Hausman test) and regression results are presented and discussed. Finally, the chapter closes with the implication of findings.

4.2 Data Presentation

The data for the study was obtained from the annual reports and accounts of the listed food and beverages Firms in Nigeria, for six years 2007 to 2012. This can be found in the appendix (I C).

4.3 Descriptive statistics

The descriptive statistics shows the nature of each of the variable of the study. This includes the minimum, maximum, mean, standard deviation as presented in table 4.1

Table 4.1 Descriptive statistics of the Variables

Variables	Min	Max	Mean	Std dev
DACC	0.00454	0.27207	0.0715294	0.0643458
ACSIZ	4	9	5.791667	0.8741764
ACIND	0.17	0.6	0.37375	0.1190499
ACFEP	0	0.6	0.2689583	0.130779
ACMTN	2	5	3.708333	0.9443749
FSIZ	15.8	19.4	17.555	0.9317702

Source: Extracted from STATA[10] output

Table 4.1 shows that the minimum value of discretionary accrual is 0.00454 and the maximum is 0.27207. This implies that the firm that has higher discretionary accruals signify higher earnings

management and those with lower discretionary have lower earnings management as pointed out by (McNichols, 2002) The discretionary accrual determines the accrual quality, the larger the residuals, the lower the quality of accruals and vice versa.

The audit committee size shows a minimum and maximum of four and nine respectively. This means that the smallest number of audit committee members of listed food and beverage Firms in Nigeria is four and the largest number is nine. This shows that some Firms have violated the maximum requirement of six members as provided in CAMA 1999 as well as the SEC code of corporate governance (2011). Also, the mean of the committee size is 5.791667 which signifies that on the average it can be said there are approximately six members in the audit committee of listed Food and Beverages in Nigeria. Thus, it can be said that on the average there is a compliance of the requirement of CAMA 1999 and the SEC code of corporate governance (2011), with regards to the provision of equal representation of three shareholders and three directors.

For audit committee independence, the table shows a minimum and maximum of 0.17 and 0.6 respectively. This implies that the smallest proportion of non executive directors in the audit committee is 0.17 and the largest proportion is 0.6. This means that there is at least one non executive director in the composition of six members of the audit committee of all the sampled listed food and beverages Firms. In addition, there are at most three non executive directors in the composition of five audit committee members of the Listed Food and Beverages Firms. Again, the mean is 37%, which shows the average composition of non executive directors of Listed Food and Beverages in Nigeria.

Additionally, the audit committee financial expertise shows a minimum of 0 and maximum of 0.6. This implies that there are some Firms that do not have any member with financial expertise in their audit committees, while there are others that have up to 60% members with financial expertise out of five members of the committee. This indicates that some Listed Food and Beverages Firms did not comply with the international recommendation of having at least one audit committee member with financial expertise, even though the provision of CAMA (1990) and SEC code of corporate governance (2011) is that companies' audit committee members should have at least one member with financial literacy not specifically financial expertise. Also, the table shows that the mean of audit committee expertise is 0.130779, an indication that the average proportion of members with financial expertise in the audit committee of listed food and beverages in Nigeria is 13 percent.

Similarly, for audit committee meetings, there is minimum of two and maximum of six meetings respectively. This means that the lowest number of meetings held by Listed Food and Beverages in Nigeria during a year was two and the highest is six. The mean of 3.708333 from the table, shows the average meetings held by the listed food and Beverage within the period of the study.

4.4. Correlation Matrix

The correlation matrix is used to determine the degree of relationship between the dependent and independent variables of the study as well as independent variables themselves. These associations among the variables of the study are presented in Table 4.2. The full results are contained in appendix (II B)

Table 4.2 Correlation Matrix

Variables	DACC	ACSIZ	ACIND	ACFEP	ACMTN	FSIZ
DACC	1.0000	-0.2779	0.2086	-0.3152	0.2545	-0.2854
ACSIZ		1.0000	-0.0107	0.0980	0.1565	-0.0078
ACIND			1.0000	0.2457	0.0781	-0.0383
ACFEP				1.0000	-0.1610	-0.1917
ACMTN					1.0000	0.0626
FSIZ						1.0000

Source: Extracted from STATA[10] output

From Table 4.2, it can be observed that there is negative relationship between audit committee size and earnings management of listed food and beverages in Nigeria. Also, audit committee financial expertise and earnings management of listed Food and Beverages Firms in Nigeria indicates a negative correlation of -0.3152. Additionally, the control variable (firm size) has a negative relationship of -0.2852 with earnings management of listed food and beverages in Nigeria. This indicates there are inverse relationships between audit committee size, audit committee financial expertise, firm size and earnings management, while audit committee independence is positively correlated with earnings management of the Firms with a correlation coefficient of 0.2086. The committee meetings are positively related to earnings management of the Firms. This correlation matrix will not serve as a basis for generalization on the actual relationship between audit committee characteristics and earnings management as correction matrix only gives a mere degree of association between the dependent variable and the independent variables themselves. Thus, regression shows causation.

It can be observed that the relationship between the independent variables themselves are not significant, an indication of absence of multi Colearity. This can be clearly observed from the two indicators (i.e. tolerance value and variance inflation factor VIF) which are within less than 1 and less than 10 respectively (see appendix II D).

4.5 Regression Results

This constitutes the summary of the multiple regression results obtained from the model using ordinary least square regression. The results show individual impact between the independent variables (i.e. audit committee size and earnings management, audit committee independence and earnings management, audit committee financial expertise and earnings management and audit committee meetings and earnings management) and finally the overall impact between the dependent variable and the independent variables. This is presented in table 4.3 below. The full results are shown in appendix (II C)

Table 4.3: **Summary of Regression Result**

Variables	Coefficient	P-Values
Intercept	0.5717	0.000
ACSIZ	-0.0206	0.020
ACIND	0.1449	0.028
ACFEP	-0.1904	0.002
ACMTN	0.0162	0.051
FSIZ	-0.0253	0.002
R^2 (overall)	0.42	
Wald Chi2	30.49	
Chi2 Prob.	0.0000	

Source: Extracted from STATA[10] output

$DACC = \beta 0 + \beta 1\ ACSIZ + \beta 2ACINP + \beta 3ACMET + \beta 4ACFEP + \beta 5FSIZ + \varepsilon$

DACC =0.5717 -0.026+0.1449-0.1904+0.0162-0.0253

4.6 Discussion of Findings and Implications

i. Audit Committee Size and Earnings Management

Table 4.3 shows that there is a negative significant relationship between audit committee size and earnings management of listed Food and Beverages Firms in Nigeria. This can be observed from the coefficient of -0.0206 with p value of 0.020 which is significant at 5%. This indicates that the size of audit committee members is negatively impacting on earnings management of Listed Food and Beverages Firms in Nigeria. The implication of this result is that, larger audit committees are better at reducing earnings management of listed Food and Beverages Firms in Nigeria. Consequently, the result produce a basis for rejecting the first null hypothesis formulated which presumed that audit committee size has no significant effect on earnings management of listed food and beverages in Nigeria. This is in line with the findings of Yang and Krishman (2005) who also documented that audit committee size is negatively and significantly associated with earnings management. It is also consistent with the findings of Lin *et al* (2006), Salterio (2001), Fodio *et al* (2013), and contradicts the findings of Nelson and Jamil (2011), Rahman and Ali (2006), Ismail and Rahmat (2008), Kuang and Sharma (2013) who documented that audit committee size is positively and significantly related to earnings management.

ii. Audit Committee Independence and Earnings Management

The audit committee independence is positively and significantly associated with earnings management of listed food beverages Firms in Nigeria with p value of 0.028 and beta coefficient of 0. 1449 at 5% level of significance. This implies that audit committee independence may not serve as a means of reducing earnings manipulation by managers. This is because; members of

the audit committee might not be financially literate enough and may not have the industry experience which allows for monitoring effectiveness. This also serves as a justification for the rejection of the second null hypothesis formulated which stated that audit committee independence has no significant impact on earnings management of listed Food and Beverages Firms in Nigeria.

This is in consonance with the finding of Fodio *et al.* (2013) who showed that audit committee independence is positively and significantly associated with earnings management. Their finding makes them to posit that audit committee independence might not guarantee that managers would not manipulate earnings. This is consistent with the findings of Xie *et al.* (2001) and Shah *et al.* (2009) who also found a positive relationship between audit committee size and earnings management.

iii. Audit Committee Financial Expertise and Earnings Management

In addition, the model also provides evidence of a significant negative relationship between audit committee financial expertise and earnings management of listed food and beverages Firms in Nigeria. This can be deduced from the coefficient of -0.1904 and p value of 0.002, indicating 5% level of significance. This implies that financial expertise as one of the proxies of audit committees is negatively related to earnings management, which means that audit committee financial expertise reduces the negative effect of earnings management of listed food and beverages Firms in Nigeria. The results therefore serve as a basis for rejecting the third null hypothesis formulated as audit committee financial expertise has no significant effect on earnings management of listed Food and Beverages Firms in Nigeria. This is consistent with Chtourou *et al.* (2001) who found that the presence of at least one audit committee member with

financial expertise is negatively associated with the levels of earnings management, Badalato *et al.* (2013) who found that audit committee with financial expertise is more effective in detecting earnings management as measured by abnormal accruals and Kuang and Sharma(2003) equally found that audit committee financial expertise is associated with lower likelihood of aggressive earnings management.

iv. Audit Committee Meeting and Earnings Management

The table reveals that audit committee meetings have significant positive relationship with earnings management of listed food and beverages Firms in Nigeria at 10% level of significance. This is observable from table 4.3 containing a beta coefficient of 0.016 with 0.051 p- value. This implies that meetings up to four times do not guarantee better monitoring of earnings management of listed food and beverages Firms in Nigeria. This is because, in our sample Firms, it can be observed that audit committees met two to five times. That also provides basis for rejecting the null hypothesis which states that audit committee meetings have no significant relationship with earnings management of listed food and beverages Firms. This supports the findings of Chtourou *et al.* (2001) who documented that meeting more than twice a year is positively associated with earnings management. The result contradicts the findings of Uzun, Szewczyk and Varma (2004), Nelson and Jamil (2011), Nelson and Jamil (2012), Bedard *et al.* (2004) and Baxter and Colter (2009) who found no significant relationship between audit committee and earnings management. It is also not consistent with the findings of Xie *et al.* (2003) and Beasley (1996) who found that frequency of audit committee meetings is negatively associated with discretionary accruals.

Finally, the model again shows that the control variable- firm size is negatively and significantly related to earnings management of listed food and beverages Firms in Nigeria. This implies that, larger Firms are better at monitoring management which will result in reducing earnings management. This justifies the assertion of Hassan and Bello (2013) that large Firms usually have strong internal control systems and governance mechanisms, and therefore can access high quality services from large audit Firms, and care for its reputations. This is in line with Bedard *et al. (*2004) who found that larger Firms are likely to have more effective internal control systems and face more scrutiny in the market.

Overall, the combined and the overall impact of the repressors- audit committee characteristics (audit committee size, audit committee independence, audit committee financial expertise and audit committee meetings) on earnings management of listed food and beverages Firms in Nigeria, is shown on the model summary of the regression results. The Wald Chi2 of 30.49 which is significant at 1% (0.000) reveals the model is well fitted, while the coefficient of determination R^2 of 42.06 %, explains the individual variation of the dependent variable (discretionary accruals) as a result of the changes in the independent variable. It can be said that, audit committee characteristics (audit committee size, audit committee independence, audit committee financial expertise and audit committee meetings) and firm size have combined predictive power of 42.06 % in impacting on earnings management of listed Food and Beverages Firms in Nigeria, while the remaining 58% is accounted for by other factors which are not captured in the model.

4.7 Robustness Test

The robustness tests were conducted in this study to improve the validity of the statistical results. These include Multi-colinearity test, Heteroscedasticity test and Hausman specification tests. The results reveal that there is absence of Multicolinearity and Heteroscedasticity as explained above. This is clearly shown from the result in Appendix II D. The result from the fixed effect reveals that chi^2 is not significant at 5%, while the random effect shows that chi^2 is significant at 1%, and then the Hausman test considers random effect as the appropriate estimator on the basis that fixed effect was uncorrelated with our variable as it was not statistically significant at (0.05) see appendix (II E), and also the study ran for Breusch and Pagan Lagrangian multiplier test for random effects to choose between Ordinary Least Square and random Generalised Least Square. For that, the data did not have heteroscedasticity problem because the hettest reveals a chi2 value of 3.46 with p- value of 0.0630, and that the p- value Breusch and Pagan Lagrangian Multiplier Test for random effects is 0.359 which is not significant see appendix (II E). This shows that it is not significant.

4.8. Summary

This chapter dealt with the data presentation and analysis; containing the introduction, data presentation, the presentation of descriptive statistics that shows the nature of the data used for the study. The correlation matrix, indicating the relationships between the dependent variable and independent variables as well as the independent variables themselves, and discussion of robustness and presentation of the regression results. Finally, the discussion of findings of the study as well as their respective implications.

CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The study examines the influence of audit committee characteristics on earnings management of listed Food and Beverages Firms in Nigeria. The study hypotheses that audit committee size, audit committee independence, audit committee financial expertise and audit committee meetings have no significant impact on earnings management of listed Food and Beverages in Nigeria.

A correlational research design was used. The data was collected purely from secondary extracted source using the annual reports and accounts of listed food and beverages in Nigeria for the period of six years, 2007 to 2012. The population of the study is the entire listed Food and Beverages in Nigeria out of which eight Firms were used as sample of the study. A multiple regression was employed to empirically examine the relationship among the variables. Random Effect GLS Regression is used.

The study provides evidence of negative and statistically significant relationship between audit committee size and earnings management of listed Food and Beverages Firms in Nigeria. It further documents that audit committee independence is positively and significantly related to earnings management of listed food and beverages Firms in Nigeria. A negative significant relationship was also found between audit committee financial expertise and earnings management of listed food and beverages Firms in Nigeria. It also found a positive significant relationship between audit committee meetings and earnings management of listed food and

beverages Firms in Nigeria. Finally, the control variable firm size was found to be negatively and significantly related with earnings managing of listed food and beverages in Nigeria.

5.2 Conclusions

This study has empirically provided evidence on the relationship between audit committee characteristics proxy by audit committee size, audit committee independence, audit committee financial expertise and audit committee meetings, and earnings management of listed food and beverages in Nigeria. Consequently, based on the findings of the study, the following conclusions are drawn.

The presence of negative significant relationship between audit committee size and earnings management of listed food and beverages Firms in Nigeria made conclude that larger audit committee members are more effective in monitoring the activities of the management, and they are also better at maintaining the financial reporting process.

Similarly study also asserts that audit committee members with financial knowledge are better in detecting earnings management thereby reducing the likelihood of aggressive earnings management provided by managers. It is further established that audit committee independence might not guarantee that managers would not manipulate earnings.

Additionally, the study concluded that, audit committees meetings more up to four times will not result in more effective monitoring. This is the reason why this study found positive relationship

between audit committee meetings and earnings management of listed food and beverages in Nigeria, as some Firms held up to five meetings within a particular period of time

Finally, it also concluded that larger Firms have strong internal control systems and governance mechanisms which allow them to access high quality services from large audit Firms. This will go a long way in reducing earnings management established by managers. In the vein, audit committee characteristics of listed food and beverages influence earnings management since the proxies of these committees are significantly associated with earnings management of listed food and beverages Firms in Nigeria.

5.4 Recommendations

In line with the findings and the conclusions of the study, the following recommendations are proffered.

i The shareholders of listed food and beverages Firms in Nigeria should ensure strict compliance with the provisions of Companies and Allied Matters act (CAMA) of having six members of equal representation three shareholders and three directors. In our sampled Firms, the study found some of them have only four audit committee members during a particular period of time. The regulators such as SEC should compel those Firms to strictly abide by these rules and regulations by providing a fine or penalty on any company that contravenes such law. The composition of audit committee members should clearly be spelt out so as to enable them perform their functions effectively, because SEC is silent with regards to the composition of audit committee members. The composition may be stated in such a way that the independent members should have financial knowledge, resulting in dual attributes like audit committee

independence with financial knowledge rather than independence alone. There is the need for regulators like SEC to increase the minimum number of members with financial expertise in the audit committees. Instead of one member; they might also make it compulsory that the chairman of the audit committee should be a person with strong financial analysis background or a professional accountant. As audit committee financial expertise plays significant role in checkmating the financial reports provided by managers and in reducing the likelihood of earnings management.

ii. Furthermore, it is recommended that meetings shall not be more than four times, because meetings held more than four times do not guarantee better monitoring. The regulators too should have a statutory position on the maximum number of audit committees meetings, as SEC code of corporate governance is silent on this.

5.4 Limitations of the study

Like any other research, our study is also associated with some limitations. These limitations include the following;

i. The study is only limited to the domain of the listed Food and Beverages Firms in Nigeria. As such, our findings and recommendations are only applicable to listed Food and Beverages Firms in Nigeria.

ii. The study also finds it somewhat confusing in determining audit committee independence, because, there are two different views in the existing literature on the definition of audit committee independence. Some studies used non executive directors as proxies, for example, Fodio *et al.* (2013), while others used proportion of independent directors in the audit committee

for example Klien (2002), Kuang (2007). This study uses proportion of non executive directors in the audit committee as proxy for audit committee independence, because, in our sampled Firms none of them have independent directors in the composition of their audit committee to the best of our knowledge, even though some researchers use proportion of independent directors as their proxies.

5.5 Suggestions for Further Research

i. The study examines the influence of audit committee characteristics on earnings management of listed food and beverages in Nigeria for the period of six years 2007- 20012. For that there is the need in future to replicate the study and cover the periods beyond 2012.

ii. Furthermore, there is also the need for future researchers to incorporate financial expertise or knowledge with the independence or composition of directors in the audit committee.

iii. Further research may be needed to be conducted on the audit committee attributes in other sectors other than manufacturing like financial institution.

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Appendix 1 A

LISTED FOOD AND BEVERAGES FIRMS IN NIGERIA AS AT 31/12/13, EXTRACTED FROM NSE FACT 2012

BEVERAGES: BREWERS/DISTILLERS

CHAMPION BREWERIES PLC

GOLDEN GUINEA BREWERIES PLC

GUINERS NIGERIA PLC

INTERNATIONAL BREWERIES PLC

JOS INTERNATIONAL BREWERIES PLC

NIGERIAN BREWERIES PLC

PREMIER BREWERIES PLC

BREWERIES: NON-ALCOHOLIC

7UP BOTTLING COMPANY PLC

FOOD PRODUCT

BIG TREAT PLC

DANGOTE FLOURMILLS PLC

DANGOTE SUGAR PLC

FLOUR MILLS OF NIGERIA PLC

HONEYWELL FLOURMILLS PLC

MULTI- TREX INTEGRATED FOOD PLC

NORTHERN NIGERIA FLOURMILLS PLC

NATIONAL SALT COMPANY OF NIGERIA PLC

PS MANDRIDES

UTC NIGERIA PLC

UNION DICON SALT PLC

FOOD PRODUCT DIVERSIFIED

NESTLE NIGERIA PLC

CADBURY NIGERIA PLC

NORTHERN NIGERIA FLOURMILLS PLC

Appendix 1B

NAMES OF THE SAMPLE FIRMS

GUINNESS NIGERIA PLC

NESTLE NIGERIA PLC

NATIONAL SALT COMPANY OF NIGERIA PLC

DANGOTE SUGAR PLC

NIGERIAN BREWERIES PLC

CADBURY NIGERIA PLC

FLOUR MILLS OF NIGERIA PLC

Appendix II A

```
. xtset id year, yearly
       panel variable:  id (strongly balanced)
        time variable:  year, 2007 to 2012
                delta:  1 year

. su dac acs aci acf acm fs, detail
```

dac

Percentiles		Smallest		
1%	.00454	.00454		
5%	.00762	.00592		
10%	.00967	.00762	Obs	48
25%	.01596	.00821	Sum of Wgt.	48
50%	.058595		Mean	.0715294
		Largest	Std. Dev.	.0643458
75%	.106915	.17829		
90%	.1748	.1918	Variance	.0041404
95%	.1918	.2501	Skewness	1.26374
99%	.27207	.27207	Kurtosis	4.277061

acs

Percentiles		Smallest		
1%	4	4		
5%	5	5		
10%	5	5	Obs	48
25%	5	5	Sum of Wgt.	48
50%	6		Mean	5.791667
		Largest	Std. Dev.	.8741764
75%	6	7		
90%	6	8	Variance	.7641844
95%	8	8	Skewness	1.380229
99%	9	9	Kurtosis	6.410802

aci

Percentiles		Smallest		
1%	.17	.17		
5%	.2	.17		
10%	.2	.2	Obs	48
25%	.33	.2	Sum of Wgt.	48
50%	.33		Mean	.37375
		Largest	Std. Dev.	.1190499
75%	.5	.5		
90%	.5	.6	Variance	.0141729
95%	.6	.6	Skewness	.0865225
99%	.6	.6	Kurtosis	2.181894

acf

Percentiles		Smallest		
1%	0	0		
5%	0	0		
10%	.17	0	Obs	48
25%	.17	.17	Sum of Wgt.	48
50%	.25		Mean	.2689583
		Largest	Std. Dev.	.130779
75%	.33	.5		
90%	.5	.5	Variance	.0171031
95%	.5	.5	Skewness	.2426429
99%	.6	.6	Kurtosis	3.100979

acm

Percentiles		Smallest		
1%	2	2		
5%	2	2		
10%	2	2	Obs	48
25%	3	2	Sum of Wgt.	48
50%	4		Mean	3.708333
		Largest	Std. Dev.	.9443749
75%	4	5		
90%	5	5	Variance	.891844
95%	5	5	Skewness	-.0033685
99%	6	6	Kurtosis	2.625476

fsz

Percentiles		Smallest		
1%	15.8	15.8		
5%	15.9	15.9		
10%	16.2	15.9	Obs	48
25%	16.9	16	Sum of Wgt.	48
50%	17.805		Mean	17.555
		Largest	Std. Dev.	.9317702
75%	18.225	18.6		
90%	18.6	18.97	Variance	.8681957
95%	18.97	19.1	Skewness	-.2860754
99%	19.4	19.4	Kurtosis	2.154681

Appendix II B

```
. pwcorr dac acs aci acf acm fsz
```

	dac	acs	aci	acf	acm	fsz
dac	1.0000					
acs	-0.2779	1.0000				
aci	0.2086	-0.0107	1.0000			
acf	-0.3152	0.0930	0.2457	1.0000		
acm	0.2545	0.1568	0.0781	-0.1610	1.0000	
fsz	-0.2854	-0.0078	-0.0383	-0.1917	0.0626	1.0000

Appendix II C

```
. xtreg dac acs aci acf acm fsz

Random-effects GLS regression                   Number of obs      =        48
Group variable: id                              Number of groups   =         8

R-sq:  within  = 0.3975                         Obs per group: min =         6
       between = 0.6757                                        avg =       6.0
       overall = 0.4206                                        max =         6

Random effects u_i ~ Gaussian                   Wald chi2(5)       =     30.49
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0000
```

dac	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
acs	-.020555	.0088332	-2.33	0.020	-.0378678	-.0032423
aci	.1448851	.0660991	2.19	0.028	.0153332	.2744369
acf	-.1904081	.0622142	-3.06	0.002	-.3123456	-.0684705
acm	.0162186	.0083106	1.95	0.051	-.0000699	.032507
fsz	-.0253016	.0082687	-3.06	0.002	-.0415078	-.0090953
_cons	.5716637	.1587597	3.60	0.000	.2605004	.882827
sigma_u	0					
sigma_e	.05281158					
rho	0	(fraction of variance due to u_i)				

```
. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of dac

         chi2(1)      =     3.46
         Prob > chi2  =   0.0630

. vif
```

Variable	VIF	1/VIF
acf	1.16	0.862744
aci	1.08	0.922333
acm	1.08	0.927222
acs	1.04	0.957861
fsz	1.04	0.962164
Mean VIF	1.08	

```
. xtreg dac aci acs acf acm fsz, fe

Fixed-effects (within) regression               Number of obs      =        48
Group variable: id                              Number of groups   =         8

R-sq:  within  = 0.4149                         Obs per group: min =         6
       between = 0.5750                                        avg =       6.0
       overall = 0.4056                                        max =         6

                                                F(5,35)            =      4.96
corr(u_i, Xb)  = -0.4608                        Prob > F           =    0.0015

------------------------------------------------------------------------------
         dac |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         aci |   .1955154   .0867651     2.25   0.031     .0193728    .371658
         acs |  -.0331861   .0115884    -2.86   0.007    -.0567119   -.0096603
         acf |  -.1911002   .0675587    -2.83   0.008    -.3282516   -.0539488
         acm |   .0205165   .0107922     1.90   0.066    -.0013928    .0424258
         fsz |  -.0257616   .0160895    -1.60   0.118    -.0584251    .0069019
       _cons |   .6182191   .2760667     2.24   0.032     .0577739    1.178664
-------------+----------------------------------------------------------------
     sigma_u |  .02336471
     sigma_e |  .05281158
         rho |  .16369246   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(7, 35) =     0.77                 Prob > F = 0.6125

. eststore fixed
unrecognized command:  eststore
r(199);

. est store fixed

. xtreg dac acs aci acf acm fsz, re

Random-effects GLS regression                   Number of obs      =        48
Group variable: id                              Number of groups   =         8

R-sq:  within  = 0.3975                         Obs per group: min =         6
       between = 0.6757                                        avg =       6.0
       overall = 0.4206                                        max =         6

Random effects u_i ~ Gaussian                   Wald chi2(5)       =     30.49
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0000

------------------------------------------------------------------------------
         dac |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         acs |  -.020555   .0088332    -2.33   0.020    -.0378678   -.0032423
         aci |   .1448851   .0660991     2.19   0.028     .0153332    .2744369
         acf |  -.1904081   .0622142    -3.06   0.002    -.3123456   -.0684705
         acm |   .0162186   .0083106     1.95   0.051    -.0000699    .032507
         fsz |  -.0253016   .0082687    -3.06   0.002    -.0415078   -.0090953
       _cons |   .5716637   .1587597     3.60   0.000     .2605004    .882827
-------------+----------------------------------------------------------------
     sigma_u |          0
     sigma_e |  .05281158
         rho |          0   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. est store random

. hausman fixed random

                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |    fixed       random       Difference          S.E.
-------------+----------------------------------------------------------------
         aci |   .1955154    .1448851       .0506304        .0562059
         acs |  -.0331861     -.020555      -.0126311        .0075011
         acf |  -.1911002    -.1904081      -.0006921        .0263357
         acm |   .0205165    .0162186       .0042979        .0068852
         fsz |  -.0257616    -.0253016        -.00046        .0138023
------------------------------------------------------------------------------
                           b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =        3.45
                Prob>chi2 =      0.6316

.
```

```
. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

        dac[id,t] = Xb + u[id] + e[id,t]

        Estimated results:
                     |       Var     sd = sqrt(Var)
             ---------+-----------------------------
                 dac |    .0041404       .0643458
                   e |    .0027891       .0528116
                   u |          0             0

        Test:   Var(u) = 0
                            chi2(1) =     0.84
                          Prob > chi2 =     0.3592

.
```

```
. summarize dac acs aci acf acm fs
```

Variable	Obs	Mean	Std. Dev.	Min	Max
dac	48	.0715294	.0643458	.00454	.27207
acs	48	5.791667	.8741764	4	9
aci	48	.37375	.1190499	.17	.6
acf	48	.2689583	.130779	0	.6
acm	48	3.708333	.9443749	2	6
fsz	48	17.555	.9317702	15.8	19.4

```
.
```