EFFECTS OF LEVERAGE INCENTIVE ON EARNINGS MANAGEMENT STRATEGIES OF THE NIGERIAN LISTED MANUFACTURING FIRMS

By

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Being a Thesis submitted to the Post-graduate school, Ahmadu Bello University Zaria, in partial fulfillment of the requirement for the award of M.Sc. Accounting & Finance
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Declaration

I hereby declare that this thesis titled "Impact of Leverage Incentive on Earnings Management Strategies of the Nigerian Listed Manufacturing Firms" is a product of my modest research effort, carried out under the supervision of Dr. Ahmad Bello (first supervisor) and Dr. A. B. Dogarawa. Acknowledgements were duly observed in respect of all sources from which information were tapped. In addition, this research work has not been presented anywhere for the award of any kind of educational certificate.

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Certification

This Thesis titled "Impact of Leverage Incentive on Earnings Management Strategies of the Nigerian Listed Manufacturing Firms" by Jibril Ibrahim Yero meets the requirements governing the award of Master Degree in Accounting and Finance of Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

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Dedication

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Abstract

This study assesses the effects of leverage incentive on the three identified earnings management strategies of the Nigerian listed manufacturing firms. To achieve this, the study formulates three hypotheses and uses cross-sectional OLS to estimate accrual and real earnings management using Dechow et'al (2002) and Roychowdhury (2006) models, respectively; as well as Panel OLS and panel logistic regressions to test for the impact of leverage on acrual earnings management, real earnings management and deferred tax earnings management. The hypotheses test models were also subjected to fixed and random effect tests, in which for all the three models, the Hausman specification tests indicate that some of the firms' unobserved specific characteristics are constant over time but varies among panels, while some of these unobserved characteristics varies over time but fixed within panels as such, we analysed the result we controlled for random effects. The study found that while significant positive relationship exists between leverage and accrual earnings management, the relationships are in negative direction for both real and deferred tax strategies. Also, for the last two (real and deferred tax earnings management), the result is robust for two measures of leverage. However, the Andrew and Hosmer-Lameshow test for goodness-of-fit indicates that the models require additional data. As such, the study employed Quadratic-Hill-Climbing test for omitted variables, using three additional variables (return on equity, financial burden and firm size). Despite the documented impact of these three additional variables on earnings management by previous studies, the tests show that these three additional variables are jointly without any significant contribution to our models. We hence discard them and recommend for users to consider leverage in assessing the reliability of earnings and cash-flows. In light of the lack of fitness of our three models, we suggest for further studies on the impact of leverage on earnings management strategies, while controlling for public/private debts and tightness of the debt covenants.

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Abreviations

ABREVIATION	INTERPRETATION
ΔCA	Change in Current Assets
ΔCL	Change in Current Liabilities
ΔDCL	Change in Debt included in Current Liabilities
AAA	Abnormal Accruals
ACF	Abnormal Cash Flow
ADF	Augumented Dickey Fuller
AEM	Accrual Earnings Management
CA	Current Assets
CGTA	Capital Gain Tax Act
CITA	Companies Income Tax Act
CL	Current Liabilities
CMBAR	Capital Market Based Accounting Researches
DEP	Depreciation
DTD	Deductible Tax Difference
DTEM	Deferred Tax Earnings Management
D-W	Durbin Watson
EPS	Earnings Per Share
FINBURDEN	Financial Burden
FRCN	Financial reorting Council of Nigeria
GAAP	Generally Accepted Accounting Principles
GFC	Global Financial Crisis
GR_SL	Sales Growth
IAS	InternationalAccounting Standards
IFRS	International Financial Reporting Standards
LEV	Leverage
LEVFINLIAB	Financial Leverage
LEVTLIAB	Total Leverage
LFN	Law of the Federal republic of Nigeria
LOGIT	Logistics
LOGTA	Natural Logarithm of Total Assets
N	Number of Observations
NA	Normal Accruals
NACFE	NationalAssociation of Certified Fraud Examiners
NCF	Normal Cash Flow
NDTE	NetDeferred Tax Expenses
NI	Net Income
NSE	Nigerian Stock Exchange
OLS	Ordinary Least Square

P&L	Profit and Loss
PPE	Property Plant and equipments
R&D	Research and Development
REC	Receivables
REM	Real Earnings Management
REV	Revenue
ROE	Returns On Equity
SAS	Statement of Accounting Standards
SEC	Securities and Exchange Commission
SG&A	Selling, General and Administrative expenses
TA	Total Assets
TAC	Total Accruals
TTD	Temporary Tax Difference
U.S	United States

CHAPTER ONE
INTRODUCTION

1.1 Background to the Study

Accounting earnings as is being reported in the published annual reports of firms are expected to serve as a timely and reliable input to various stakeholders (shareholders, potential investors, employees, suppliers, creditors, financial analysts, stockbrokers and government agencies) useful in making prudent, effective and efficient decisions. The quality of firms' earnings as is being reported, vary from company to company and also from country to country (Ali, Ahmed & Henry, 2004). Literature posits that the level of reliability of reported earnings in particular and financial information in general, by quoted firms in developing countries lags behind that of their counterparts in developed countries; and government regulatory institutions are ineffectual in not only driving the enforcement of the existing accounting standards, but also in providing adequately enabling regulations that may enhance the practice of reporting quality accounting earnings (Ali, et al., 2004). Notwithstanding, the practice of reporting managed earnings (which is of low value-relevance) is famous not only in developing countries but also in developed countries. This could be evidenced from the genesis of collapse of giant corporations like Enron, Worldcom, Parmalat and so on, which triggered a series of calls for, and enactment of tighter regulations by various study-committees from different countries, such as the famous Sarbanex-Oxley Act of 2002. These are in addition to the proliferation of literature on earnings management, value relevance of earnings and the call for war against earnings management which was made by one time chairman of U.S Securities and Exchange Commission (SEC), Arthur Levit, as cited in Loomis (1999). Thus, as pervassive as it is, opportunistic earnings management needs to be fully studied. Its roots and manifestations deserve thorough investigation, so as to fashion out ways on how to improve the relevance of rep[illegible] varying vagaries of applications.

Generally, running the affairs of a firm is entrusted in the hand of managers whom in most cases have little or no equity interest in the firm. Individuals that own greater portion of the equity on the other hand are with little or no hand in the day to day running of the firm. Managers are in addition to any other duty, responsible for the preparation and reporting the earnings figures of organizations they manage. This gives the managers upper hands as they are the first line of information, to exercise some discretions in the recognition and treatment of certain transactions (using the choices in the generally accepted accounting principles - GAAP). The managers are in turns rewarded usually based on performance, as reflected in the increased earnings of the firm. Considering information asymetry, this very issue of reporting by managers, their stewardship role, and basing their rewards on the reports they brings in, coupled with the gaps in GAAP, lead into a serious agency problem. Thus, the managers as agents, need to be monitored, to ensure that they do not manage earnings in pursuant of their interest (which is most a times conflicting with that of the owners) at the detriment of the owners.

Earnings management entails the use of selective judgement in the choice of accounting policies and in structuring transactions to alter financial report so as to either misled users or to influence contractual outcome that depends on the accounting numbers being reported (Healy & Wahlen, 1999). This tendency questions the reliability and the information content of the reported earnings; and since non-reliability compromises relevence, there is thus, the need to look for the indicators that may likely improve the value relevance of the reported earnings.

The fact that managers manage earnings when they have incentive to do so have since been established in the literatures (e.g. Healy, 1985). One of the ways managers manage earnings is the use of total or discretionary accruals (Dechow, Sloan & Sweeney,1995). Unlike non-discretionery accruals like credit sales, accrued rent receivable/payable, for a given period which are expected; discretionery accruals which arise from ma

asset impairment, deciding the level of doubtful debt to provide for, among others, are at the discretion of the managers, and are otherwise called unexpected accruals. Large literature exists on the use of total or aggregate discretionary accruals in detecting earnings management. This was pioneered by Healy (1985).

Managers also adopt the use of specific accruals in managing earnings (Mills & Newberry, 2001). The specific accrual approach focuses on an industry's nature in which a single accrual is sizeable enough to be used in managing earnings. For example, the loan loss provision is a specific accrual that calls for substantial judgment in the banking industry. In an industry that uses heavy plants and equipments with high value, depreciation in particular, and deferred taxation in general can be targeted as specific accruals that can be used in managing earnings. Deferred taxation is a strong tool which literature have identified as a means by which managers manage earnings (Phillips, Pincus & Rego 2002). According to Philips et al., (2002), deferred taxes are temporary differences between actual tax payable in a given period and the tax actually paid. This arise as a result of differences in treatment of certain items (like depreciation, bad-debt provision, prepayments, among others) as allowed by the GAAP, and the way tax rules treat these items. Phillips et al., (2002) further forwarded that managers take advantage of these gaps between GAAP and tax laws, and decide on earnings' levels to report. An increase in deferred tax expenses is equal to recognising additional income for accounting purposes and not for tax purposes. The increase in pre-tax reported earnings and the aggregate discretionary accrual earnings management discussed above, are non permanent earnings. Extant studies have documented that non-permanent earnings reduce the reliability and thus the relevance of reported earnings (e.g. Dechow & Skinner, 2000).

In addition to exploring accounting policies in managing aggregate and specific discetionary accruals, managers can also manipulate earnings through real transactions (Roychowdhury, 2006). For example, mana

units, the fixed overhead costs can be spread over a larger number of units, thus lowering fixed costs per unit. This will in turn reduce cost of goods sold, and consequently higher operating profit can be reported. Graham, Harvey and Rajgopal (2005), discovered in their research, that managers prefer to manage earnings through real actions instead of accounting discretionary actions, even though the real earnings management is viewed to have a seriously far reaching permanently negative economic implications. For instance, cutting down expenses for resarch and development deprives a company timely discoveries which could expedite the enhancement of the future value of the company.

There has been increasing demand to fashion out ways of curtailing earning management. As cited in Loomis (1999), Arthur Levitt, chairman of the Security Exchange Commission emphasized that, "...the SEC in no uncertain terms to a serious, high-priority attack on earnings management". Loomis (1999) further reported that, concocted reports and doctored records are rampant problems and there are "great expanses of accounting rot, just waiting to be revealed". In addition, Healy and Whalen (1999) appealed that the accounting profession should look up areas where standards could be modified so as to reduce the ability to manipulate earnings.

In publicly traded corporations, monitoring mechanism comes in handy in ensuring alignment between the conflicting interests of managers and those of the stake-holders. Literature suggests that debt owners could be a good monitoring tool for the managers' opportunistic tendency (see Sweeney, 1994). It is expected that, debt-owners monitor the activities of the firms to which they give out loan and thus forcing the managers to act in such a way that the stake of these creditors are safeguarded. They make sure that they secure a conducive atmosphere, such that will ensure the safe return of their investment from the firm they loaned out to. They make sure that they impose conditions that will ensure the generation of permanent earnings, sufficient enough to facilitate the loan servicing and the pricipal

argue that certain conditions such as the minimum figures by which the working capital of the lending firm must not fall below, has the potency to induce the managers into manipulating receivables/accruals, upward for example. Of course this is possible, but looking at the firm from a going concern perspective, one could see that in long-term (and bear in mind that loans are of long-term nature), any inflation and postponement of the accrual figures beyond reasonable point is as good as bubbles waiting to burst. It could culminate into liquidity squeeze (which the debt-owners are against) which may in turn metamorphose in to insolvency and bankruptcy. Logically, it is only when the "cow" (firm) stay healthily alive that the "milk" (managers' pay) will keep coming. Notwithstanding the above notion, it is argued by the proponents of positive accounting theory that, debt-to-equity ratio (i.e leverage) is viewed as a strong incentive for managers to manage earnings upward, so as to avoid the cost of violating debt agreement. Even if the lenders' conditions induce managers to manage earnings, it means that leverage still has an impact on earnings management, though a positive one. Thus, leverage can still be used in assessing the reliability of the reported earnings.

Going by the above, it is plausible to assume that monitoring or inducing potential of leverage level, which is the ratio of borrowed funds to the total equity, could either moderate the managers' ability to manage earnings, or enhance it. If this is so, it may be tentatively correct to say that leverage level impacts on earnings management and by extention, it will hence impact on the the value relevance of reported earnings, since it signals to the investors as to way the managers are expected to conduct themselves. It is thus worthwhile to investigate on such a phenomenon that could possibly impact on earnings management in Nigeria, if not for users of earnings reports, atleast for the sake of maintaining the dignity of Accounting discipline- to improve the dwindling relevance of accountant's most important variable- since the entire accounting process is geared towards producing it.

1.2 Statement of the problem

Scholars like Ijiri (1966), advocated (with sound reasons) for the need to maintain the reliability of reported earnings. On the other hand, notable accounting scholars such as Chambers (1966) advocated (with equally plausible logic) that earnings as an end result of accounting process, should be relevant to the users' decision making. Earnings management on the extreme end has been revealed to reduce the reliability of the reported earnings and consequently its relevance, in users' decision making (Bugshan, 2005). It is now a challenge for the present day accounting scholars to find a way by which the relevance of earnings is improved, while preserving its reliability- striking a balance without a trade-off.

Capital market based accounting researches (CMBAR) suggest that accounting earnings is said to be value relevant if it can be significantly linked with equity market (Barth, Beaver and Landsman, 2001, as cited in Bugshan, 2005). As far back as 1968, Ball and Brown concluded that there is definately an association between accounting earnings and share returns (Easton and Harris, 1991). Subsequent CMBAR studies however concluded that there is a lowering explanatory power of earnings on returns. While some researchers argued that error in methodology or the irrationality of the investors may be the cause of this weak relationship (e.g Lev, 1988), many researches concluded with evidence, that the weak relationship between earnings and returns is as a result of the low information content (low reliability) of the earnings that is being reported – owing earnings management (Bugshan 2005).

Since around late 1970s and early 1980s, a large number of studies discovered that managers are capable of exercising discretion by means of the choices in accounting methods and policies. As explained in Sun and Rath (2010), Watts and Zimmerman (1978) documented evidence that managers will lobby to choose accounting policies which may decrease tax payments, help secure favourable regulatio

(2010) added that Watts and Zimmerman (1978) developed a positive accounting theory which suggests that managers will always chose accounting policies that will aid in maximizing their personal wealth. Earnings management is reported to reduce earnings informativeness, misguide ill-equiped users and make them incur heavy losses. A typical example is the case of Enron's earnings management which eventually led to their downfall. In that case, it was revealed that the managers exploited the weaknesses in GAAP and continuously managed earnings using various techniques like accrual earnings management, real earnings management, specific earnings managent using deferred taxation, related party transactions, among others (Mehta and Srivastavaare, 2009). The Nigerian case of Cadbury's accounting irregularities and the law suit that follows in the year 2007, is believed to be the first of its kind in the country, which has been trying to shed its image of corruption to attract foreign investment (Times Magazine, 2007). The recent cases are of some Nigerian banks, found to have had their shareholders' funds eroded without trace, even though they have been reporting positively increased earnings (which is obviously non-permanent) through out the periods. These cases were, along with other issues, believed to also be as a result of poor corporate monitoring (Eagle, 2009). These substantiate for the evidence that firms' managers exploit the gaps embedded in GAAP to manage earnings.

Studies documented that managers manage earnings using various strategies such as aggregate accruals (Healy, 1985), real transactions (Roychowdhury, 2006) and deferred tax expenses (phillips, et al., 2002). Fortunately, studies as well documented that leverage impacts on accrual earnings management (Wasimullah, Toor & Abbas, 2010) as well as real earnings management (Mamedova, 2007). However, while some studies concluded that leverage constitutes a positive incentive to manipulate earnings using accruals and real transactions (e.g Mitani, 2010 and Liu, 2011, respectively), others documented that leverage is a disincentive to the two earnings management strategies (e.g Wasimullah, e

addition, despite the startling efficacy of deferred tax expenses in managing earnings as documented by Phillips, et al, 2002), there has been no studies (to the best of our knowledge) as to what phenomenon could impact on this form of earnings management.

It is a laudable achievement that researches have identified that the three strategies of earnings management reduce the reliability of reported earnings and hence reduce its relevance in users decision. It is also a commendable break-through that these researches have discovered the monitoring or inducing power of leverage – either signals external monitoring against managers' opportunistic tendency to manage earnings, or induce them to engage into it; and thus improves/reduces the reliability of earnings. Consequently, factoring leverage in assessment of the reported earnings and cash-flows, improves its relevance to investors' decision making. Despite these discoveries, available evidence abound to show that investors and other users of reported earnings still suffer losses as a result of basing their decisions on the reported earnings and cash-flows. This may not be unconnected to the mixed results of these researches. As such one may assume leverage level in a firm to potray the reliability of earnings or cash-flow (i.e negatively related with accrual or real earnings management) whereas it actually compromises the reliability (positively related). This will therefore result in taking wrong decision and consequently yielding ineffective outcome. In addition, in the absence of documented predictors for deferred tax earnings management, the users may just be fumbling in the dark. It is clear that users of earnings reports are in a dilemma here. Therefore, against the above backdrop, the controversy that still remains which the study seeks to address is that to what extent does leverage incentive positively/negatively influence the opportunistic tendency of managers to manage earnings using accruals? What is the the actual direction of the impact of leverage incentive on real earnings management? How does leverage incentive impact on the use of temporary difference (deferred tax expense) to manage earnings here in Nigeria?

1.3 Objective of the Study

The objectives of this research are to:

(i) Assess the impact of leverage level on accrual earnings management

(ii) Evaluate the effects of leverage level on real earninga management

(iii) Examine the impact of leverage level on the deferred tax earnings management

1.4 Research Hypotheses

Based on the stated objectives, the following hypotheses were formulated in null form:

Ho_1: Leverage level has no significant impact on accrual earnings management.

Ho_2: Leverage level has no significant impact on real earnings management

Ho_3: Leverage level has no significant impact on deferred tax earnings management

1.5 Significance of the Study

Earnings management have been frequently studied far and wide, using data from different countries of the world. Effects of this phenomenon (i.e earnings management) have also been studied, with like frequency. However, few of these studies addressed the issue of identifying from accounting data, those items that could possibly have an impact on earnings management. In addition, to the best of our knowledge, this is the first research to be conducted using Nigerian data via three different surrogates of earnings management (especially deferred taxation and leverage). The research employs among other techniques, the use of forward looking-model of discretionary accruals, which is considered by researchers to be more superior and providing less noisy figures of discretionary accruals. The above therefore, is a vacuum that need to be filled. Further, significance of this research is fathommable in the following ways:

First, the outcome of the research would help in confirming the scholars' view about the role of monitoring/inducing power of debt,

earnings. The result may be an added leverage to the investors' fast fading confidence in respect of reliance on accounting data in making investment decisions.

Secondly, coporate board members will get a new yardstick in evaluation of the extent to which the earnings reported to them by their manager, are manipulated. They could then use that in deciding how qualitative is the earnings figures, and factor this in their various decisions such as market expectations, future cash flow expectation, and so on. It will also give them the yard-stick in rating the quality of the managers' performance in real term, when deciding on his compensation.

Thirdly, the result will serve as empirical evidence that will justify the need for more sterner regulations in the area of effective monitoring of agents (managers). It will further confirm/contradict the theoretical underlays, positing that the larger the firms' debt to equity ratio, the more likely the firm is to resort to income increasing accounting procedures/the benefit of monitoring the agent out-weights the cost, and vice versa.

Finally, in addition to confirming the findings of previous researches in depicting that leverage level is a vital determinant of earnings management, findings of this research would hopefully contribute to the existing literature. The research will also suggest areas needing further researches.

1.6 Scope of the Study

This study assesses the impact of leverage level on earnings management. The analysis uses a viably less noisy measure of abnormal accruals as propounded by Dechow, Richardson and Tuna (2002); abnormal cash-flow model developed by Dechow, Kothari and Watts (1998) and as implemented in research by Roychowdhury (2006); and the net change in deferred tax liability (i.e. Net Deferred Tax Expenses) as applied by Phillips et al (2003) with slight modifications. In addition, based on the signalling theory rel

relation by Jensen and Mecklings (1976), excess cash-flow hypothesis by Jensen (1986) and positive accounting theory relation of leverage and managerial opportunism as propounded by Watts and Zimmerman (1978); the research adopts leverage as explanatory variable of the three proxies of earnings management.

The research covers the manufacturing firms listed on the Nigerian stock exchange as at 1st January of the year 2003. The periods covered comprised of five periods of eight years (from 2003 to 2010) for hypothesis one, structured according to the requirements of the adopted model, as follows: Period one: 2003/2004/**2005**/2006; Period two: 2004/2005/**2006**/2007; Period three: 2005/2006/**2007**/2008; Period four- 2006/2007/**2008**/2009; and Period five: 2007/2008/**2009**/2010. Six periods comprising seven years (2004 to 2010) were covered for hypothesis two. These periods are structured as follows: Period one: 2004/**2005;** Period two: 2005/**2006;** Period three: 2006/**2007;** Period four: 2007/**2008**; Period five: 2008/**2009;** and Period six: 2009/**2010.** For hypothesis three, six periods of six years (from 2005-2010) were covered. The periods here coincide with the years (i.e 2005-2010). The period covered is considered suitable considering that it encompassed the hay days when the market witnessed the most impressive reported earnings and fierce competition for fresh capital. The research view this competition as an incentive to manage earnings. It also captures the era during which the meltdown struck, and thus inducing managers of firms to possibly resort to managing earnings, in order to hide their poor results.

It should be noted that this research does not cover the use of leverage in determining the relevance of earnings in predicting returns. Rather, it aimed at ascertaining the impact of leverage on that phenomenon (earnings management) that is revealed to be reducing the reliability and hence the relevance of earnings. Furthermore, classifying firms into high/low leveraged firms is out of the scope of this research.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter covers background issues on the variables of the study and a review of the existing literature in the field of study. The main purpose of the chapter is to identify the contributions previously forwarded in this line of research and also to trace gaps within the research-works, with a view to filling them.

In addition, the section provides a review of relevant theories that are related to the variables of the study. A theory that seems to provide a better nexus between the variables, is given at the end of the chapter.

2.2. The Concept of Earnings Management

Literature forwards a number of difinitions of the term earnings management. As the literature posits, there is no consensus as to a single and standardized definition of this term. Nevertheless, the most widely used definition is the one forwarded by Healy and Wahlen (1999, p: 368), where they stated that:

> Earnings management occurs when managers use judgement in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers.

Misleading stakeholders and influencing contractual outcomes are the key to earnings management, according to this definition. Misleading stakeholders may be to influence the firm's stock price in short run, in a way of making them appear more valuable than their actual value (DeAngelo, 1988), or due to tax tarrif incentive (Watts & Zimmerman,1978), or meeting analyst expectation or maintaining a firm's competitive position in the market (Rifi, 2010). Influencing contractual outcome could be in a way of

based compensation is practiced (Healey, 1985), or to avoid breaching debt covenant (Defond & Jiambalvo, 1994). In addition, managers can achieve these because of the opportunity they have in the use of their own personal judgement in treatment of certain items – choosing how to report them; and in the manner they decide to structure certain transaction so as to influence the time to recognize these transactions. While this definition has been widely accepted, it has been observed to merely focus on the intentions of the management, -i.e to mis-lead or to influence stake holders. These intentions was viewed by Dechow and skinner (2000) to be unobservable and thus, gives rise to difficulty in measuring earnings management In addition, other extreme form of earnings management was viewed not to be captured by the definition. As a result, Dechow and Skinner (2000), preferred to adopt the definition given by the National Association of Certified Fraud Examiners- NACFE (1993:12), where they define earnings management as: "the intentional, deliberate, misstatement or omission of material facts, or accounting data, which is misleading and, when considered with all the information made available, would cause the reader to change or alter his or her judgment or decision."

This definition also carries a little loop hole because it does not include non-material fact as part of earnings management, despite the fact that reseaches indicated that managers also use non-material facts in managing earnings. Example is the work of Zhang (2002), where he reported an evidence of earnings management from rounding up figures of earnings per share (EPS). Another example is that, what is considered material in GAAP is largely left to the judgement of the managers to decide. However, unlike the definition of Healy and Wahlen (1985), this definition has given a direction as to what to look for in detecting earnings management.

Dechow and Skinner (2000) further noted that there exist different shades of earnings management, some of which are within the c

of GAAP. These includes: conservative accounting, neutral accounting, aggressive accounting, and fraudulent accounting. While the last one falls outside GAAP and as such is illegal, the rest are lawfully within the confines of GAAP. Example of conservative accounting are: overly agressive recognition of provisions and reserves, over statement of restructuring charges and assets write-off, delaying sales, accelerating research and development or advertisement expenditures, and over-valuation of acquired in-process reseach and development during purchase acquisition. They cited the examples of aggressive earnings management to include: under stating the provision for bad debt, drawing down reserve or provision in overly aggressive manner, postponing incuring expenditures in respect of research and development or advertisement, accelerating sales and untimely disposal of fixed assets to generate more cash flow. Accordingly, Dechow and Skinner (2000) noted that neutral earnings management is some where in between aggressive and conservative earnings management. They further forwarded that fraudulent earnings management may take the form of: recognising sales before is it realized, recording fictitious sales, back-dating sales invoice and overstating inventory by recording fictitious inventory figures.

Generally speaking, from the discourse above, it can be deduced that earnings management can be carried out through accounting choices, judgement in valuation, recognition and execution of transactions. It can also be deduced that earnings management could be carried out through manipulation of aggregate accruals, specific line item or through executing real transaction. It should be noted that, for the purpose of this study, earnings management here exclude the fraudulent aspect of it as that is apparent for the auditors to detect easily.

2.3 The concept of Leverage and Leverage Incentive

Dictionary of business and finance (2007), define leverage as "the use of debt financing". It also define leverage ratio as a "measure of t[illegible] and of the firm's ability to pay financing

financing only (otherwise known as financial leverage). However, According to Nissim and Penman (2004), leverage are of two kinds- the financial leverage (resulting from financing activities) and the operating leverage (resulting from operating activities), and both have impact on a firm's profitability. From another dimension, Welch (2010) defines the term leverage as, "the degree of sensitivity of value of equity ownership with respect to changes in the value of the firm". It is thus observable that firms with debts and or any non-debt long term liability in their financial structure are levered.

As firms grow, investment opportunities grow and share-holders' fund becomes insufficient to solely finance the available juicy investment. The need for more funds arises. Thus firms borrow from outside (financial leverage), or from inside - their employee, retirees, government, and so on (operating leverage). Regarding why and how leverage factors into a firm's financial structure, two competing models are available from the literature- The pecking order model and the trade-off model.

As pecking order model of Myers (1984) implies, it is in the nature of man to generally hold on to control of wealth for himself alone. Thus the firm would not want to dilute control by issuing more ordinary shares unless all available options seem costlier. The pecking order model suggests that, since the cost of issuing equity (transaction cost and asymmetric information costs) are high, equity issues are rare and thus, "firms finance new investment first with retained earnings, then with safe debts, then risky debt and finally, but only under duress, with outside equity" (Myers 1984 as cited in Fama & French, 2004). Here, the pecking order sequence implies that the decisions of firms leverage level is determined by the firm's financing deficit- the balance of fund required to finance available investments after exhausting the retained earnings. However, the result of Fama and French (2004) contradi

financing deficits still issue shares and bond, repurchase bonds and issue shares, and so on. This left us with the second compelling proposition in the theory of modern finance- the trade-off model (of weighting cost and benefit).

The trade-off model explained that, debt has certain costs and benefits and that firms weight these two and decide whether to go for it and at what level, or not (Fama & French, 2004). Although the work of Miller and Modigliani (1958 and 1963) is believed to have formed the basis of capital structure studies, literature shows that their theory of capital structure irrelevance has suffered serious criticisms. Modern capital structure theory built on the trade-off model, implies that "a firm can build an optimal debt/equity mix by focusing on the potential tax benefits of debts and the potential cost of financial distress" (Harris & Chaplinsky, 2006). In that, the majority view among scholars of finance is that capital structure has a direct relationship with the value of a firm (Binsbergen, Graham & Yang, 2010). Binsbergen, et al., (2010) noted that as there are benefits in introducing debt into a firm's capital structure, there are also cost, and as such, firms' decisions for optimal capital structure level tends to follow weighting the benefits against the costs. Among the benefits they observed is tax savings. Due to the tax deductibility of interest, firms consider financing their operations with debt. Another benefit as observed in Jensen (1986) is that of committing managers to operate more efficiently. By including debt in the financing options, a firm has to service and repay back to the lenders and this requires extra cash flow. The manager has to go extra miles bearing this in mind and that he also need to generate additional income to show for the share holder, as compensation for risking debt into their venture. This means that any sub-optimal activity that may generate lesser cash flow will be avoided. Thus debt reduces the agency cost of free cash flow (Fama & French, 2004; Jensen 1986). In addition, Jensen and Mecklings (1976) explained that debt is beneficial to the share holders' interest as it encourage lenders to monitor the activities of the managers, to ens

view is shared by Diamond (1991) where he observed that in situation of information asymmetry, the presence of debt in itself will signal reassurance to the worried stake holders by the presumption that the debt holders are closer in the chain of information and thus, have superior knowledge of the firm's financial health. Hence, loaning out to them means that the firms are healthy. With this, Diamond inferred that, the managers will have no need to manage earnings in order to reassure anybody.

As Jensen and Mecklings (1976) expounded, the costs of debt can be manifested in different forms depending on the situation. They explained that in firms where managers are different from owners and also where managers are owners, agency cost of debt exists. Where managers are just employess, the owners employ contracts to motivate the managers who have conflicting of interest with that of the owners. Thus, the contract agreements (such as compensation and bonus plan) is employed by the owners to align the conflicting interests between principals and agents. However, Jensen and Meckling (1976) observed that the incompleteness and the rigidities in binding of contracts create agency concerns, which lead to manipulation of the reporting process – generating agency costs.They elaborated that, in a firm where the manager is an owner and where his stake is much less than the stake of the creditors, he will be striving to transfer wealth to himself by engaging in highly risky and highly profitable projects. They called this kind of agency cost as incentive effect associated with highly leverage firms. They further clarified that, to curb the incentive effect, the lenders impose several restrictions in form of agreement which may cover so many aspects of the firm's operation and which may limit some of the manager's optimal decisions that could be of benefit to the firm. The cost of writing these agreements and the cost of implementing and monitoring; are normally taken into account by the lenders, before deciding on the price of the debt. This price is normally borne by the firm. Jensen and Mecklings (1976) explained this as monitoring cost of debt.

bankruptcy and liquidation. Since in bankruptcy the creditors take only what is available and bear the remaining loss, they therefore tend to make an assessment of such tendency and factor it in the price they will be willing to pay for a firm's debt instrument. Also, during liquidation, the share holders have the residual claim on the firm's assets. It is only if anything is left after settling the creditors, that the share holders may have something to share (Scott, 1976 as cited in Binsbergen, et al., 2010).

Looking at the monitoring attribute of debt, Jensen and Mecklings (1976) concluded that debt is therefore beneficial to firms whether the managers are owners or not. Their reason is that, debt reduces agency cost inasmuch as lenders are expected to monitor the managers. As such, the managers are provided with the incentive to forward more relevant and reliable information to debt-owners/lenders and comply with debt agreements so as to obtain a more favourable financial terms in subsequent dealings. Harris and Raviv (1991) concluded that available evidence is sufficiently in support of the view that debt can mitigate agency conflicts. On top of that, Grossman and Hart (1982) verified that debt compels managers to carryout operations in a more efficient manner such that could reduce the probability of bankruptcy, loss of control and loss of reputation.

From purely accounting background, Watts and Zimmerman (1976) inferred that the cost of debt for a firm transcends the borrowing cost, monitoring cost and sort, that the cost which a firm will incur for violating the debt agreement leads the managers to resort to income-increasing accounting choices, which reduces the quality of earnings. This in itself is a cost to the firm. Watts and Zimmerman (1978) propounded a positive accounting theory which posits that there is definately a regular relationships among accounting numbers, all we have to do is to identify these patterns amongst and establish the relatio

Zimmerman (1978) identified that debt is a strong incentive for managers to engage into managing earnings, so as to avoid incurring the cost of violating the debt agreement. They expatiated that managers of organizations with a high debt/equity ratio have a motive to borrow earnings from future periods into the current period. In addition, this hypothesis presents the decision process of management in organizations associated with high debt/equity to consider higher monitoring and contracting cost, and those with low debt/equity to face lower contracting and monitoring costs of debt. Contracting cost as explained by Watts and Zimmerman (1990), includes the cost that a firm may incur as a result of default in meeting up contractual agreement. From their point of view, if a firm for instance borrowed fund, the lender usually imposes certain conditions that he sees fit in guaranteeing the safe return of his money plus the interest. Such conditions are signed as contracting agreement, and are followed up with monitoring, to ensure compliance. Managers who failed to comply with these conditions are subject to certain costs of violation. Such costs may include: litigation costs, seizing of collateral, loosing the patronage of the lender and credibility in the debt market and this leads to high cost of subsequent borrowings, and so on. As such, managers that have to deal with high contracting costs in event of default, have strong incentive to make more decisions that will realize higher earnings. conversely, managers that have to deal with low contracting and monitoring costs will have lesser incentive to make such decisions. This is the claim of debt covenant or debt/equity hypothesis.

This claim has been consistently proven to be correct by several researches such as Healy and Palepu (1990); Sweeney (1994); Defond and Jiambalvo (1994); Bugshan (2005); Gupta and Field (2006); Sercu, Bauwhede and Willekens (2006); and so on. As the number of positve empirical confirmations from across the world continue to grow, this hypothesis is fast becoming a sound theory. The clear cut incentive to manage earnings here is debt level. As Watts and Zimmerman (1978) assert: " Ceteris paribus

the firm is to select income-increasing accounting procedures" (Watts & Zimmerman, 1978 as quoted in Sweeney, 1994). However, as explained earlier, base on agency theory as propounded by Jensen and Mecklings (1976), some writers contend that reverse is the case. They suggest that debt should have preventive incentive and not inducing incentive on earnings management, due to its monitoring attributes.

It is therefore understandable from the foregoing discourse, that leverage incentive can be viewed as the motivation or demotivation to manage reported earnings due to the inducing/monitoring attribute of debt. It can also be deduced that leverage incentive is only associated with firms that are levered. Thus, presence of leverage constitute incentive or disincentive to manage earnings- according to these two sets of emminent scholars. Henceforth, the approprite proxy for leverage incentive, should be the level of a firm's leverage. Studies such as Wasimullah et al (2010), Mamedova (2007), Bugshan (2005), and so on, used the same approach.

For the purpose of research, leverage tends to be measured in different manner. As Mamedova (2008) professed, there is no law or regulation that suggests how leverage should be measured. She added that however, two widely used methods are long term debt/book-value of equity (for accountants) and long term debt/market value of equity. Nissim and Penaman (2004) shared different opinion where they clarify that the standard measure of leverage should be the ratio of total liabilities to total assets. Agreeing with this view, Welch (2011) further clarified that leverage are often expressed in ratios and the numerator may comprise of financial liabilities only or financial plus non-financial liabilities, depending on the purpose of the ratio. Welch (2011) further criticized that it is not clear in the literature as to whether non-financial liabilities should be considered as debt, but it is clear that they should never be considered as equity, and yet the common measure of leverage (i.e. financial

that non-financial liabilities formed part of the capital that finances the assets, he thus commented that researches on the leverage ratios that measure leverage as financial debt to total asset at least explains decreases in non financial liabilities and that further researches should shun this. Welch (2011) recalled that balance sheet composition of total asset is: total assets equal to long term and current financial debt plus non-financial debt plus equity. Where the long term financial debt includes long term debt and debt included in the current liabilities. It is thus incorrect to take only financial debt and match it against the assets to obtain the leverage ratio. He further argued that just like the financial debt adds to firm's asset, the same way non-financial debt contributes, and that in case of bankruptcy, non financial debt too is superior to equity.

From this it can be observed that non financial debt can also cost the equity holders in bankruptcy situation, not to mention the regular demands they have on the firm's earnings (equally just like the financial debt). Example is the payment of pension and tax liabilities are all having strong statutory backing. Lastly, better measure of leverage as advocated by Welch should either be: (i) total liability-to-assets ratio (i.e. balance sheet leverage); or (ii) financial debt-to-capital ratio (i.e. financial leverage). While the first alternative considers the liabilities that will be settled in the event of liquidation or bankruptcy, the last one ignored it. Welch concluded that unlike financial debt-to-asset measure, neither the two measures mentioned above, decline by change in non-financial liabilities. Generally speaking, the literature proposes that leverage is beneficial as well as costly and can be measured in different ways, depending on the purpose.

2.4 Accrual Earnings Management

This is a strategy for managing earnings through the use of accruals and is made possible due to the discretions allowed in GAAP (Sun & Rath, 2010). Based on the work of Wasimullah, et al., (2010), managers are able to shift earnings in different reporting periods. The argument is based on the fact that since accounting earni

as opposed to cash basis, there is always a difference between the reported earnings and the reported cash-flow for any given period. Accounting dictates that revenues realized for a period should be matched with their corresponding expenditures, whether cash is received or not. This gives rise to accruals to be included in the earnings components. By nature, accruals are exposed to manipulation since they involve judgements to some degree. Example, using accrual action, manager may decide to increase credit sales discount in order to increase receivables. Also, he may refuse to recognise certain credit transactions in the period which it occurred. This will increase next year's earnings, when he recognise the sales. As jones (1991) pointed, not all accruals can be manipulated. Thus, a portion of total accruals is non-discretionary (normal) while a portion is discretionary (abnormal).

As Healy and Wahlen (1999) pointed out, despite the general notion that earnings are managed, it is very difficult to plainly document it. This, they explained, is because for earnings management to be established, the earnings before it is managed must be established and this is not that easy. Healy and Wahlen (1999) further clarified that the common approach to measuring earnings management is to first identify circumstances where the incentive to manage earnings is relatively strong and then test whether the unexpected accruals (or others like unexpected cashflow) is consistent with the incentive. This means from this procedure, two critical research designs arise. They thus suggested that the first one is taken care of, by identifying managers' incentive such as capital market, debt/equity incentive, bonus plan, and so on (one of which has been discussed in the previous section of this chapter). The second problem of the research design as they expounded, is in respect of estimating the unexpected accruals or (often with inevitable degree of error), i.e. estimating the portion of the managed earnings. It is obvious from literature that earnings management is an inherently unobservable process. Thus, for empirical analysis of

earnings management to be possible, the only thing that can be used is a proxy to capture it as close as possible.

A survey of existing literature revealed that there exist different approaches to measuring earnings management. Hoogendoorn, (1990) broadly classified approaches to measuring earnings management to fall under either benchmarking for normal level of line items, or under accounting choices. Through this understanding, studies attempted differing ways to benchmark the normal accruals so that the abnormal/discretionary accruals can be ascertained to proxy for earnings management. Notably among these includes the works of Healy (1985), De-Angelo (1986), Jones (1991), Dechow, et al., (1995), and Dechow, et al., (2002).

According to Wasimullah et al (2010), Healy (1985) is the first to attempt measuring earnings management using a bench mark for normal accruals. Healy (1985) proposed that normal (non-disretionary) accruals equals to average of total accruals. Healy (1985) predicted that a sytematic earnings management is carried out in each year. He first estimated total working capital accruals. He then partitioned the yearly totals into two upper and lower limit, assuming the average to be the normal accruals. Healy (1985) concluded that any deviation from total (normal) accruals is earnings management. Using this, he found that accruals are used by managers to manipulate earnings in order to secure their bonuses. It was argued that Healy's model is errorneous in recognizing that accruals are constant fraction of of lagged total assets.

Owing to the shortcomings identified in Healy's model described above, one year later, De-angelo (1986) contended that a better measure of earnings management should be the change in total accrual. He assumed the first order difference of total accruals to have an expected value of zero. Under this assumption, current year's total accruals are normal (non discretionary) and any change in it is non-normal (discreationary)

equals to last year's total accruals, and thus discetionary accruals equals to current year's accruals less last year's accruals. With this approach, she used a population of 64 U.S firms that proposed to buy out publicly held shares and go private, and detected managers' sytematic use of total accruals to understate earnings. Both Healy and De-Angelo assumed that normal accruals are constant and that all earnings management activities can be captured by total accruals. However, Sun and Rath (2010) noted that such assumption is unlikely to be empirically descriptive. They further cited the work of Kaplan (1985) where they remarked that, "the nature of the accrual accounting process dictates that the level of non-discretionary accruals should change from period to period in response to changes in economic circumstances". Sun and Rath concluded that, "Although Healy (1985) and DeAngelo (1986) captured either income-increasing or income-decreasing techniques that managers have incentives to employ, they neglected the changing of non-discretionary accruals and they misclassified all accruals as the discretionary component". They finally remarked that, "both approaches tend to detect earnings management with error".

To overcome this limitation, five year's after De-Angelo's model, Jones (1991) proposed a regression model which relaxed the assuption of De-Angelo. Contending that normal accruals do not remain the same, her model depicts normal accruals varying with the level of economic activities. She controlled the level of economic activities by the change in sale and property, plant and equipments. The logic here is that working capital accruals depend on a firm's level of sales, and accruals arising from depreciation depend on a firm's level of property, plant and equipment. Jones used this model she suggested, in 1991 and discovered that U.S firms managed earnings downwards during clamour for import relief. As cited in Sun and Rath (2010), Dechow et al., (1995) noted that that although the models of Healy (1985), De-Angelo (1986) and Jones (1991) seems to produce fairly well specified tests for a random sample, the power of the tests is low for earnings management of economically pla

elaborated that, the lack of power in detecting earnings management means that the level of discretionary accruals needs to be very large relative to earnings to be detected. Dechow et al., (1995) applied a time-series version of the Jones Model to a sample where they have artificially manipulated earnings. They reported that the time-series version of the Jones Model is able to detect earnings management close to 100% level only when the induced manipulation exceeds 50% of total assets. When the induced manipulation equals 5% of total assets, this model can only detect less than 30% of the manipulation. Dechow et al., (1995) criticized that despite that Jones model is some kind of break-through in measuring earnings management, in constructing the model, Jones failed to take into account, the possibility of manipulating the level of economic activities (change in sales) through account receivables.

According to Sun and Rath (2010), the Jones model has undergone a number of modifications. For instance, Dechow and Sloan (1991) proposed another model they called the industry model. In the model, the non-discretionary accruals is to first be estimated using the Jones (1991) model and the regressed on the median value of an industry's total accruals at time t, lagged by total assets at time t-1. The model assumes that variations in the determinants of non-discretionary accruals are common across firms that are in the same industry (Belkaoui, 2004). Other modifications include the margin model from the work of Peasnell, Pope and Young, (2000), in which they concentrated on working capital accruals, arguing that depreciation accruals is unlikely to capture systematic earnings management; the performance matched model proposed by Kothari, Leone, and Wasley (2001), which is merely an addition of return on assets as additional explanatory variable in the Jones or modified Jones model.

In 1995, Dechow, et al., (1995) modified the Jones (1991) model by incorporating a substration of receivables from the change i

taken care of the possibility of managers manipulating the account receivables (credit sales) among the reporting periods. Wasimullah, et al., (2010) reported that this model seems to be the most widely used model in research.

Despite the perceived superiority of the modified Jones (Dechow, et al., 1995) model, over other accrual models, Dechow, et al., (2002) argued that the Modified Jones (Dechow, et al., 1995) also measures discretionary accruals with error. As such they proposed three adjustments to the model. As cited in Zhang (2002), the adjustments are: first, they argued that total change in receivables as depicted in the modified Jones, is not wholly discretionary, that some portion of it is based on previous accruals. To take care of this, they introduced a parameter *k* which is estimated by regressing change in receivables on change in revenue and the coefficient to be obtained will then be winsorised to be between 0 and 1, and then subtracted from 1, the difference of which represents the proportion of receivable that is non-discretionary. The second adjustment is the introduction of lagged total accruals at time t-2, basing it on the assumption that accruals are auto-correlated- firm with high/low accruals in year t-1 are expected to have high/low accruals in year t, and vice versa. Finally, they also argued that some portion of inventory should not be treated as discretionary owing to the fact that a firm may decide to increase expenditure on inventory in anticipation of higher future sales growth. Thus, accruals associated with inventory increases should not be treated as earnings management but rather an outcome of a firm's rational response to future growth forecast. To control for this, they added sales growth from time t to time t+1.

From the foregoing discussion, it seems that the only model that has not suffered criticism is the forward-looking model of Dechow, et al., (2002). Rifi (2010) criticized that both Healy's and De-Angelo's models assumed accruals to be constant; the Jones model overcame this assumption but produced another error by assuming that

may be powerful in non-bad debt expense manipulation but not when bad debt and revenues are manipulated; the industry model may not detect earnings management when it is a common practice in the industry, in that way, the accruals will be seen as non-discretionary. Regarding the performance matched model, the authors themselves- Kothari, et al., (2005) observed that though the model has the potency in mitigating type one error (rejecting the null hypothesis when it should have been accepted), the model is exposed to possibility of committing type two error (accepting the null hypothesis when it should have been rejected). They however noted that the important error to avoid is the type one error- assuming that earnings management has occurred when it has not. Notwithstanding, the model still suffers the shortcoming identified in the modified Jones (Dechow, et al., 1995) model- assuming that the entire receivables are discretionary. This kind of error has been taken care of by the forward-looking model of Dechow, et al., (2002), by introducing the parameter *k*. Zhang (2002) used it (the forward looking model) in research and concluded that it is superior to modified Jones model in terms of avoiding measurement error as well as the magnitude of detection.

2.5 Real Earnings Management

This can be viewed as the practice of manipulating the earnings and cash-flow to be reported through manipulating actual activities with cash-flow consequences (Roychowdhury, 2006). Through granting favourable credit terms to customers or increasing price discount, managers can accelerate sales which in turns has a direct bearing on a firm's income. Also mangers can report higher operating margin by reducing fixed cost per unit through increase in production (which facilitates the spread of over-head cost over a larger number of units). The sale of fixed asset and the use of expenditures on research and development are also ways in which managers manage earnings through real activity (Mamedova, 2008). The issue here is that, it may not be good for the firm to have an increased real

weighted on the long run going concern cost and benefits scale. For example, fixed cost per unit may be reduced by increased production but without looking at the market demand, the additional production may lead to excess supply, excess carrying cost for the subsequent periods, wastage, and so on. This is in line with the definition of real earnings management as given by Mamedova (2008), where she define it as "a purposeful action by management of a company to alter reported earnings in a particular direction, which is achieved by changing the timing and/or structuring of an operation, investment and/or financial transaction with cash flow effects and has sub-optimal business consequences". In addition, she also revealed that the result of Gunny (2005) shows that real earnings management has a significant negative impact on a firm's future performance. This is possible as the firm has already consumed some portion of its future potentials, in efforts to report impressive earnings and cash-flows in the current period.

Although, Shippers (1989) is one of the first to document the evidence that managers manages earnings through real activity (according to Sun & Rath, 2010), literature shows that a real model for detecting earnings management was first used in research by Roychowdhury (2006). Most studies merely examine specific real events. Example are the work of Bartov (1993) on the sales of fixed assets to avoid reporting loss and debt agreement violation; the work of Dechow and Sloan (1991) and Bushee (1998) on the use of Research and Development expenditures to manipulate earnings; Jackson and Wilcox (2000) on price reduction in the forth quarter to increase sales and avoid reporting losses or decline in earnings, and so on.

The approach adopted by Roychowdhury follow the bench-making of normal-level approach- one of the two approaches explained in the previous section. In his work, Roychowdhury (2006) used two different models to proxy for real earnings management: (a) total level of real earnings management, and (b) sum of stand

one, he estimated the "total level" of real earnings management by using abnormal level of cash flow. To estimate the normal level of cash flow, he used the model of normal cash flow as developed by Dechow, et al., (1998), where they stated that current cash flow is a function of scaled constant, plus current sales plus change in sales (all scaled by total assets of the previous year). Using the coefficients from the result, he computed the normal cash flow and subtracted the normal cash flow computed from the actual cash flow for the year, to derive the abnormal cash flow which he used as a proxy for total level of real earnings management. As Mamedova (2008) disclosed, Chen, Riz and Sivarama-krishnal (2008) also used the same in the following year.

The second model used by Roychowdhury is where he examined three different proxies of real earnings management separately and then jointly examined their standardized coefficients. The three proxies are (1) abnormal cash flow (as discussed above), (2) abnormal discretionary expenses and (3) abnormal production cost. Finally, as explained above, is the sum of standardized coefficients from the three models. The first proxy (abnormal cash flow) is as explained in the previous paragraph above. The second proxy depicts that current year's discretionary expenses is a function of current year's sales (all scaled by total assets of the previous year). He defined current year's discretionary expenses as the sum of advertisement expenses, research and development expenses (R&D) and selling, general and administrative expenses (SG&A). Any portion of the sum of the discretionary sales that is not explained by current year's sales is real earnings management using discretionary expenses. In the same vein for the third one, he modeled current year's production cost as a function of current year's sales plus change in current year's sales plus change in previous year's sales (all scaled by previous year's total assets). He defines production cost as the sum of cost of goods sold and change in inventory during the period. In summary, he respectively termed the three sub-models as abnormal cash flow, abnormal production and

abnormal discretionary expenses. The sum of their standardized coefficients is then used as the aggregate proxy for real earnings management.

Lastly, as it is revealed in Sun and Rath (2010), the use of accounting choices to measure earnings management is not adequate enough owing to the fact that there are other earnings management channels that accounting choice do not capture. Example is the decrease in selling price to accelerate sales (and consequently increase earnings). Real earnings management captures such techniques. In addition, considering that analyst and investors have lost interest in earning-based metric (as a result of several corporate scandals), Graham et al., (2005) documented that managers would rather manage earnings through real action than through accruals. In the words of Mamedova (2008), "it appears that managers are willing to burn 'real' cash flows for the sake of reporting desired accounting numbers. There appears to be a constant tension between the short-term and long-term objectives of the firm". With models such as the one explained above, that try to benchmark normal levels of various real activities, the thesis upon which Sun and Rath based their claim, purporting that it is difficult to identify real earnings management owing to the reason that there is no known bench mark for normal real activity level, is somehow negated. It is thus, worthwhile to look into ways in which managers manage earnings through real activities as this is a technique that has direct impact on cash flow.

2.6 Deferred Tax Earnings Management

Deferred taxes are taxes whose payments are carried forward to the subsequent periods, and as such, they constitute a temporary difference between tax payable in a given year and tax actually paid for the year; and also between income reported for tax purposes and the income reported for accounting (annual reporting) purposes (Phillips, et al., 2002). Deferred tax expense brings about a positive net change in deferred tax liability. Rabin and Nagesh (2006) explained that, "an increase in deferred tax liabilities is consistent with a

expense for accounting purposes but not for tax purposes". They added that, "...This results in a future taxable amount which is reflected as a deferred tax liability in the balance sheet and as deferred tax expense in the income statement". Deferred tax asset increases as firms currently recognize expenses or defer revenue for accounting purposes but not for tax purposes, and this result in a future deductible amount (Rabin & Nagesh, 2006). Except where changes in the net deferred tax liability for a period relate to mergers, acquisitions or divestitures or to income or loss items that are deferred in equity, the change in the net deferred tax liability account will affect the deferred tax expense in the income statement. Based on the work of Zhang (2002), Resvine Collins and Johnson (2002) identified that the temporary differences between book and tax income (deferred tax expenses) arise from a number of specific accruals including: depreciation expenses, bad debt expenses, prepaid expenses, warranty expenses, pension and other post retirement expenses, purchase goodwill, installment sales, long term construction contracts, revenue received in advance and equities in undistributed earnings of investees. All these are discretionary specific line items, whose valuation/recognition/matching allow for flexible judgment. Defered tax expenses as the main source of differences between tax and book income, is subject to a reasonable discretion from the part of the manager. As such, deferred tax expense, is a powerful context to study earnings management.

. As one of the last account to close before preparing the final annual accounts of firms, tax account can be seen as a last resort for managers to use in manipulating earnings, in years when managers observe that they may experience a decline in earnings (Dhalilwaal, Gleason & Mills, 2004). Managers may use the gap that exists between accounting and tax rules to decide on the level of earnings to report. For instance, according to Companies Income tax Act (CITA) 1990 (2004 as ammended), the qualifying annual capital allowance for plant and machinery is 25%. If the carrying value of a company's plant and

depreciation charges from say 25% to 20% at straight line. The carrying book value at the end of the year will amount to, 800,000 naira, while the tax written down value of that asset at the current 25% annual allowance, will be 750,000 naira. At the current income tax rate of 30%, this gives rise to deferred tax liability of 15,000 naira (i.e 50,000 x 30% tax-rate). The N15,000 is the tax levy on the unqualified capital expenditure of the N50,000 (that is in excess of the qualified expendture). This means that the pre-tax book income of this firm will increase by 15,000 above the pre-tax taxable income (which is normally not published, rather, it is used only for tax assessment and related purposes). In the same vein, the Capital Gain Tax Act (CGTA) 1967 (as amended1998), requires the payment of capital gain tax at 10% of fixed assets profit on disposal. Where a company decided to reinvest the proceed in to the same class of asset, it can exercise the option to receive a roll-over relief in full or partial, depending on the amount reinvested. This roll-over relief is a way of postponing the payment of the capital gain tax till some future date. This is a discretion which managers exercise – they may opt to defer paying the tax if they could use the extra income (which is non-permanent), to report increased earnings. As Mills and Newberry (2001) reported, managers increase their deferred tax liability to avoid reporting decreased earnings. They also forwarded that managers normally have more discretion in financial reporting than in tax reporting and can exploit such discretion to manage earnings. Such earnings management will generate differences in reported pre-tax income and the taxable income, that increase a firm's net deferred tax liability (i.e., deferred tax liabilities minus deferred tax assets) and, consequently, increase its deferred income tax expense. Furthermore, Mills and Newberry (2001), argue that accounting/tax income differences help separate the discretion in actions of managers from non-discretionary choices.

From the above, it it clear that deferred tax is actually a tool for accounting discretionary. It can also be observed that, this discretion is reflected on the amount generated as deferred tax expenses, since it is what separate the ma

Thus, for research purposes, it is indeed a cogent idea to use deferred tax expenses as a proxy for managerial discretion. This approach of using a single specific line item such as deferred tax expenses, is what Sun and Rath (2010) termed as "specific approach" to measuring earnings management.

Under this approach, instead of looking at accruals in totality, a specific accrual is identified and matched with a given incentive to manage earnings, to see if a significant association exists. The question here is which specific accrual is possibly being used in managing earnings? Sun and Rath (2010) answered this where they explained that specific accrual approach focuses on an industry setting, looking at an accrual that is big enough (in relation to the industry) to be used in influencing the reported earnings. They cited examples of a bank and insurance industries respectively, where loan loss provision and claim loss reserve, are sizable enough and require substantial discretionary judgment from the part of management. In addition, in relation to this work, looking at manufacturing industry (with heavy plants and machineries), provisions for depreciation which has a direct relation to deferred tax expenses, can be seen as significant enough to influence the reported profit. In general the method considers an industry setting/peculiarity and then identifies the specific accrual that is likely to be used in managing earnings, given the requisite incentives. Studies such as the works of Phillips, et al (2002), Rabin and Nagesh (2006), and so on, used deferred tax expenses to proxy for earnings management.

From the foregoing discussions, it suffice here to define deferred tax earnings management (for the purpose of this study) as the use of deferred tax expenses, to manipulate the earnings to be reported, where a given incentive to do so exists. Such incentive could be to exceed thresh-holds (avoid earnings decline, avoid reporting loss, beat analysts' expectations). It could also be to avoid incurring the cost of breaching debt agreem

evidence on earnings management using specific accruals and thus it is a fruitful area of research. They reasoned that by investigating specific accrual that could be used in managing earnings, a contribution can be made for standard setters in enhancing the accounting standards.

2.7 Empirical Studies on Earnings Management

From the literature, it appears that there exist mixed views about the position of earnings that are managed. Strong among the views, is the notion that both real and accrual earnings management is actually detrimental particularly by reducing earnings' relevance in its association with capital market, and in general, to the economic well being of firm- to the share holders, potential investors and other stake holders (see Bugshan, 2005; Cohen & Zarowin, 2008; Loomis, 1999 and Wasimullah, et al., 2010). A weak view claims that accrual earnings management especially when it is not carried out for opportunistic reasons of the managers is beneficial to investors as it communicates future cash flow potentials of the firm (e.g. Xue, 2003). The question here is how do we know when earnings management is not opportunistic? There is no known evidence (as far as this research can tell), that empirically documented earnings management that is not opportunistic. However, this research came across several researches that provided evidence suggesting that managers manage earnings opportunistically, to earn their bonuses (Sun & Sun, 2007), to beat analyst forecast (Comprix, et al., 2007), to avoid reporting losses or declines in earnings (Burgstahler & Dichev, 1997), during IPO, to secure favourable subscription (Teoh, Wong & Rao, 1998), etc. Nevertheless, there exist a reasonable evidence that income smoothing (which is also a form of earning management) helps in stabilizing a firm's share price due to the consistency in reporting less volatile earnings, which makes investing into the firm more secure and attractive (see Truman & Titman, 1988). This notion may seems plausible but looking at a firm from a going concern perspective, moving income from period to period may have the capability to distract a firm from its actual long term ec

optimality in goal attainments. Example, where there is no income to tap from a "cookie jar reserve", managers may start thinking of selling an asset, decreasing provisions, or even devising some complex transactions like the Enron case, notwithstanding whether such decisions are sub-optimal or not. Just as Loomis (1999) emphasized, earnings management should be seriously confronted. It is for this reason thus that scholars used the bank of knowledge at their disposal and devised varying techniques of detecting earnings management. As pointed earlier, Healy and Wahlen (1999) described the dual-staged nature of earnings management research. First stage of which is identifying the motive or incentive that could likely propel managers into managing earnings and secondly, computing the earnings that are managed so as to match it with the incentive to see if the hypothesis backing the incentive is correct. It is in line with this that, this research aimed at reviewing researches on the debt contract tightness (as measured by level of leverage) as a strong incentive for managers to manage or to avoid managing earnings.

Also from the literature, it appears that there are two schools of thought as regards to the relationship that exists between a firm's leverage and managers' tendency to manage earnings. The first school of though holds their claims on the thesis of agency cost theory as propounded by Jensen and Mecklings (1976) and agency cost of free cash-flow hypothesis (by Jensen 1986), while the second school leans on the debt covenant hypothesis as forwarded by Watts and Zimmerman in their work on positive accounting theory of 1978. These will be further discussed in the later part of the chapter. Meanwhile, below are reviews of related studies on leverage and various proxies of earnings management.

2.8 Leverage and Accrual Earnings Management

As argued in positive accounting literature, by the proponents of debt covenant hypothesis, managers of firms close to violation of debt agreements resort to manipulating accruals in order to avoid incurring the cost attributed to violatio

on debt covenant violation and manipulation of accruals. Covering a period of 4 years, they used a sample of 94 U.S firms that were reported to have violated their debt covenants. Agreeing with their hypothesis in which they expect that managers accounting choices are influenced by the level of closeness to debt agreement violation; the result shows that there exists a positive relationship between debt and abnormal accruals. The result shows that in a year prior to violation, abnormal, total and working capital accruals are strongly positive, while in the year of violation, the accruals are negative. The explanation they gave for the first result is based on the debt covenant hypothesis, that firms manage earnings upwards to avoid violation. In the second result where there is a negative accruals, the explanation was that, auditors of firms on going concern qualification usually after covenant violation, encourage the firms to write off of dubious assets, and that usually after strong event like covenant violation that resulted to penalties, the management is replaced with a new one and the new one takes a big bath to clear the deck. Going by the above, it seems that everything fit to place. However, the research included only firms that have already violated debt covenants. Including firms that have not yet violated their debt covenant agreement may give a different result. Besides, the Jones (1991) time series and cross-sectional models used to proxy for abnormal accruals have been severely criticized in the literatures to be associated with gross estimation error. For instance, Dechow et al., (1995) pointed that it is erroneous for the Jones (1991) model assume that the entire change in revenue incorporated in the model is non discretionary. Both the Jones (1991) time series and the cross-sectional versions carry such assumption. Similar studies was carried out by Sweeney (1994) using the same but larger population (130 U.S firms) that violated debt agreements and arrived at the same conclusion with Defond and Jiambalvo (1994). She found that managers with debt violation constraints respond with income increasing accounting choices. The issue here is that, unlike Defond and Jiambalvo,

she used time series of accounting changes of firms close to violation of debt agreements to proxy for earnings manipulation instead of abnormal accruals.

Considering the general concern on the lowering explanatory power of accounting earnings, Bugshan (2005) conducted a research on corporate governance, earnings management and the information content of accounting earnings, using a sample population of 778 drawn from the top companies listed in Australian stock exchange, covering a period of 3 years (from 1997 to 2000). Though his overall hypothesis proved to be correct- that corporate governance negatively impact on earnings management and conditioning corporate governance on earnings management (which reduces the information content of earnings) improves the information content of earnings; among his findings is that leverage level, which is one of the monitoring mechanisms of corporate governance, has a positive impact on abnormal accruals. First, it could be that because of the way he measured the leverage ratio which Welch (2011) severely criticized with evidence and logic (refer to the discussion under section 2.4). Second, despite that the correlation coefficient shows a negative correlation between leverage level and abnormal accruals (-.13) and is significant at 1%, the regression coefficient depicted a positive explanatory power of leverage at .16. However, it is only the correlation result that is significant. Lastly, his study period is more than a decade old. With changes that occurred in the economy of the world, a new research may reveal a different result.

Evidence from the same Australian continent, was presented by Jones and Sharma (2001), where they used a sample of listed firms over a 10 year period and discovered a positive relationship between leverage level and abnormal accruals. In addition, their result revealed that the earnings management detected from firms' operations dating back to the period of old regulation is far higher than after the regula

measured the leverage ratio as the ratio of external debt to total liability. Since leverage is considered to be the added pull-up on the company's equity, and total liability can not stand for equity or assets, their measure is arguably not an adequate measure of leverage. In addition, they used the Jones (1991) model of discretionary accruals and the McNichols and Wilson (1988) model. While Jones model was criticized to have assumed that all changes in revenue are non-discretionary, McNichols and Wilson (1988) model has been observed to be inadequate as it captures only a single possible means of earnings management and managers may employ several specific items at a time (Sun & Rath, 2010).

In another development, Shen and Chih (2007) researched on the impact of corporate governance and earnings management, using Taiwanese listed firms. Again, his result confirmed the prediction debt covenant hypothesis, where he derived a positive relationship between leverage and earnings management. It is interesting to mention here that he however found that this finding is as a result of good corporate practice. Where there is a poor corporate governance practice, leverage increase has a reverse (negative) impact on earnings management. Notwithstanding, he used the correlation between accruals and cash flow to proxy for accrual earnings management.

Nevertheless, using the same Taiwanese data (but this time obtained from 42 hospitals covering 2005 to 2008), Huan and Liu (2011) conducted a research on the relationship among governance and earnings management, and confirmed the result of Shen and Chih (2007. Among the governance attributes he measured is leverage level, where he defined it as the ratio of long term debt to total assets. His result shows a positive relationship exist between leverage (at level) and abnormal accruals. In estimating the abnormal (discretionary) accruals, though he used the widely acclaimed powerful model of discretionary accruals- the modified Jones (Dechow, et al., (1995), instead of using the coefficients f

estimate the portion of managed earnings, he used the residuals from the regression to proxy for abnormal accruals. That may not affect the result, but using time series version is like assuming that the coefficients do not vary with time. As Dechow et al, (1995) stated the coefficients vary as time passes. Also, with the coefficient computed separately for each year (using cross-sectional approach), any firm in the industry can be used and its earnings management for a given year can be ascertained (if the coefficients are meant to be industry specific). Thus the work might not have provided this chance for the earnings management of other firms (in the industry but not included in his sample), to be ascertained. In addition, against the facts presented by Welch (2011), this researcher assumed non financial liabilities to be a non debt item, in computing the leverage ratio.

Murhadi (2009) examined the relationshipbetween good corporate governance practice and earnings management, using Indonesian listed firms, covering the period 2005 to 2007. Among the corporate governance variables he measured is leverage level. Also, he used the Jones (1991) model to proxy for earnings management. In support of agency theory, the outcome shows a negative relationship between leverage level and earnings management. However, the result is not significant. This could be because, on top of using the Jones (1991) model which seems to be widely agreed to be measuring discretionary accruals with error; he used the time series version of it. As Bugshan (2005) observed, time series version of Jones (1991) and modified Jones (Dechow, et al., 1995) model assumes the coefficients to be static over time, whereas, they are time specific, and thus earnings management is better captured using the cross-sectional versions of the models. Also, three years observations for a time series might not be adequate enough (depending on the number of firms. No mention of the number of years was made in the paper).

Evidence from Japan was documented by Mitani (2010), confirming the positive relationship between leverage and abnormal

Modified Jones (Dechow, et al., (1995) models to estimate discretionary accruals and results from both models are significant at 5% and 1%, respectively. While it can be said that he has taken care of the short comings of using the time series version of the two models, he failed to consider the errors in Jones (1991) and modified Jones (Dechow, et al., (1995) by respectively assuming that all change in revenues are non discretionary and all change in receivables are discretionary. Perhaps, using the forward-looking model of Dechow, et al., (2002), which Zhang (2002) adopted and found it to display the most power and devoid of these shortcomings, might give a different result.

Although all the results (that are significant) discussed so far, are in support of debt covenant hypothesis- presuming leverage to be positively related to abnormal accruals, Sercu, et al., (2006) argued that the explanation for this positive relation is much subtler than the proponents of debt covenant hypothesis suggested. They noted that the explanation that managers resort to managing earnings so as to avoid the cost of debt covenant violation, is simply inadequate, otherwise, how can debt covenant hypothesis explain the positive relationship between debt and earnings management of firms whose debts have no covenants? They cited example of some Belgian firms whose creditors helped them recovered from potential distress, since they know that they have stakes to loose if the firms are finally allowed to go in to distress. They thus suggested that other broader cost- the cost of financial distress, could be a better explanation for this relationship. If this is presumed to be true, then it could be said that managers manage income increasing accruals upward not just to comfort the lenders but also to assure other stake holders like share holders, trade creditors, who do not impose any covenant but have more to loose than the organized lenders (who are covered by insurance) in the event of financial distress. To prove their point, Sercu, et al., (2006) conducted a research using Belgian non-listed firms (where debt covenants hardly exist), to find the impact of leverage and earnings management. In their work they measured leverage increases and lev

creditors separately. After regressing each measure against the empirical proxy of earnings management (abnormal accruals), they discovered that both the two measures of earnings management shows a significant positive relationship with earnings management. As such, they concluded that cost of debt covenant violation should not be the explanation for the leverage level, leverage increases and earnings management's positive relationship, and that cost of financial distress explains it better. Considering this, the explanation given by Diamond (1991), that the presence of debt, especially bank debt or bonds, in a firm should signal reassurance to the potentially worried stake-holders (such as suppliers, and potential investors), since it signifies confidence on the firm by the lenders, who may seem better informed, given the information asymmetry; is contradicted. If this signaling quality of debt is to be considered, then the need for earnings management to reassure these stake holders would not arise, as it would be taken care of by the debt presence; and thus a negative relationship should have depicted when leverage is measured using trade creditors. Using a population and a data different from that of this European country may agree with Diamond (1991).

In contrast to findings above, evidence from Asian country of Pakistan was documented by Wasimullah et al., (2010) showing a significantly negative association between high leverage, leverage increases leverage level and total and abnormal accruals. They used a sample of 182 textile firms listed in Karachi Stock Exchange for the period 2001-2006 and concluded that high leverage is indeed instrumental in controlling the opportunistic behaviour of managers. Though the result is robust for three different measures of abnormal accruals (the Healy (1985); modified Jones (1995) and the forward looking model of Dechow, et al., (2002), they used a dummy variable to proxy for leverage. They partitioned their sample between firms that undergo leverage increase in a given year as 1 and 0 if otherwise, in the first test. In the second test, they partitioned the samples between highly leveraged firms as 1 and 0

negative association between leverage and abnormal accruals. Without controlling for the leverage increases, the question here is what if the result obtained is as a result of the interacting effects of the three explanatory variables (i.e leverage increases, high leverage and leverage level)? What would be the result if only raw figure of leverage ratio is used?

2.9 Leverage and Real earnings management

Most earnings management researches focus on accrual earnings management, leaving other avenues unexplored. Reviewing the work of Mamedova (2007), it can be evident that as a result of corporate scandals in the last two decades, investors, creditors, share holders, seem to have lost faith in "soft numbers" (reported earnings), rather, they are now after the "hard numbers" (cash flow). Owing this shift in yardstick for assessing performance, Zang (2006) observed with empirical evidence, that managers will rather manage earnings through real action rather than accrual action. This agrees with the result of a survey conducted by Graham et al., (2005) where they documented that firm managers would go to the extra-mile of decresing discretionary spendings, as well as delaying the take-off of new projects to meet earnings targets, even if a sacrifice in value may be encountered becaused of such delay. This suggest that for the purpose of maintaining accounting appearance, managers are ready to take real economic actions.

From the above, it seems that managers are ready to burn real economic assets, compromise optimal economic alternatives for the sake of reporting attractive accounting "hard numbers" to impress the users. In that, there seems to be constant tension between a firm's short-term and long-term objectives which is obviously detrimental to the firm's overall goal (Mamedova, 2007). Mamedova (2007) observed that, in this era of globalizing economy, firms can only survive through mergers and acquisitions, and these are normally funded through equity fund and external financing; with increased demand for loans and high interest, firms need to constantly generate sufficient cash flows to meet up demands fr

prey. For this reason, she added, yeasty-minded managers would resort to real earnings management that could generate more cash flow, to enable them receives or maintain external finances. Consequently, she noted, leverage level and leverage increase should have a positive impact on real earnings management.

Conversely, according to Jensen's (1986) control hypothesis, leverage controls the opportunistic behaviour of managers and in that; a high leverage begets more demand on the firm's cash flow. As a result of the fact that huge amount of a firm's free cash flow is channeled to debt servicing, managers are left with little cash, and when this occur, rationally, they do not engage in unproductive activities, rather, they channel the available cash in to more prudent uses. Consequently, this hypothesis predicts that leverage should be negatively related with real earnings management.

In spite of the above prediction the result of Kim, Lei and Pevzner (2010) depicts a positive relationship between real earnings management and leverage. Their evidence indicates that tightness of debt covenant is positively related to real earnings management, and this finding stands for both the period prior to Sarbanes Oxley Act and after. They measured leverage as the ratio of a firm's total liability to total asset, which is quite acceptable to this research, considering Welch's (2011) observation. However, they used data from U.S listed firms. Using Nigerian Data may give a different result.

Partly disagreeing with the result of Kim, et al., (2010), using the same U.S data, is the findings of Mamedova (2007). Mamedova's result is mixed. Among the findings is that by distinguishing between highly leveraged firms and firms that underwent leverage increases, debt induces firms to manipulate activities through real actions, when absolute value of debt is used in place of leverage. When debt-to-equity rati

relationship, with no significant probability. Where the debt-to-equity ratio computed using market value is adopted, the result shows a positive but non-significant relationship between high leverage, leverage increases and real earnings management. She measured real earnings management using the normal cash flow model as implemented by Roychowdhury (2006). She measured the leverage ratios using ratio of debt to equity plus debt (at book and at market values). However, she also used absolute value of debt to proxy for leverage, and this measure is the only proxy whose result is significant. Going by criticism on measures of leverage as stated earlier, this research is not satisfied with relying only on absolute value of debt as leverage measure. Hence, different measure (like total liability to total assets) and different population may give different result.

A dimension of Jensen's (1986) agency cost of free cash flow relates to finding a judicious way of using up free cash flow to avoid the agency cost associated with it. As the theory posits, agency cost of free cash flow stem from separation of ownership and management, and self seeking managers may be driven by the available free cash flow to expanding the firms beyond its optimal size, to expand their power and compensation (Jensen, 1986). As such, Jensen (1986) noted that one of the ways to judiciously use up the free cash flow is through dividend payment, and thus, managers will be forced to seek more external financing which will hence subject them to scrutiny of the financers. Owing to the above notion, Liu (2011) conducted a research on the impact of dividend policy and real earnings management. While at it, he additionally investigated leverage relationship with real earnings management. Following Roychowdhury (2006), he measured real earnings management using abnormal cash flow model, in addition to other real earnings management models. His result among other findings indicates that the higher a firm's leverage, the higher its abnormal cash flow. This supports the debt covenant hypothesis and contradict the free cash flow hypothesis of Jensen (1986), since according to Jensen (1986), excess cash flow suppose to be used up in debt servicing (

mentioned above), which means more debt begets more demand on the abnormal cash flow. Though the work of Liu (2011) is recent, the data used is from a developed economy (U.S).

As cited in Herman, Inoue and Thomas (2001), Shippers (1989) observed that a specific proxy for earnings management needs not to be discretionary all the time but need to be significant enough to matter. Considering that real earnings management may take the form of asset sales, Herman, et al., (2001) conducted a research to investigate the impact of asset sales on earnings forecast, using Japanese listed firms. In the work, having observed the predicted effect of leverage incentive on earnings management, they controlled for leverage ratio. They measured it as the ratio of long term liability to total assets. Their result shows that managers in Japanese listed firms employ the use of assets sales in years whose earnings seems to be below the prior year's forecast. They also discovered that leverage ratio has a positive impact on the proceeds from assets sales. This finding is no different from all (but Mamedova, 2007) the foregoing findings on the impact of leverage on real earnings management. Nevertheless, the use of asset sales to proxy for real earnings management seems to leave out other possible real discretionary actions that may have an incremental impact on cash flow.

2.10 Leverage and deferred tax expenses

As Hanlon and Rochester (2009) observed, tax research is multi-disciplinary and most accounting researchers shy away from it. Perhaps this is why there is scanty literature that explores the use of deferred tax in manipulating earnings, compared to the researches on the use of other techniques like abnormal accruals. Nevertheless, a number of studies on deferred tax and earning management are now gradually coming up, in different shapes. As observed above, due to the multi-disciplinary nature of tax research, replication is another problem area in this line of research. Tax laws vary among countries. Example, consider one of the dimensions of researches on deferred tax and earnings management, in which res

provision of deferred tax valuation allowance to manage earnings. Such researches cannot be empirically possible here in Nigeria because the Nigerian tax laws/accounting standards (SAS19) provides that firms should make full provisions for deferred taxation, where as the U.S accounting standards (FRS19) and international accounting standards (IAS12) allow for partial provision. On top of the above, Nigerian accounting researchers are evidently dormant in this line of research. This work could not come across a single home-based research on the use of deferred taxation to manage earnings. However, some other dimensions can still be carried out in Nigeria without grappling with these differences. One of such is the use of net change in deferred tax liability (i.e. net deferred tax expense) to manage earnings. Looking at the caption of this section, one may expect to find under it, a discussion relating to documented evidence on the relationship that exists between deferred tax earnings management and leverage incentive. For this, it is important that we made a note of the fact that, there is no known empirical evidence (to the best of our knowledge) as to the nature of this relationship. Nevertheless, evidence exists as to the monitoring/inducing power of leverage to avoid/engage into earnings management. This has been discussed in the prior section. Also little evidence exist on the power of deferred tax expenses in managing earnings. This is discussed below. After the discourse, a nexus between deferred tax earnings management and leverage incentive can be apparently evident.

Phillips et al., (2002) proposed that deferred tax expense is efficacious in detecting earnings management. His reason was that managers normally have more discretion under GAAP than under tax rules. As such if managers are to manage earnings upwards, they are expected to exploit their discretion under GAAP in such ways that do not affect current taxable income. As such, the accounting choices they will make will generate differences between the accounting income reported and taxable income, that increases deferred tax expense. Having observed this, Phillips et al., (2002) carried out a research to invest

reporting loss and to avoid decline in earnings. He used three different proxies of earnings management- deferred tax expense, total and abnormal accruals. He concluded that among the three metrics of earnings management, deferred tax expense is more useful beyond all the other measures, and that deferred tax expense is significantly more accurate beyond any of the accrual metrics in classifying firms as successfully avoiding loss.

Following Phillips et al., (2002), Zhang (2002) used deferred tax expense (net change in deferred tax liability), scaled by lagged total assets, as a proxy for earnings management, to document evidence of earnings management in rounding up earnings per share (EPS) figure. In his research, he used nine different metrics of earnings management- eight accrual models and the last one is deferred tax expense. Consistent with the findings of Philips, et al., (2002), his result shows that deferred tax expense detects more discretion of managers in managing earnings and that deferred tax expenses was able to detect the type of earnings management associated with rounding up earnings per share while accrual models were not. Owing to the fact that earnings management in itself, by definition is represented in accruals, the obvious question will be: why is deferred tax expense better than discretionary accruals in this case? To answer this question, Zhang conducted robust checks on some of the items identified to be the source of deferred tax expenses. He zeroed on depreciation expenses, bad debt expenses and prepaid expenses (because they are easily obtainable from financial reports). He observed that bad debt expenses reduce accounting (book) income not tax income because the method for tax write offs are restricted to specific account failures, instead of the estimates of the expected account failures allowed under GAAP. As such, reducing bad debt expenses increases book income and also deferred tax expenses. Since bad debt expenses are not directly depicted, Zhang (2002) used the ratio of allowance for doubtful debt divided by total account receivable. He assumed that any change in this ratio is earnings management. Looking at depreciation expe

total assets. Changes in this ratio upward or down ward and change in the method use for charging depreciation bring about change in book income and deferred tax expense. Reducing depreciation expenses increase book income and also increases deferred tax expenses, Zhang (2002) observed. To gauge the effect of prepaid expenses, he used prepaid expenses divided by total assets. As Zhang (2002) noted, GAAP requires prepaid expenses to be written off over the periods when benefits are received, while tax laws require it to be written off in the year when the payment is made. Zhang observed that this brings about book/tax income differences. Correlating the three items with deferred tax showed strong positive correlations, and regressing them with the proxy for earnings management incentive he identified, Zhang noticed that these items are actually source of earnings management, with bad debt being the strongest. As such, he concluded that the reason why deferred tax expenses detected earnings management in his research, more powerfully than abnormal accrual models, is because abnormal accrual models (forward looking model inclusive) do not capture certain specific source of accruals, such as bad debt expenses, where as deferred tax expenses do capture them

Additional evidence from South Africa was documented by Rabin and Nagesh (2006), in which they examined the practice of earnings management to avoid losses or earnings decline. With regards to their observation on Phillips, et al., (2002), they noted that when deferred tax expense is used as a surrogate of earnings management, the errors associated with isolating discretionary accruals are avoided. Along with accrual models, they used deferred tax expense to represent discretion of the managers. Their result indicated that total accrual is incrementally useful beyond deferred tax expense in detecting managing earnings to avoid reporting decline in earnings; and deferred tax expense is incrementally useful beyond total accrual in detecting managing earnings to avoid loss.

Dhalilwal, et al., (2004:434) investigated the technique used by managers to manage earnings (so as to avoid loss or beat analyst forecast) as a last resort, just before earnings announcement. They concluded that:

> When we consider the complexity of estimating tax expense and the timing of the tax accrual prior to earnings announcements, we believe that tax expense is a powerful and under-explored context for studying earnings management. When managers have an incentive to achieve a particular earnings target, the tax expense account provides a final opportunity for earnings management. Tax expense is one of the last accounts closed before earnings are announced because other income related changes affect the tax accounts….We consider tax expense because this account is material for a broad set of firms and because it contains the necessary discretion to generate information asymmetry between managers and investors or analysts.

It is interesting to note here that though Dhalilwal, et al., (2004) did not used deferred tax expense directly, the tax expense account they used comprises of tax paid for current year and tax deferred to future date. Thus the usefulness of deferred tax expense is still reflected in their research. A number of other researches exist on the use of under/over provision for deferred tax valuation allowance to manage earnings, but as stated earlier, Nigerian tax regulations make it impossible to manage earning using this technique. Hence this research finds it best not to discuss them.

Considering the startling efficacy of deferred tax expenses discussed above, as earnings management tool; and referring to the prediction of positive accounting theory – the higher the debt to equity ratio, the more the chances that managers employ the use of income increasing accounting choices; it is sufficient to propose that deferred tax expenses which mostly emanate from income increasing accounting choices (as argued by the findings above) will be positively related to leverage. One may argue that the negative/positive relationship between debt/equity financing and income tax payable (tax effects of leverage financing) may bias the result of matching leverage against deferred tax exper

reveal that, deferred tax expenses emanate from such manipulation that do not affect taxable income and the tax payable for the period. Besides, Philips, et al., (2003) noted that deferred tax expenses consist of only temporary differences which mostly emanate from non-debt tax shields, like depreciation expenses, bad debt expenses, research and development, etc. As such, the relationship between leverage ratio and deferred tax expenses is not affected by the relationship that exists between leverage ratio and income tax payable.

2.11 Existing regulatory Framework in Nigeria

To give more footing to the variables of the study, this study briefly looks into an overview of the relevant regulations relating to the study. Thus:

(i) Accrual Earnings Management

The relevant regulations are SAS and IAS/IFRS. Both the two standards allow for the use of fundamental accounting concept. These concepts are: entity, going concern, periodicity, realization, matching, consistency and historical cost concept (see SAS1 and IAS1). In addition, they allow for rational judgment, using objectivity, fairness, materiality, prudence and economic substance over form. As such, managers use judgment in so many qualitative decisions with quantitative effects. Example, they can decide to structure some transactions in such a way that may delay the recognition of certain revenues. For instance, in long term contract, SAS5 requires that the method to use in determining the proportion of revenue (sales) should either be: cost to date divided by estimated total cost to completion multiplied by total contract revenue, or cost to completion of work certified divided by estimated contract value times total contract value. Based on consistency concept, if a firm has been using the second method of revenue recognition, anytime it wants to bank income for the future period, it may delay the process of certifying the portion of work completed to date.

Generally, this review observed that the regulatory framework allows for a lot of discretions and this give the managers opportunity to be able to manage earnings using accruals, whenever there is incentive to do so.

(ii) Real Earnings Management

The review observed that real earnings management is possible due to the fact that there are no regulations specifying any normal level of activity to be carried out by firms. For instance, a firm is not constrained by any law as to what volume of goods and services it should produce, what price to charge, what minimum discount to offer, how much to expend on R&D or advertisement, and so on. These are left for the market forces, rationality and managerial discretion to decide. As such, firms are easily able to manage earnings through real economic actions with cash flow consequences

(iii)Deferred taxation:

The relevant regulations are Companies Income Tax Act (CITA)1990 CAP60, 1997 and 2004 CAP21, Law of the Federal republic of Nigeria (LFN) as amended; Capital Gain Tax Act (CGTA)1999, No 45. LFN as amended; Statement of Accounting Standards (SAS) issued by Nigerian Accounting Standard Board (NASB) and International Accounting Standards (IAS), plus International Financial Reporting Standards (IFRS), respectively issued by International Accounting Standard Board and International Financial Reporting Standards Board.

CITA provided for the tax rate (at 30%) as well as the strict processes in arriving at the taxable profit. This included the maximum of capital expenditures (such as depreciation charges on fixed assets) allowed for certain assets, the allowance rate for the assets and other expenses like bad debt, research and development and so on. On the other hand, SAS and IAS/IFRS allow for certain discretions to be exercised in estimating these rates and expenses. For instance, SAS3 allows for a firm to reflect its assets either

requires that the depreciable value should either be the historical cost value or the revalued amount. SAS9 (for depreciation) allows the use of judgment in selecting the depreciation method and rate. A company may opt for straight line or reducing balancing method with any suitable rate. On the other hand section 38 (37) of CITA (1991 as amended) provides for initial and annual depreciation rate allowed for each class of assets. CITA calls it capital allowance. Capital allowance for plant and machinery for manufacturing is 50% initial allowance and 25% annual allowance, strictly on straight line. Owing to such differences, a deferred tax arises.

In addition, the CGTA1999 provides for payment of a 10% tax on capital gained from disposal of fixed assets by a firm. The Act also provides that when the proceeds from the disposal is immediately reinvested wholly or partially, the firm reserve the right to respectively apply for a full or partial roll-over relief , i.e. to defer paying the capital gained tax, till some future date when the newly acquired asset is finally disposed. However, it is important to note here that the CGTA provision did not clarify whether the acquisition of the new asset should be in cash, or on credit. For this lacuna, the firm may immediately acquire the new asset but on credit and delay paying cash for it until it closed its financial report and then seek for a roll over relief. The effect of this is that, the firm will defer paying the 10% CGT, report the profit portion as additional profit and also report the whole proceed (the profit portion plus the capital it claimed to have reinvested), as additional cash flow. The unpaid acquisition cost will be reflected as other creditors.

Finally on this, it is important to note here that the SAS provision on deferred taxation (SAS12 replaced by SAS19) is strictier than IAS provisions (IAS12). SAS provides for full provision on deferred tax expenses while IAS allows for partial provision. The implication here is that with the current arrangement underway, for Nigerian firms' adoption of IAS/IFRS, more room will be created for Nigerian firms to be mana

2.12 Theoretical Framework

The thesis of this research is based on the positive accounting theory's debt/equity hypothesis as propounded by Watts and Zimmerman (1978). Base on the work of Watts and Zimmerman (1990), the positive accounting theory asserts that, indeed there exist a kind of regular relationship among accounting numbers/variables and that, accounting scholars should strive to identify these patterns which could aid empiricism. It is on that note that Watts and Zimmerman (1978) identified a pattern of positive relationship existing between a firm's leverage ratio and income-increasing accounting choices, which is hence referred to as debt/equity hypothesis or debt covenant hypothesis. In their own words as quoted by Sweeney (1994), they predict that: "ceteris paribus, the larger a firm's debt/equity ratio, the more likely the firm's managers is to select income-increasing accounting procedures". The higher the debt/equity ratio, the tighter the firm's constraints in the debt covenants and the tighter the covenant constraint, the greater the chances of a covenant violation and of incurring costs from technical default; and when this is evident, managers resort to exercising discretion by choosing income increasing accounting methods to relax debt constraints and reduce the costs of technical default (John & Kalay, 1982). The rationale behind this as Sweeney (1994) explained, is that, covenants are accounting based restriction and the only logical response is accounting based manipulations. Expounding further, in order to safe guard their investment in a given firm, lenders impose certain restrictions on to the borrowing firm. These restrictions are in form of accounting ratios, expressing the minimum standard (of performance) required by the lender. E.g., the minimum current ratio, a firm should maintain, and so on. The tightness of the ratios usually depends on the extent to which the firm relies on debt- i.e. leverage ratio. In addition, the interest charges, administration expenses, monitoring expenses are normally factored in the debt pricing. These are the borrowing cost. Violating the covenants normally leads to refusal to renew the debt liquidity problem, and finally, the chain will

claim. From this, it is evidently costly to violate the debt agreement. To avoid violation, Watts and Zimmerman (1978) explained that the better means is through income increasing accounting choices. This predicts positive relationship between leverage and earnings management.

On the other hand, agency theory posits that monitoring of an agent bring about reduced agency cost (Jensen & Mecklings, (1976). The logic here is that, earnings management is viewed as agency cost since it is mostly opportunistic. In order to curtail this dysfunctional behaviour of the agent (the manager), monitoring mechanism like debt monitoring by the lenders, comes in handy. Additional argument by a division of this theory (cash-flow hypothesis of Jensen, 1986) is that since debt requires servicing through interest plus capital installment repayment, periodically, managers needs to buckle up and generate more permanent earnings that will facilitate this (Jensen, 1986). Thus, it is not rational to manage earnings where there is debt. As such, debt should negatively impact on leverage.

In addition, signaling theory which is an extension of agency theory, predicts that debt in a firm's capital structure (especially institutional debts like bank, bond, etc.), signals reassuring presence to the potentially worried investors, trade creditor and other stakeholders and as such, this negates the need for earnings management to reassure anybody (Diamond, 1991). The explanation for this is that in situation of information asymmetry, institutional lenders are viewed by the distant trade creditors and investors, as better informed about the company they are lending. This notion supports the negative relationship between leverage and earnings management- the more the debt level, the more the assurance and consequently the less the need to manage earnings.

However, majority of the empirical findings are in support of debt/equity hypothesis. Therefore, this research is of the view that debt equity hypothesis better explains the variables of the study and is therefore, adopted as the th

the study. On this thesis henceforth, this research claims a positive relationship between leverage and accrual, real and deferred tax earnings management strategies.

2.13 Summary

In this chapter, conceptual, empirical, regulatory and theoretical issues relating to the study were discussed. The concept, nature, incentives, dimensions and measurement of earnings management in research were discussed. The concept of leverage incentive and measurement of leverage was also discussed by the chapter. In addition, aside the documented evidence on the impact of leverage incentive on accrual, real earnings management; the power of deferred tax expenses in earnings management was also critically reviewed. Gaps were identified and will be filled later in the course of this study. Finally, a discussion on the relevant theories in this chapter enabled the study to have identified the thesis upon which the study's claim is built.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research design relating to the methods employed in data collection and tools of presentation and analysis used in the course of the study. The chapter also discusses construction of the variables of the study in relation to the models which the study has adopted.

3.2 Research Design

The methodology of this study was patterned along descriptive (especially, correlational aspect of descriptive) and ex-post factor approaches. The after-the-event approach has given the study a better insight on the previous empirical evidence on the study variables, from which the study was able to build its thesis; and has also provided the historical data that was used in the data analysis aspect of the study. Descriptive research design has aided in describing, analyzing and interpreting the data collected from historical records of the study population.

The sources of data were from the NSE fact book and published annual reports of the firms that finally constituted the population of the study. Other relevant sources like news papers, NSE bulletins were also used for data screening purposes only.

3.3 Population of the Study

The population of the study was the entire 79 manufacturing firms listed in the Nigerian Stock exchange as at 31 December, 2003 which were not liquidated, merged/acquired or delisted as at 31st December 2010.

3.4 Sample Size

The final population of the study also constituted the sample of the study after a necessary screening was carried out. This final population was arrived at in the following screening process as depicted in the table below:

Table 3.1 (sample filtering)

Description						
Total listing	263					
Less: Government & private debt stock	(47)					
=Total Equity listing		216				
Less: Non-Manufacturing firms		(127)				
=**Total Manufacturing**			**89**			
Less: listed after 01/01/2003			(10)			
=Manufacturing listed before 01/01/2003				79		
Less: Firms below industry's average capitalization (104m)				(28)		
					51	
Less Firms:						
-Non-exclusive manufacturing						(8)
-that merged/acquired/delisted						(2)
-suspended for not declaring annual reports						(7)
-without complete footnotes disclosures						(5)
						(22)
Study population						**29**

sources: NSE fact book- 2010, firms' annual reports & voice of Nigeria website

According to the NSE Fact book, 2010 published by the Nigerian Stock Exchange (NSE), there were 263 numbers of firms listed in Nigerian Stock Exchange (NSE) as at 31 December, 2010. Out of this number, 41 were government securities, 6 industrial loan stocks and 216 equities. Going through the profiles of these 216 equity listing, it was evident that 89 were into manufacturing/processing activities. Of these manufacturing listed firms, only 79 were listed as at 31st December, 2003. In addition about 28 of the 79 had paid-up capital below the 104million industry's median (average by positioning). 51 firms were left after screening out the 28. In addition, firm that were either into processi

some other businesses like importation, printing and so on, which numbered up to 8, were also screened out. While, two firms fell into the merged/acquired/delisted category, 7 firms (of the balance) were part of the firms suspended for failure to publish their backlogs of audited annual reports. Finally, 5 of the remaining balance of 34 firms did not disclose some useful footnotes, required in computing certain variables for some years. These include notes like the non-cash items/components of the cash-flow, the actual amount charged/credited to profit and loss account (P&L) as deferred tax expense for a given year, as well as the deferred tax asset (if any) that was subtracted there from, before charging to P&L. Subtracting the 5, left 29 manufacturing firms which the study adopted as the population as well as the sample of the study. Refer to appendices A1, A2 and A3. Further justifications were given in section 3.9.

3.5 Methods of Data Collection

Data collected for this study came exclusively from secondary source. NSE published fact book and published annual reports of the firms under study were examined and the required data necessary for the analysis were collected there from.

3.6 Variables Specification and measurement

With respect to the hypotheses presented in chapter one, the relationships among the variables of the study were specified as follows:

- Hypothesis one: the relationship was between leverage (LEV) and accrual earnings management (AEM).
- Hypothesis two: The functional relation was between the leverage (LEV) and real earnings management (REM).
- Hypothesis three: The relationship has been between leverage (LEV) and deferred tax Earnings management (DTEM).

Note that, in all the three cases, leverage has been used in two different dimensions- finacial leverage (LEVFINLIAB) and total leverage (LEVTLIAB).

The next section explains the manner in which the specified variables were applied into hypotheses tests equations, as well as how they were measured.

3.7 Method of Data Analysis

The analysis was conducted in three stages, for hypothesis one; two stages for hypothesis two and one stage for hypothesis three. In the first and second stages (for hypothesis one) and first stage (for hypothesis two), secondary models were used to estimate the relevant proxies, and then the primary models were applied in the final stage of hypotheses tests. Abnormal accrual was estimated by a cross sectional regression model of Dechow, et al., (2002) which requires two regression estimates. Real earnings management was estimated by a cross sectional regression model adopted by Roychowdhury (2006). No initial regression was required in estimating deferred tax earnings management. Information in the footnotes of annual reports and the net income were utilized for this. Finally, panel OLS regressions were estimated using the primary models of the study. To correct anomaly noticed in the data, dependent variables in the all the three hypotheses test-equations were later converted to dichotomous variables and the equations were then re-estimated using panel logistic regressions. Thus:

The primary models

$$AEM = \alpha_{it} + \beta_{it}LEV + \mu_{it} \qquad (1)$$

$$REM = \alpha_{it} + \beta_{it}LEV + \mu_{it} \qquad (2)$$

$$DTEM = \alpha_{it} + \beta_{it}LEV + \mu_{it} \qquad (3)$$

Where:

AEM = Abnormal accrual proxy for a

REM = Abnormal cash flow proxy for real earnings management

DTEM = Proxy for deferred tax earnings management

LEV = Leverage ratio

α = Intercept (constant value of earnings management in the absence of leverage)

β_{it} = Panel parameter (coefficient to explain the variation caused by leverage)

μ = Error term (other explanations not by leverage)

$_{it}$ = firm "i" at time "t"

Based on the argument forwarded by Welch (2011), as explained in chapter 2.3, and also the manner in which the debt covenant hypothesis was forwarded, we deem it fit that financial leverage (hence to be referred as LEVFINLIAB) is the type of leverage that best suit our hypotheses. Nevertheless, we measured leverage (LEV) in two different perspectives. One, from the perspective of real monetary debt, otherwise known as financial debt (i.e LEVFINLIAB); and the other, from the perspective of total debt owed by a firm, whether resulting from financing, trading or other operating activities. These are the two acceptable/error-free measures of leverage, according to Welch (2011). With this, we therefore splited each of these three equations above as follows:

$$AEM = \alpha_{it} + \beta_{it}LEVFINLIAB + \mu_{it} \quad (4)$$

$$REM = \alpha_{it} + \beta_{it}LEVFINLIAB + \mu_{it} \quad (5)$$

$$DTEM = \alpha_{it} + \beta_{it}LEVFINLIAB + \mu_{it} \quad (6)$$

$$AEM = \alpha_{it} + \beta_{it}LEVTLIAB + \mu_{it} \quad (7)$$

$$REM = \alpha_{it} + \beta_{it}LEVTLIAB + \mu_{it} \quad (8)$$

$$DTEM = \alpha_{it} + \beta_{it}LEVTLIAB + \mu_{it}$$

Where:

LEVFINLIAB = financial leverage, and

LEVTLIAB = total leverage.

Other variables remained the same as in eqations (1), (2) and (3).

Note that LEVFINLIAB is the main independent variable we tested. LEVTLIAB was used merely for robustness test. Thus, it is imperetive to understand here that equations (4), (5) and (6), were the three equations used to test hypotheses one, two and three, respectively. Base on the hypotheses raised, the three primary models above seem appropriate for the study. The decision rule adopted was that if the *p* value obtained from the regression is not above 5% level of significance, the study rejects the null hypothesis in all the three cases. However if the p-value exceeds 5%, the null hypothesis cannot be rejected. Any other model subsequently specified was there to aid in providing the requisite proxies for the three primary models above and not directly for hypotheses testing.

The abnormal accrual model

To estimate the abnormal accrual, forward looking abnormal accrual model as developed by Dechow, et al., (2002) was used. The process comprised of first, estimating total accruals, then estimating the parameter *k* by regressing change in receivable on change in revenue, then estimating the normal accruals using the parameters estimated from equation (11) and finally subtracting normal accruals from total accruals to obtain the discretionary accrual. Alternatively, the residuals from equation (5) can be directly used to represent the abnormal accruals. Following Zhang (2002) we specified the Dechow et al., (2002) model, in computational sequence as follows:

Total accruals (TAC), was computed using balance sheet approach as follows:

$TAC_t = \Delta CA_t - \Delta CL_t - \Delta CASH_t + \Delta D($

Where:

TAC_t = Total accruals at time t

ΔCA_t = Change in current assets at time t (from period t-1 to period t)

ΔCL_t = Cash flow from operation at time t (from period t-1 to period t)

$\Delta CASH_t$ = Change in cash at time t (from period t-1 to period t)

ΔDCL_t = Change in debt included in current liabilities from period t-1 to period t

DEP_t = Depreciation and ammortisation expenses at time t

The parameter *k* in equation (12) was estimated using the following regression:

$$\Delta REC_t = \alpha_0 + \beta\ \Delta REV_t + \mu_{it} \qquad (11)$$

Where:

ΔREV_t = Change in revenue at time t

$\Delta RECt$ = Change in receivable at time t

μ_{it} = error term

β in equation (11) above, was used as the parameter *k*, which was subtracted from 1 in equation (12/13)

The normal accrual proxy [incorporated in the equation (13)]

$$NA_t/TA_{t-1} = \beta_1\ [(\Delta REV_t - (1-\kappa)\ \Delta REC_t)]/TA_{t-1} + \beta_2\ PPE_t/TA_{t-1} + \beta_3\ TAC_{t-1}/TA_{t-2} + \beta_4 GR\_SL_{t+1} \quad (12)$$

Where:

NA_t = Normal accruals at time t

TA_{t-1} = Total assets at time t - 1

TA_{t-2} = Total asset at time t - 2

ΔREV_t = Change in revenue at t

$\Delta RECt$ = Change in receivable from period t-1 to period t

PPE_t = Gross property, plant and equipment

TAC_{t-1} = Total accruals at time t - 1

GR_SL_{t+1} = Change in sales from time t to time t + 1

κ = Parameter estimated from regressing $\Delta RECt$ on ΔREV_t

$\beta_1, \beta_2, \beta_3, \beta_4,$ are the parameters estimated in equation (13).

The total accrual model is as follows:

$$TAC_t/TA_{t-1} = \alpha_0 + \beta_1 [(\Delta REV_t - (1-\kappa) \Delta RECt)]/TA_{t-1} + \beta_2 PPE_t/TA_{t-1} + \beta_3 TAC_{t-1}/TA_{t-2} + \beta_4 GR\_SL_{t+1} + \mu_t \quad (13)$$

Where: TAC_t is total accruals at time t (which was obtained by equation (10), α_0 is the constant term and μ_t is the residuals at time t which can be used as the abnormal accrual portion (see Zhang, 2002). In other way, the parameters $\beta 1, \beta_2, \beta_3, \beta_4$ can be used to estimate the non discretionary portion of the total accruals. We used the later option- the parameters, to compute the non-discretionary accruals.

Using the coefficients obtained from equation (13) above, normal accrual (NA) was calculated using equation (12). using this normal accrual and the total accrual from equation (10), abnormal accruals was estimated as follows:

$$AAC = TAC - NA \quad (14)$$

Where:

AAC = Abnormal accruals- proxy for accrual earnings management (AEM)

TAC = Total accruals

NA = Normal (non-discretionary) a

The abnormal cash flow model

To estimate the abnormal cash flow, normal cash flow was estimated first, from which a firm's cash flow for the year was deducted. The difference was then used as the abnormal cash flow. Roychowdhury (2006) explained that the normal cash flow is a linear function of sales and change in sales, all scaled by lagged total assets. Following Roychowdhury (2006) and Mamedova (2008) we specify the normal cash flow model as follows:

$$CFO_t/TA_{t-1} = \alpha_o + \alpha_1 1/TA_{t-1} + \alpha_2 SL_t/TA_{t-1} + \Delta SL_t/TA_{t-1} + \mu_t \qquad (15)$$

Where:

CFO_t = Cash flow from operation

TA_{t-1} = Total assets at time t-1

SL_t = Sales at time t

ΔSL_t = Change in sales from time t-1 to time t

μ_t = Residuals (can alternatively be used to proxy for abnormal cash flow)

α_o = The intercept

α_1, α_2, are the parameters used in estimating the normal cash flow

Using the result from equation (15) above, abnormal cash flow was computed as shown below:

ACF = CFO - NCF (16)

Where:

ACF = Abnormal cash-flow, as a proxy for real earnings management (REM)

CFO = Total cash flow from operation

NCF = Normal cash flow from operation

Estimating Deferred tax earnings management (DTEM)

To estimate deferred tax earnings management, we first computed net deferred tax expenses (NDTE) which is the same as net change in deferred tax liability (see Phillips, et al., 2002 & Zhang, 2002). NDTE was estimated using the footnotes available from the annual report. In any given year a firm may incur a taxable temporary difference or deductable temporary difference, resulting to either deferred tax liability or deferred tax asset. If the taxable temporary difference is greater than the deductible temporary difference, deferred tax expense arise which increases the deferred tax liability. If on the other hand the deductible temporary difference is greater, the net change in deferred tax liability will then be in negative direction- it reduces the deferred tax liability (refer to the training manual prepared by Nigerian Tax Academy, 2011, for more details). We avoided using the on-balance-sheet figures of deferred tax liability in computing the net deferred tax expenses, so as to avoid including any portion of deferred tax expenses that might have arised from merger, acquisition and sort. Thus following Zhang (2002) and Phillips et al., (2002) the following estimate of deferred tax expenses was made:

Net deferred tax expense is given as:

NDTE = TTD – DTD (17)

Where:

NDTE = Net deferred tax expenses

TTD = Taxable temporary difference

DTD = Deductible temporary difference

Both Phillips et al., (2002) and Rabin and Nagesh (2008), used the raw figures of deferred tax expenses to proxy for deferred tax earnings management. This is perhaps because they are regressing it against another proxy of earnin

approach. Here, we find it inappropriate to just use deferred tax expenses as earnings management, owing to the fact that it is possible for deferred tax expenses to arise out of sheer spontaneity, not with the intention to manage earnings. For this, we needed to match the deferred tax expenses arised, with an additional incentive. We thus figured that since avoidance of earnings' decline is an incentive which literature has established to be one of the motivations to manage earnings (Burgstahler and Dichev, 1997), and that literatures also established that deferred tax expenses is used for this purpose; we therefore looked for those firms with positive net deferred tax expenses who manifest sign of avoidance of earnings' decline. As Burgstahler and Dichev (1997) empirically documented, firms that barely exceed previous earnings level are indeed avoiding earnings' decline by means of managing their reported earnings. Phillips et al., (2002) identified three earnings thresholds/targets which managers at all times tries to exceed either of these thresholds or targets. In that, they noted that managers manage earnings to: avoid reporting loss; avoid reporting decline in earnings, and to beat analyst's expectation. Phillips et al., further clarified that the evidence for each of the above mentioned three, is manifested in: small profits (in the case of loss avoidance), small increases in profits (in the case of avoidance of decline in earnings), and small increases in profits over the profits targeted/forecasted by analyst. In this research, we opted to match deferred tax with avoidance of decline in earnings. Determining what constitute small increase in profit is solely judgmental. Some researchers such as Rabin and Nagesh (2008) and Phillips et'al (2002) used 0.01 or 0.05. We set 0.1 increases in profit to be small profit, as we used book-value of equity to divide the net income; unlike these other researches, in which they used market value of equity.

Following Phillips et al., (2002) but with slight modification, we estimated deferred tax earnings management (DTEM) using dichotomous variables, as 1 for firms with positive net deferred tax expenses, if the firm's change

book-value of equity at time t-1, is greater than 0 and less than or equal to 10%, (i.e DTEM= 1, if NDTE is positive and if $\Delta NI_t/EQUITY_{t-1} > 0 \leq 0.1$, and 0 otherwise). To practically estimate this, we first extracted the temporary differences arising for all the years and for all the firms. We then gave the value 1 for those with positive temporary difference balances (i.e net deferred tax expenses), and 0 if negative. We then extracted and computed changes in net income as percentage of lagged total equity. We gave the value 1, to those firms with positive changes below or equal to 10%; and 0 if out of range.from there, we multiplied the result from net deferred tax and the one from change in net income, to arrive at deferred tax earnings management (DTEM).

Leverage computation

Leverage was computed using two different approaches:

(1) LEVFINLIAB = Financial debt/Equty+Financial debt (18)

Where:

LEVFINLIAB = Financial leverage

Financial debt = Long term debt plus debt included in the current liabilities,

Equity = Total equity funds

(2) LEVTLIAB = Total liabilities/Total assets (19)

Where:

LEVTLIAB = Total leverage

Total liabilities = Financial plus Non-financial liabilities

Total assets = Total fixed plus current and any other intangible assets

3.8 Corrective transformation

In the wake of data normality test, we discovered that our entire data-sets are statistically not normally distributed. Considering the nature of sensitivity of OLS regression to extreme data outliers, we re-estimated our hypotheses-test models using Logistic regression (logit). Logit is a standard statistical procedure that convert non-linear relationship between a dichotomised dependent variable and the independent variable, into linear, by taking the log of odd ratio in favour of the probability that the dependent variable is predicted as expected; and then compute the maximum likelihood of such happening (see Peng, Lee & Ingersoll, 2002). As Peng et al., (2002) noted, the OLS assumptions in respect of the residuals are not of concern to logit. The logistic model fits data that is not normally distributed (Finney, 1952). A simple logistic model predicts the logit (Z) of Y from X. As from our primary equations for the hypotheses tests, we can convert our OLS model into logistic model, using equation (4) as an example, in the following manner:

$$\text{Log}\{p(AEM=1)/1 - p(AEM=1)\} = Z = \alpha_{it} + \beta_{it}\, LEVFINLIAB + \mu_{it} \qquad (20)$$

Where:

Log	=	Natural logarithm
P(AEM=1)	=	Probability that AEM occurs as expected (i.e AEM =1)
1 - p(AEM=1)	=	probability that AEM does not occur as expected (i.e AEM=0)

The ratio of the two above (i.e pAEM=1 / 1 – pAEM=1) is called the odds (odd-ratio) in favour of event AEM occuring. Thus, the log of this odd ratio is what is called the LOGIT, which is equal to Z. Z is used as it is not bounded to be between 1 and 0, and it is convertible back to probability using the Z-score table. The probabilities themselves are not linearly related to the α and β coefficients but the logs of ratio of the probability of occurrence to the probability of non-occurence of the event AEM, are indeed lin

detail on the derivation, see: Feng et al., 2002 and Finney, 1952). Using Stata-9 statistical package, we re-estimated logistic regressions for equations (4) up to equation (6), after dichotomising our dependent variables (i.e AEM and REM- DTEM has been a dichotomous variable). A summary of the logistic regressions and their corresponding discussions is part of chapter four (precisely at section 4.5). the full results are appended. Before estimating the logits, we redefined the two dependent variables that were not initially dichotomous, in the following manner:

AEM = 1 if the calculated abnormal accrual is positive, 0 if negative;

REM = 1 if the computed abnormal cash-flow is positive, 0 if negative.

What informed our criterion to be as above is the fact that the prediction of debt-covenant hypothesis is centred on **income-increasing** (i.e positive) accounting choice (earnings management) against debt-to-equity ratio- the higher the debt-to-equity ratio, the more likely that managers employs **income-increasing** accounting choices (Watts and Zimmerman 1978, cited in Sweeney, 1994). Additionally, Bugshan (1995), Phillips et al., (2002) and Rabin and Nagesh (2008) all used a dichotomous variables to represent earnings management.

3.8.1 Test for Goodness-of-fit

One short-coming of all binary dependent models identified by literature is their inability to come up with a coefficient of determination (R^2) that perform exactly the same function as the R^2 performs in OLS. The R^2 computed in logit is viewed to be of limited value in judging the logit model's goodness-of-fit (Feng et al.,, 2002). As such, a separate test for goodness-of-fit was conducted- as strongly advised by Peng et al., (2002), using Andrews and Hosmer-Lemeshow tests. These test the null hypothesis of the model-good-fit-to-data. If the p-value is not significant, the hypothesis that the model does not fit the

However, this does not negate the significan

on the other hand respectively test whether the coefficient has significant impact on the dependent variable, and the model is significantly better than a model that has only an intercept. Result of these tests can be found in appendix G2 and the discussions regarding the test-results are integrated in section 4.5 (under corrective transsformation).

3.8.2 Test for omitted variables

In view of the observed poor fitness of the model from both results of the R^2 and the two tests of goodness-of-fit, efforts were made to see if the model can be improved through omitted variable tests. This was conducted using E-views7, using three additional variables, which literature has shown to be having impact on earnings management. These variables includes: returns on equity (Wasimullah et al.,, 2010), financial burden (Wasimullah et al.,, 2010) and firms' size (Mamedova, 2007). The result of this test can be located in appendix G3 and the discussion is done under section 4.5 (under the heading: corrective transformation). To measure our newly added control variables, the following procedures were followed:

ROE = NI/EQUITY (21)

Where:

ROE = Returns on equity at time t

NI = Net income before extra-ordinary items at time t

EQUITY = Ordinary share-holders' funds at time t

FINBURDEN = INTEREST EXPENSES/TOTAL DEBT (22)

Where:

FINBURDEN = Financi

INTEREST EXPENSES = Total interest expended for the year

TOTAL DEBT = Total financial debt for standing at time t.

LogTA = Logarithm of total assets at time t (proxy for size) (23)

3.8.2 Fixed and Random effects tests

After we run our logistic models for all the six equations and tested for their fitness and the omitted variables, we additionally looked into the possibility that certain unobserved phenomena which are time invariant (fixed in time) and also entity specific (fixed in entity/peculiar to individual firms), may have influence on our predictors and thus bias the coefficients estimated using the panel logit. In taking care of this, we controlled for these unobserved fixed effects by running fixed effect models, on the assumption that the predictors for each panel are correlated with the error terms within their respective panels, and that the error terms plus the constant term in each panel (which captured the individual panels' distinct characteristics) are not correlated among the panels, i.e the coefficients' variation across panels are due to these fixed firms' characteristics. We also did not overlooked the possibility that these error terms could be correlated across each other, and that whether these unobserved fixed effects are uncorrelated with the predictors and thus the variations of the coefficients have nothing to do with the individual panel's fixed characteristic (i.e the variations across panels are purely out of random). To take care of this, we run random effect logistic (xtlogit) regression using stata, for all the test equations that were found to be significant at instance of the first logistic regression.

Finally, we run for a hausman specification test, to enable us select which result best fit our panelled variables. Using the probability significance we select which result to select and interprete. Since the Hausman test is not significant in each of the tests, we used the results that we controlled for random effect in all cases. Th[illegible] G and summaries of the qualified results and

3.9 Justification of the Methods and Techniques

The justifications for the methods and techniques adopted are as follows:

(a) Historical and descriptive designed were selected owing to their suitability – allow for adequate, accurate and accessible data (annual report) and the means (literature and models tested before) to analyze the data.

(b) Manufacturing industry was used due to its strategic nature in the development of any developing economy. In addition, the annual report from the sector seems to have all the observations required by the proposed models. Importantly, the cross sectional forward-looking discretionary accrual model requires at least 16 observations. No one single sector with all the required observations has up to this number. Moreover, they are viewed to use heavy plants, whose depreciation value is substantial enough when employed in managing earnings using deferred taxation.

(c) The manner in which the 29 firms arrived at are purely based on unbiased screening procedures, with the aim in mind, to aid in having a final population that could give the requisite data which may properly capture the information required. For instance, firms with paid-up capital of below the median capitalization of the industry, were considered to be too small and hence screened out because literature documented that bigger firms are more likely to manage earnings, especially to avoid earnings decline; while smaller firms are more likely to manage earnings to avoid reporting losses (Tehrani, Salehi, Valipour & lashky, 2009). It is only logical to assume that a study that aimed at investingating income increasing earnings management versus leverage incentive, can best suit such firms where there is higher likelyhood of income increasing earnings management, especially when considered the manner in which def

study (positive deferred tax expenses was matched against avoidance of decline in earnings, to ascertain deferred tax earnings management). Non-exclusive manufacturing firms were sidelined so as to have a balanced focus on what derive all three earnings management strategies. For this, we figured that non-exclusive manufacturing firms do not usually employ the use of those heavy plant which generate significant depreciation expenditures that may allow significant manipulation around qualifying capital expenditure, which eventually generate deferred tax expenses or assets. In the same vien, firms that merged or acquired usually have deferred tax that arise from the merger/aquisition and such is not viewed to be discretionary (Zhang, 2002). Firms not listed prior to 2004 were out of our scope. Firms suspended for not submitting 2010 annual reports are obviously without data that we can access, so also firms without those voluntarily disclosed foot-notes which can aid us in computing the net-deferred tax expenses and the total accruals.

(d) Forward looking model of abnormal accrual was used in estimating abnormal accruals because when compared with other accrual models, it is the accrual model that exhibits the most power, with minimum error (Zhang, 2002). Cross sectional version of the model is opted for owing to the fact that the parameters do not remain static, rather they changes with the passage of time (Dechow, et al., 2002). Time series version assumes that these coefficients are stationary. Dechow et al., (2002) maintained that it is erroneous to assume so.

(e) Dechow, et al., (1998) normal cash flow model was used because to the best of the knowledge of this study, it is the only available model in the literature that estimates aggregate real earnings management. In addition, Mamedova (2008) declared that this

proxy for real earnings management (REM) has been used and verified to be valid in subsequent studies by Gunny (2006), Cohen (2007), Zhang (2006), and Zang (2007).

(f) Net deferred tax expense (i.e. net change in deferred tax liability) was adopted as a proxy for specific earnings management because it is free of measurement error, unlike other metrics, and also, it captures other earnings management which the accrual models miss (Zhang, 2002). It encompasses all specific discretionary line items which can be used to manage earnings. E.g. decrease in bad debt expenses, decrease in provision for depreciation, decrease in expenses for research and development, prepayments, and so on.

(g) The research adopted measuring leverage in the manner it is specified because of the observation given by Welch (2011) that the two error-free leverage measures are: debt-to-equity ratio (for accountants) and total debt-to-total assets. For the later option, he argued that non-debt liabilities too finances the assets and they put the same pressure on a firm's earnings and cash flow like the debt liabilities. The finding of Sercu, et al., (2006) is in tune with this notion.

(h) Logistic regression was opted instead of data transformation because of the problem encountered when attempting to transform our DTEM and because of the observation made by Dougherty (1992) in respect of the poor ability of linear regression in handling regression with dichotomous dependent variable. Logit is a standard statistical procedure which can handle data that is not normally distributed (Finney, 1952).

3.10 Summary

In this chapter, the approaches to the research design adopted for the study were presented. Population and sample size of the study and [illegible] highlighted. The variables used in the study [illegible]

the chapter discussed the procedure of hypotheses testing and the decision rule criterion that was followed. Finally, the chapter provided justification for the methods and techniques used for the study.

CHAPTER FOUR
DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter presents and discusses the results of the hypotheses testing. Descriptive statistics and other univariate results as well as bivariate correlations are presented and discussed first. Following these are the results of secondary regressions and the primary regressions executed for the hypotheses testing, concurrently with discussions on inferences derivable from the results, as reflected in the reviewed literature. The chapter ends with highlights of the policy implications emanting from the findings.

4.2 Descriptive Statistics, Normality and Stationarity Tests

The study used five variables in testing the three hypotheses raised for the work. Three different dependent variables- Accrual Earnings Management (AEM- hypothesis one), Real Earnings Management (REM- hypothesis two) and Deferred Tax Earnings Management (DTEM- hypothesis three), were used for each of time-series models presented in chapter three. One independent variable measured in two different dimensions- Total Leverage (LEVTLIAB) and Financial Leverage (LEVFINLIAB), were used for the primary models. While LEVFINLIAB is considered to be the main independent variable, LEVTLIAB is additionally used merely to test for robustness of the findings. The result of descriptive analysis for these variables employed, and other numerical analysis that are theory driven, are given as follows:

Table 4.1: The Univariates statistics

	AEM	REM	DTEM	LEVTLIAB	LEVFINLIAB
Augumented Dickey Fuller (ADF) Stationarity Test					
ADF (t-statistics)	-11.963	-10.322	10.291	-8.327	-6.518
Critical Value at 1%	-3.477	-3.468	-3.468	-3.468	-3.468
P values	0.0000	0.0000	0.0000	0.0000	0.0000
Descriptive statistics					
Mean	.0188	-.0254	.3103	.6840	.4486
Median	-.0341	-.0147	.0000	.6171	.4326
Std. Deviation	6.60117	.19183	.46397	.41012	.42603
Variance	43.575	.037	.215	.168	.182
Skewness	7.679	.171	.827	3.984	2.453
Std. Error of Skewness	.201	.184	.184	.184	.184
Kurtosis-3	88.081	4.910	-1.331	21.170	11.837
Std. Error of Kurtosis-3	.400	.366	.366	.366	.366
Shapiro-Wilk W Normality Test					
W	0.281	0.936	.0988	0.626	0.819
V	81.328	8.519	1.650	49.476	23.888
Z	9.954	4.894	7.250	8.913	7.250
P values	0.00000	0.00000	0.12637	0.00000	0.00000
Shapiro-Francia W Normality Test					
W	0.262	0.926	1.000	0.616	0.813
V	90.632	10.531	-0.000	54.889	26.727
Z	8.496	4.740	-	7.777	6.480
P value	0.00001	0.00001	0.00001	0.00001	0.00001
Number of observations	**145**	**174**	**174**	**174**	**174**

Source: Author's computations using SPSS, Stata & E-views, respectively

Since the models for testing our three hypotheses demands the use of panel data- with attribute of time-series (and cross sectional) data, we first and foremost, subjected our data to a unit root test; so as to be certain from the on-set, as to the nature of the data stationarity we are dealing with. From the table, the results indicate that all the variables are stationary at level (in long-run). In all cases, Augumented Dickey Fuller (ADF) is greater than its corresponding critical value, in ABSOLUTE term, and it is significant at 1%. This means, whatever outcome we get from the hypotheses testing, the finding can hold for a long-run perspective. Full result is attached in appendix C1.

From the descriptive statistics in table 4.1 above, the average (mean) of the observations in each of the five variables, seem not to be situated exactly at the middle (median) of the distribution from which each of these means are derived. The mean of each distribution is above its respective median. This is tentatively insinuating non-symmetry of these distributions, though a mild one, since they are all close to 0 and 1. With respect to DTEM which is dichotomous, its mean value represent the proportion that satisfies the case where DTEM equals to 1 (i.e where deferred tax earnings management exist). Thus, it seems that there is no even spread between the two groups- those who do not manage earnings carry a greater proportion of the population (close to 70%). One variable (AEM) stands out, in respect of the extent to which observations from its distribution deviate from the respective mean and also in respect of the variations that exists within the observations in that group. The standard deviation and variance are both above 1.0, whereas the standard deviations and variances of the other four variables (REM, DTEM, LEVTLIAB LEVFINLIAB) show figures below 1.0 and not beyond -1.0. Importantly, since the characteristic property of the normal distribution is that 68% of all of its observations fall within a range of ±1 standard deviation from the mean, only AEM can be said to be non-normally distributed at this point, on the basis of the standard deviations, as its standard deviation (6.60) is out of this range. This means that observations that have standardized values within the range of ±2 in that distribution, have a relative frequency (of occurrence) above 5% (i.e. 95% of this distribution- AEM, does not fall within the range of ±2). Moving further, the result of the skewness and kurtosis-3 shows that all the variables without exception, have skewness and kurtosis different from the one obtainable from a normal curve. This can be evident from both the numerical figures above and the visual cofirmation as graphically depicted in appendix C2. AEM, LEVTLIAB AND LEVFINLIAB are more sharply skewed to the right with skewness figures of 7.677, 3.984 and 2.453, respectively- indicating more negativ

of skewness for distributions with number of observations (N) less than 2000. Though REM and DTEM are also having more observations to the left, their skewness are both mild ones- close to 0.0 and not up to 1.0- a normal distribution should have a zero or near zero skweness (Park, 2008). With the exception to DTEM which shows a kurtosi (of -1.331) below the normal kurtosis-3 level of 0.0 (or 3.0 for kurtosis, SPSS returns kurtosis-3) indicating a lower than normal peak and thicker than normal tail, every other variable shows a higher than normal peak and thinner than normal tails. Refer to appendix C2 for visual confirmations. This shows that extreme outliers are more pronounced in the these four distributions (with high peak-ness).

To verify what the descriptive statistics indicated above in respect of these five variables, theory-driven numerical tests (Shapiro-Wilk W and Shapiro-Franca W normality test) were conducted using STATA. Unlike Kolmogorov-Smirnov normality test which requires the number of observation (N) to be very large like 5000, Shapiro-Wilk and Shapiro-Franca requires N observations to be atleast between 7 to 2000 and between 5 to 5000, respectively (Park, 2008). Thus,our data-sets are qualified for these tests (145 observations for AEM and 175 each for the rest). The Shapiro-Franca W modifies and approximates the Shapiro-Wilk “W”. The “W” ratios from the result is always a positive ratio between 0 and 1 and it is the ratio of the best estimator of the variance to the variance’s corrected sum of the square (Shapiro and Wilk, 1965 as cited in Park, 2008). The closer the “W” ratio is to 1 the better the result (the closer the normality of the distribution). A significant P-value indicates the probability that the null hypothesis of normality is true. Thus, if the P-value is not significant, it means that the data/distribution is statistically confirmed to be normally distributed. From the result in the table, except for DTEM (which has the highest “W” of approximately 0.99, followed by REM: 0.94), all the P-values in the remaining 4 variables are significant at 1% . However, even the DTEM result became significant after the modified approximation by the Shapiro-Fran

(0 and 1) were used for DTEM and thus milder deviation, variance, low peak and fat tail are all expected. As dummy, all observations are between 0 and 1 concentrating on one side of the curve (as in cumulative distribution), with no single negative observation, and that is why despite that the approximated "W" in the Shapiro-Franca test has become 1, the P-value still remained significant. Going by the rule of significant p-value as cited in Park (2008), this ambiguity cannot be said to have confirmed a normality of the DTEM distribution. Thus, with significantly significant P-values, we can now say that the five variables (AEM, REM, DTEM, LEVTLIAB and LEVFINLIAB) are statistically not normally distributed. This means outliers exists in these distributions- just as in the case of these observations, outliers are mostly associated with right-tailed skewness (Walfish, 2006).

With the observed sensitivity of regression to outliers, there is a risk of commiting type-one or type-two errors during hypotheses testing. Nevertheless, corrective and preventive remedies for these exist. One of such remedies according to Walfish (2006) is to identify these extreme outliers through tools such as box-plots, percentiles, trimmed means, and so on, in which the extreme upper (5% from the roof) outliers and lower (5% from the floor) as determined using the median figure, can be identified and expunged. The regression can then be run and reported separately with and without them. Walfish (2006) however noted that, valid explanation has to be given for the reason for such outliers and if removing them will not bias the result in the light of the objective of the test. "Removing data points on the basis of statistical analysis without an assignable cause is not sufficient to throw data away" (Walfish, 2006). For the purpose of this research, effort was made to trace these outliers using percentiles and to see if a pattern can be identified, which may give clues as to why they exist in the disributions and whether valid reasons that may warrant expunging them can be fathomed. The outcome of this exercise is not forthcoming in any way to this quagmire other than to remind us of the fact that we ar

are into manufacturing), with different drives for external capital demand and capital requirement, with different determinants in respect of market "re-actors", price determinants and different tightness of competition. Thus, bringing them together is bound to generate extreme outliers in the distributions of the variables collected there from. For instance, a firm that manufacture drugs may experience an all time high production and high sales boom during an epidermic like avian influenza or cholera out-break. This is something that is not an every year happening. When it happens, the cash-flow from its operations may seems to stand out against all observation for that firm or even against other bigger companies with bigger capital and sort. Note that, not all these firms are into drug manufacturing. In the same vein, a cement company for example may experience a depressed revenue in years when cement importation is allowed and then bounce back when it is banned, since these tariffs/embargos are somewhat not just perennial happenings, they are on and off all the time, depending on the political gimmick that is on the play. It could also be that one company stands out against its peers from the same sector and same industry, due to issues such as political ties as mentioned above. Such issues are not easy to quantify and control for without the requisite data (which are not part of firms' published annual reports). We found that these outliers are not clustered around specific event like Global meltdown or specific factor which could be a reason strong enough to warrant removal or controlling for these outliers. Thus, we deemed it fit not to remove these extreme outliers. However, the issue of error in the hypotheses testing still remains.

To take care of that issue, we decided to adopt another option that is more safer and without any prejudice. This is achievable by subjecting the data to logarithmic transformation. However, we first presented and discussed the results as they appear before the transformation and then after tranformation. This is done for each of the three hypotheses testing as presented in the subsequent sub-sections of this section.

4.3 The bivariate correlations

Table 4.2: Correlation Matrix

	LEVFINLIAB	*LEVTLIAB*	*DTEM*	*REM*	*AEM*
AEM	*.138***	*-.009*	*-0.049*	*.110**	*1*
REM	*-.367****	*-.374**2*	*.235****	*1*	
DTEM	*-.340****	*-.307****	*1*		
LEVTLIAB	*.568****	*1*			
LEVFINLIAB	*1*				

Source: Author's computation using SPSS.
*****, ** & * = probability significance at 1%, 5% &10% respectively.**

The usual motive of conducting a correlational test in a research that entails the use of regression analysis, is to ascertain whether strong collinearity exists among independent variables, which may be capable of distorting the true picture of a given relationships between the dependent and the independent variables. In this research however, the motive is to examine the relationships among the three earnings management strategies vis-a-vis their relationships with leverage, so as to obtain a broader picture than the one obtainable from regressing them individually against leverage.

From table 4.2, the correlation between AEM and REM is positive (and significant at 10%); that of AEM and DTEM is negative (not significant); and the one existing between DTEM and REM is positve (significant). This means that at any given point of time, managers of Nigerian manufacturing firms manage earnings using a combination of strategies. When they employ accrual earnings management (AEM) together with real earnings management (REM) technique, they rest deferred tax earnings management (DTEM) aside, because DTEM strategy does not go with AEM. Similarly, when they employ DTEM with REM strategies, they forgo AEM strategy. This is in line with the work of Sun and Rat

employ simultaneously, more than one technique in managing earnings. In addition, while AEM has a positive correlation with both leverage measures, both DTEM and REM have negative correlations with the measures. This gives us a little insight on what awaits us on the regression results, following in the subsequent sub-sections.

4.4 Leverage Incentive and Earnings Management (regression results and robust tests)

In this section, regression results for the impact of Leverage Incentive on the earnings management strategies of Nigerian manufacturing firms are presented and discussed. The independent variable in each of the three hypotheses testing, Leverage Incentive has been captured using two different acceptable measures- financial leverage represented as LEVFINLIAB, and total leverage, represented as LEVTLIAB. it is important to re-emphasize here that LEVFINLIAB, is our main independent variable of interest. LEVTLIAB is there for robust test- to ascertain whether managers manage earnings in order to actually avoid the cost of violating debt agreement as Watts and Zimmerman (1979) documented, or rather to avoid the cost of financial distress, as argued by Sercu, et al., (2006). The dependent variables, Earnings management strategies, were captured using three different proxies of earnings management- accrual earnings management as AEM (hypothesis one), real earnings management as REM (hypothesis two) and deferred tax earnings management as DTEM (hypothesis three).

4.4.1 Leverage Incentive and Accrual Earnings Management (hypothesis one)

As explained in the methodology, due to the requirement of the Dechow, et al., (2002) abnormal accrual model, testing this hypothesis was carried out in a multi-stagical regressions. The first regression was meant to estimate the parameter *k* (that is represented in the second regression). The second regreesion was for the estimation of the coefficients required to compute normal accruals which was then subtracted from total accruals to obtain the abnormal accrual that was used in the third regression as a proxy for ac

two regressions were secondary and thus, they are scantily displayed here (refer to appendix D for their full results). A summary for the result of the first regression under this hypothesis is given in table 4, that of the second regression is shown in table 5 and the last (primary) regression which is the actual test for hypothesis one, is depicted in table 6. These are presented and discussed consecutively as follows:

Table 4.3: Impact of Change in Revenue on Change in Receivables

$$\Delta REC_t = \alpha_t + \beta \Delta REV_t + \mu_t$$

Period	*βeta/t-values*	R^2	*Adjusted* R^2*/F-stat*	*N*
2004/2005/2006	.893 (4.218)***	.618	.583 (17.788)***	29
2005/2006/2007	1.062 (5.981)***	.719	.699 (35.772)***	29
2006/2007/2008	.593 (4.809)***	.640	.612 (23.127)***	29
2007/2008/2009	.898 (5.121)***	.652	.627 (26.222)***	29
2008/2009/2010	.086 (.708)**	.502	.446(9.058)**	29

Source: Author's computation using SPSS
*****, ** & * = probability significance at 1%, 5% &10% respectively.**

Table 4.3 above depicts the result of the impact of change in revenue (ΔREV) on change in receivables (ΔREC), on year-by-year basis. The coefficients of change in revenue show a significant impact on the the dependent variable (change in receivables) in all the periods, with t-values at 1% level of significance, except for the last period (2008/2009/2010) which shows significance at 5%. This last period as well has the lowest t-vaue. It is less than that of a normally distributed estimate of t-distribution which should be > or = 1.96 or 2.0, for n-p degree of freedom greater than or equal to 30 (precisely, 2.086 t-value applicable to these sets of samples having 29 number of observations each). However, the F-statistics in all the years seem to have proved beyond reasonable doubt that the true values of all the coefficients are not equal to 0 as it is above 1.96 in all cases. The probability of this happening by chance is 1% for the first four periods and 5% in the last period. Using a rule of 2 for

normally distributed around the coefficients' true values (for period 1-4) and that the true values of the coefficients are statistically different from 0 (for all the periods).

In all the periods, the influence which change in revenue has on change in receivables is in a positive direction. This means that we expect increased receivables in years of increased revenues (sales). True to the observations of Dechow et al., (2002), that not all changes in receivables are non-discretionary, the coefficients of determinations are no where near 100%, indicating that the unexplained variation in change in receivables (not captured) is as a result of managers' discretions and as such, should be the portion that needs to be removed from the change in revenue, while retainig the non-discretionary portion. This is the purpose of this regression- to extract the coefficients of change in revenues, that actually explain changes in receivables, and then winsorizing it to be between 1 and 0, so that when it is subtracted from one, what is left is the ratio of receivables that is discretionary. In short, the coefficients on the table above were used to represent the parameter *k* in the next stage of the analysis whose results (coefficients) are shown in the next table (table 5).

Table 4.4: Summary of yearly cross-sectional coefficients of normal accruals

$TAC_t/TA_{t-1} = \beta_1[(\Delta REV_t - (1-\kappa)\,\Delta REC_t)]/TA_{t-1} + \beta_2 PPE_t/TA_{t-1} + \beta_3 TAC_{t-1}/TA_{t-2} + \beta_4 GR\_SL_{t+1}/TA_t + \mu_{it}$

Coefficients/t-values/significance

Periods	β_1	β_2	β_3	β_4	*N*
2004/2005/2006	0.564(2.025)*	-0.040 (-0.234)	-0.067 (-.975)	-0.464(-1.601)	29
2005/2006/2007	0.347(1.147)	-0.573(-2.823)***	-0.405(-2.031)**	0.286 (0.966)	29
2006/2007/2008	23.828(2.384)**	-4.932 (-0.701)	5.074 (0.763)	1.857 (0.444)	29
2007/2008/2009	0.215(1.152)	0.110 (0.365)	-0.657(-74.955)***	0.102 (0.178)	29
2008/2009/2010	0.033(0.053)	-0.341 (-1.192)	-0.006 (-0.500)	0.509 (0.685)	29

Source: Author's computation using Eviews
*****, ** & * = probability significance at 1%, 5% &10% respec**

Table 4.4 depicts the result of the second stage of the analysis required in testing hypothesis one. It shows the result of regressing total acrruals against the proxies of acruals that are expected/normal- non discretionary change in revenues (REV-{1-k}REC); property, plant and equipment (PPE), lagged total accruals (TACt-1) and sales growth (SLGR). As stated earlier, this is done to estimate and obtain the coefficients required to calculate these expected/normal accruals for each year, which was then subtracted from the total accruals form each year, to arrive at the non-normal/discretionary accruals. This discretionary accrual was used to represent accrual earnings management (AEM) in testing the impact of leverage on accrual earnings management.

One important point to note here is that, constant term was not used in these equations owing to the argument forwarded by Zhang (2002) that it is theoretically wrong to include the constant term. The target is not to test the power of the model but rather to estimate the coefficients. And just like earnings has only two items- accruals and cash-flow, with nothing in between, before or after; the same way that total accruals is comprised of a given portion that depends on managerial discretions (abnormal) and another portion that does not depend on on managerial discretion (normal). Without both of these, there will be no constant value for accruals, and that, if the values of the coefficients in the equation are 0, the value of the dependent variable (total accruals) will also be 0. With that, our output is not expected to produce probability significance for the coefficients of determination. However, it produced those of the coefficients of variation, for each independent variable, for each year.

It can be evident that in all the periods, data from 29 firms observations were used. Also, in the first and third periods, only the change in non-discretionary revenue is significant (as well as positive). This shows that increase in total accruals are largely as a result of increase in non-discretionary revenues. This deduction in r

applicable to all the years. Its coefficients and t-values, remained the largest and the only consistent positive all through the periods. This is with a negligible exception in the last period in which, though it is positive, the coefficient and the t-value of Sales growth (SLGR) are higher than the one obtainable from non-discretionary revenue. However, beside being non-significant in any of the periods, sales growth is not consistently positive. PPE and TACt-1 show a negative influence on the total accruals in all the periods except period four and period three, respectively. In addition with regards to these two variables, it is only the second period's results (in both cases) and in second to the last period (in the case of TACt-1) are significant, and both have shown negative influences on the total accruals. Possible explanations to these negative relationships with total accruals is that, in case of PPE, the discretionary accrual earnings represented in the total accruals can be in form of decrease in depreciation expenses that is acknowledged as part of earnings, and this does not involve the movement of cash (as it is a non-cash item). Thus, recognognizing less of depreciation expenses from property plant and equipments, brings up the total accrual earnings because the decrease in depreciation is credited to income statement as increase in income. On this part (non-discretionary accruals), the lower the level of PPE book value, the less will be the amount charged against profit as depreciation and hence more profit (in form of accruals or cash) that is purely determined by the PPE level and not discretion. The higher the PPE, the more the depreciation charges and hence the lower the profit. Regarding the lagged total accrual (TACt-1), the expectation was to have a positive relationship between it and the total accruals. That is the essence of incorporating it into the model in the first place- firms with high/low accruals in the previous year are expected to have high/low accruals in the current year. In contrast to this expectation of Dechow et al., (2002), our result is showing that firms with high/low accruals in the previous year have low/high accruals in the current year. This unexpected outcome could be attributed to a number of possible reasons. D

policies of Nigerian manufacturers differ from that of their counterparts in the U.S.A, where the model was developed. With this in mind, income accrued for the previous year without cash backing in that very year, could be easily and wholly converted into cash in the current year, if a firm's credit policy to its debtors required not more than 6 month grace for settlement. Thus, having collected the whole money owed, the firm will then start on a clean slate in another phase of credit sales, accumulating new accrual income. This may not be as significant as that of the previous year especially if the policy requires all cash be collected first before new credit is given; or that the policy requires a systematic improvement in cash sales over credit sales on a consistent basis, year-in year-out. In addition, considering that accruals emanating from PPE in a given year is negatively associated with the total accruals of that year, its domineering presence in the accruals could be the reason for the negative association between lagged accruals and current accruals. To demostrate the overall power of this model and for no other purpose, a panel regression was executed for the full sample covering the entire periods. The result is displayed in appendix D3, with an explanatory power of 20% (adjusted R^2) and is significant at 1%.

Notwithstanding these analysis, the main aim is to use the coefficients derived there from, which were used in calculating the dependent variable (AEM) in testing the first hypothesis, the result of which is shown in the table below:

Table 4.5: Impact of Leverage on Accrual Earnings Management (hypothesis one)

AEM against LEVFINLIAB			*AEM against LEVTLIAB*		
$AEM_{it} = \alpha_{it} + \beta\ LEVFINLIAB_{it} + \epsilon_{it}$			$AEM_{it} = \alpha_{it} + \beta\ LEVTLIAB_{it} + \epsilon_{it}$		
Variables	*Coefficients*	*t-values*	*Variables*	*Coefficients*	*t-values*
Intercept	*-.832*	*-1.165*	*Intercept*	*-.097*	*.102*
LEVFINLIAB	*3.211*	*2.863***	*LEVTLIAB*	*.788*	*.683*
R2	*.054*		*R2*	*.003*	
Adjusted R2	*.048*		*Adjusted R2*	*-004*	
F-stat.	*8.195***		*F-stat.*	*.466*	
Durbin-Watson	*2.054*		*Durbin-Watson*	*1.987*	

Source: Author's computation using SPSS. *, ** & * = probability significance at 1%, 5% &10% respectively.**

From table 4.5 above, the coefficients of LEVFINLIAB and LEVTLIAB indicate positive impact of the two proxies of leverage on the proxy of accrual earnings management (AEM). However, the noisiness of the signals which the coefficiefients carry is too much and thus resulted in a high standard error of estimate (SEE) for LEVTLIAB. Refer to appendix F. Dividing the SEEs by their respective coefficients has given us very low t-value of .683 for LEVTLIAB, while that of LEVFINLIAB stands impressively at 2.863. The t-value for LEVTLIAB is low in the sense that it's value is below the normal t-value (table value) of 1.960 at 5% for 143 degree of freedom (i.e 145-2 since the "N" observations in both test above are 145 respectively). However, the coefficient of LEVFINLIAB shows a statistically significant t-value at 1% (greater than the 1.960 critical value t-value at the normalsignificance level of 5%), while that of LEVTLIAB is not significant even at 10%. What this infers is that, while the estimated coefficients of LEVTLIAB are not normally distributed around their respective true/actual value (as it has t-value below that of a normal t-distribution with same degree of freedom) even at 90% confidence level and are their actual values are not statistically different from 0; the coefficients of LEVFINLIAB are normally distributed around their corresponding true

value is significant at 1%). The non-normality in the ditribution of the coefficients of LEVTLIAB around it respective actual mean values here again, strengthens the evidence relating to the existence of outliers in the data sets. With respect to LEVFINLIAB's t-value significance, its F-statistics of 8.195 (i.e the square of the corresponding t-value), additionally saves the day with a significant p-value of 1% also. This means that at this level of significance, the combine explanation of the model is significantly different from 0. On the other hand, the F-statistics of LEVTLIAB is not significant even at 10% and thus the explanatory power of the model cannot be said to be significant - its t-value having insignificant p-value, has already proved that it should not be included in the model, as explanatory variable to AEM. The issues identified that marred this equation (which has LEVTLIAB as regressor) therefore, gave us the intuition to check for the regression assumptions. While at it, we found that there is evidence of perfect correlation between the predicted variable (AEM) and the error term, indicating biasness (see appendix F). This is further confirmed by the graphical plots of the dependent versus the observed variables as well as the residual plot (see appendix F). It shows a kind of curve-linear pattern of relationship between the dependent versus observed and the independent variable (non-linearity between dependant and independant variables). The plot confirmed the skewed non-symetric nature of the distribution (non-normality of the error terms), and evidence of heteroscedasticity is depicted by the scattered plot (non-constant variance of the residuals). Additionally, the Breusch-Pagan/ Cook-Weisberg test for heteroskedasticity rejected the null hypothesis of constant variance at 10%. These put together, justified why the coefficient of determination- R^2 and the adjusted R^2 showed 0 and below 0 respectively, for this equation (having LEVTLIAB as regressor), inferring that all the explanations for the dependent variable were instead captured in the error term. The only index that seems close to right here is the Durbin-Watson, whose value lies within the comfortable zone of tolerable serial correlation (not below 1.5).

On the whole, the finding in respect of LEVFINLIAB agrees with the notion forwarded by the work of Watts and Zimmerman, (1979), which upholds that the higher a firm's debt to equity ratio, the more likely that managers manage earnings. It however contradicts the notion forwarded by Jensen and Mecklings (1976), that leverage controls for managers' opportunitic tendencies such as earnings management. The explanation for the superiority of financial leverage over total leverage, in impacting positively on accrual earnings management here lies in the very wordings of the positive accounting's debt covenant hypothesis. The hypothesis exactly used the term debt-to-equity ratio, and that is exactly the measure of financial leverage. This is unlike total leverage as total leverage includes non-financial liability in the numerator, and the denominator comprises of total assets. The debt covenant hypothesis clarifies that high debt-to-equity induces managers to employ income increasing accounting choices, so as to avoid incurring the cost of voilating the agreements made with the lenders. It is therefore pertinent to note here that accounting choices are typically associated with accruals. Example is the choice of depreciation method or decision to either revalue fixed assets upward or downwards. Other real actions like asset disposal are less of accounting in nature. Thus, it may not seem surprising if the next hypothesis test (Ho2) does not conform since accounting choices mostly begets accruals without cash backing.

Before we finally reject or fail to reject hypothesis one, on the basis of a parametric test result, the data of which was initially proved to be non-normally distributed, we decided to first, further carryout corrective transformation of the data and then run the test again to see if a different result ia obtainable. This is to avoid refusing to reject where we ought to have rejected. The result of this test of hypothesis one, after transformation will come in later part of this section. Meanwhile, let us see what hypotheses two and three test results show.

4.4.2 Leverage Incentive and Real Earnings Management

Testing hypothesis two requires regressions in two stages, as stated earlier in the methodology section. The first regression requires the estimation of coefficients needed to calculate the normal cash-flow, which was then subtracted from the total cash-flow to arrive at the abnormal cash-flow (REM). Before presenting the hypothesis two test result, we present in the table below, a summary of these coefficients obtained from the first regression. Full result of this first regression from which these coefficients were obtained, is displayed in appendix E.

Table 4.6: Coefficients of Normal Cashflow

	$CFO_t/A_{t-1} = \alpha_0 + \alpha_1/A_{t-1} + \beta_1 SALES_t/A_{t-1} + \beta_2 \Delta SALES_t/A_{t-1} + \square$					
PERIODS	α_0	α_1	β_1	β_2	*Adjusted* R^2	*N*
2004/2005	*.017(.124)*	*-103(-2.216)***	*-.014(-.027)*	*.329(1.784)**	*.169 (2.900)**	*29*
2005/2006	*.167(1.31)*	*-153(-3.56)****	*-.086(-.813)*	*.446(2.367)***	*.358(6.212)****	*29*
2006/2007	*-.125(-1.60)*	*-790(-1.946)**	*.155(2.49)***	*-.025(-.183)*	*.220 (3.626)***	*29*
2007/2008	*.054(.797)*	*-556(-1.201)*	*.049 (.851)*	*-.031(-.395)*	*-.021 (.808)*	*29*
2008/2009	*.078(.689)*	*-226(-.236)*	*.014 (.169)*	*.301(1.468)*	*.009 (1.089)*	*29*
2009/2010	*.120(2.05)**	*-100(-2.019)**	*-.018(-.046)*	*.494 (3.77)****	*.449(8.595)****	*29*

Source: Author's computations using SPSS. *****, ** & * = probability significance at 1%, 5% &10% respectively.**

The coeeficients in the table 4.6 were arrived at using the normal cash-flow model of Dechow et al., (1998) as applied by Roychowdhury (2006). The model holds that normal cash-flow from operation (CFO) is a linear function of scaled costant, sales and change in sales. Any other thing contributing to the variability of cash-flow from operation is abnormal and hence, is as a result of real earnings management. From the result above, coefficients of scaled intercept (α_1) and that of change in sales (β_2) demonstrate more power in explaining the variations in the dependent variable (CFO), with the former having a negative influence (in all the periods) and the later having strong positive (in most periods

coefficients are significant for the first three periods and the last period, in the case of α_1. As of β_2, significant results are evident in the first two periods and the last period. β_1 is significant only in the third period. Just as Roychowdhury (2005) explained, estimating the scaled and the unscaled intercepts is to ensure that the value of CFO in any given year for an industry, is non-zero; and that also, the scaled intercept (α^1/A^{t-1}) helps in avoiding a spurious correlation between scaled CFO and scaled SALES (correlation that is apparent but not true), due to variations in the variable that is used in the scaling (i.e lag total assets). Unlike in the case of estimating abnormal accruals in equation 13, unscaled intercept is included here. Including this unscaled intercept here does not materially affect the result, nor does eliminating it (Roychowdhury (2006). Just like Roychowhury (2006) we find that sales and change in sales (where p-values are significant) are positively associated to cash-flow from operations. This means that the higher the sales and change in sales, the higher the cash-flow to be generated from operations. It is a cogent explanation indeed, for current cash-flows to be conditional on contemporaneous sales.

A close look at the patterns of the significance, it can be evident that in every periods, a combination of α_1 and β_2 or α_1 and β_3 are significant. This is with the exception of two periods-2007/2008 and 2008/2009. It is interesting to note that it is only in these periods that the R^2 (adjusted) are not significant. What these notes are inferring is that CFO in these periods are not determined by either any constant inflow, sales or change in sales as usual. If this is the case, the cash-flow reported from these two periods must have came from some where else. This probe lead us to observe that these two periods exactly coincide with the periods when global financial crisis (GFC) actually hit this country as Ajakaiye and Fakiyesi (2009) reported. (note that this does not collides with our observation in 4.2, regarding the fact that our data outliers are not clustered around GFC period). Thus, the dwindling production (which consumes assets that produces CFO) and the falling revenues experienced during

appearance by embarking on real earnings management, through a combination of real actions like assets disposal, selling off investments, and so on. With this in mind, our expectations that managers manage earnings through real activities were high. To what extent is this tendency being enhanced or curbed by the presence of debt in the firms? This is answered in the table below:

Table 4.7: Impact of Leverage on Real Earnings Management (hypothesis two)

REM against LEVTLIAB			*REM against LEVFINLIAB*		
$\mathbf{REM_{it} = \alpha_{it} + \beta\ LEVFINLIAB_{it} + \epsilon_{it}}$			$\mathbf{REM_{it} = \alpha_{it} + \beta\ LEVTLIAB_{it} + \epsilon_{it}}$		
Variables	*Coefficients*	*t-values*	*Variables*	*Coefficients*	*t-values*
Intercept	*.061*	*.020***	*Intercept*	*.101*	*3.771****
LEVFINLIAB	*-.137*	*-4.223****	*LEVTLIAB*	*-.148*	*-4.410****
R2	*.094*		*R2*	*.102*	
Adjusted R2	*.089*		*Adjusted R2*	*.096*	
F-stat.	*17.830****		*F-stat.*	*19.449****	
Durbin-Watson	*1.764*		*Durbin-Watson*	*1.754*	

Source: Author's computation using SPSS. *, ** & * = probability significance at 1%, 5% &10% respectively.**

Table 4.7 displays the results of the the impact of the two measures of leverage, LEVFINLIAB and LEVTLIAB, on real earnings management (REM). From the results, both the two measures of leverage show negative impacts on the managers' ability to manage earnings through real activities, with LEVTLIAB having higher impact. The result shows that for every unit change in REM, 14.8% of LEVTLIAB negatively influences that change. It also indicates an explanatory power of the model- R^2 (adjusted) at approximately 9.6% and that we have 99% confidence that such happening is not by chance, as both the p-values of t-statistics and the f-statistics for this equation are significant at 1%. On the left side of the table, the result indicates that LEVFINLIAB also has a negetive impact on the regressand (REM). However, it is not as strong as the impact which LEVTLIAB has on the same regressand. The coeffient of variation and the t-statistics for this regression are -.137 and

influences REM negatively only by 13.7% of its varying values and this is significant at 1%. The coefficient of determination R^2 (adjusted) shows explanatory power of this equation (at the left side of the table) at approximately 9% and the f-statistics is significant at 1% too. In a nutshell, t-statistics in both results (-4.223 for LEVFINLIAB and -4.410 for LEVTLIAB) displays impressive figures greater (in absolute term) than the normal t-distribution even at 1% (2.326 at 1%, one-tailed test and 2.576 for two-tailed test table values) of the same n-p degree of freedom (i.e 174-2). This means that, in addition to the indication that the estimated coefficients are normally distributed around the true/actual values of the coefficients, the true/actual values of these coefficients in both cases are significantly different from zero. The Durbin-Watson in both results indicate mild positive auto-correlation for which we may not be alarmed.

The finding is in line with the work of Mamedova (2007) and also the prediction of agency theory, while contradicting the work of Kim, et al., (2010) and the prediction of debt covenant hypothesis. Thus, the explanation here for the negative relationship is that, the more a firm is indebted, the less likely it will engage its needful resources into sub-optimal undertaking such that produces abnormal cash-flow. The cogency here is that debt owners are monitoring the managers' choice of projects/investments to ensure that they engage in cash generating activities that are viable and economically optimal not just on short-term basis but also in long-term, since debt are of a long-term perspective. They do this to secure the safe return of their investment (principal) and the return on their investment (interest), from the firm. From another angle, the presence of debt in a firm consumes any free cash-flow that may induces the manager engage into ventures that are of less economic benefit to the firm and of more to him. This means that debt curbs the problem associated with free cash-flow (agency cost of free cash-flow), as the excess cash is bein used up in debt servicing, settlements or repayment. The finding also justified the notion forwarded by Welch (2011) that not only financial debt should be

has claim on a firm's assets in the day to day operations and also in the event of liquidation, their settlement also consumes cash-flow. This justifies the increased significance and explanatory power of LEVTLIAB over LEVFINLIAB. From the foregoing, our finding contradicts the assertion that leverage is positively related to earnings management, as propounded by Watts and Zimmerman (1979) and documented by works of Lui et al., (2011), Herman et al., (2001), and so on. This disagreement could be as a result of the fact that real earnings management is less of accounting choice and more of managerial. It could also be as a result of methodology issues, population used, time parity and other factors discussed in the literature review section.

Despite the strong probability significance of the F-statistics which indicate that the probabilities of the predicted influences of LEVTLIAB and LEVFINLIAB on REM are just by chance, are 1% in both cases, the adjusted R^2 seems to tell us the model is of low explanatory power. This tendency as Sykes (1993) hinted, may not be unconnected to the possibilty of "omitted-variable-bias". Also, the issue of non-normality of the three sets of data used for this equation is still not yet resolved at this juncture.

4.4.3 Leverage Incentive and Deferred Tax Earnings Management

As explained earlier on, unlike hypotheses one and two, the test for hypothesis three is a straight one-stage test. It requires no prior regression estimate to obtain/compute variable to proxy for either a regressor or regressand. Just like the two hypotheses tests previously conducted, the test of this hypothesis was carried out in robust form, using two different measures of leverage- financial leverage as LEVFINLIAB and total leverage as LEVTLIAB. Dummy variable- DTEM is used as the dependent variable in both equations shown in table below, to proxy for deferred tax earnings management. Below is the table displaying results of the test of hypothesis three and following the table is a discussion of the resu

Table 4.8: Impact of Leverage on Deferred Tax Earnings Management

DTEM against LEVFINLIAB			*DTEM against LEVTLIAB*		
$\mathbf{DTEM_{it} = \alpha_{it} + \beta\ LEVFINLIAB_{it} + \epsilon}$			$\mathbf{DTEM_{it} = \alpha_{it} + \beta\ LEVTLIAB_{it} + \epsilon}$		
Variables	*Coefficients*	*t-values*	*Variables*	*Coefficients*	*t-values*
Intercept	*.576*	*11.176****	*Intercept*	*.667*	*9.630****
LEVFINLIAB	*-.375*	*-4.493****	*LEVTLIAB*	*-.378*	*-4.356****
R2	*.105*		*R2*	*.099*	
Adjusted R2	*.100*		*Adjusted R2*	*.094*	
F-stat.	*20.190****		*F-stat.*	*18.973****	
Durbin-Watson	*1.825*		*DurbinWatson*	*1.806*	

Source: Author's computation using SPSS *****, ** & * = probability significance at 1%, 5% &10% respectively.**

From the right hand side of the table 4.8, the result shows that about 38% variation in LEVTLIAB negatively impact on DTEM. The corresponding t-statistics of -4.356 is significant even at 1%. The F-statistics here is also significant at 1%. The overall explanatory power of the model stands at approximately 10%. Looking at the left hand side of the table, it can be evident that our variable of interest, LEVFINLIAB also displays a negative impact on the dependent variable DTEM, influencing DTEM's variation by about 38% of its varying values. Its t-statistics standing at -4.493 is also found to be greater than the corresponding table value of t-distribution of 2.326 and is significant at 1% too. In the same vein the the F-statistics here also is significant at 1%. The Durbin-Watson (D-W) statistics from both results shows figures above 1.5. The foregoing findings to the best of our knowledge is the first of its kind in this line of research. Prior researches on deferred tax expenses have only documented the use of the defered tax expenses to manage earnings, as well as the efficacious quality of the deferred tax expenses in detecting earnings management. Our evidence is establishing one of the factors that induces or prevent this form of earnings management. Not fortunately enough at this level, the significant t-values were not supported by good coefficient of determinat

results, greater than their corresponding critical values indicates that the estimated coefficients of LEVFINLIAB and LEVTLIAB are normally distributed around their respective true values. In other words, this is telling us that the estimates are infact close to their actual values. The significance of these t-values in both cases indicates that the actual values of these coefficients are indeed not any where near zero and as such they qualify as valid explanatory variables for the dependent variable. However, the coefficient of determination in both results are low. This is confirming the issue raised in test of hypothesis two, that omitted-variable bias certainly exist in these models.

As explained by Sykes (1993), low R^2 usually comes from either of poor proxy for independent variable, random noise or omitted variable bias and these are all captured in the error term. With significant t-statistics even at 1%, it is obvious that our proxies for the independent variables are indeed qualified to be included in the model. Thus, what is left now is the random noise and possibility of omitted variables, and in practical world, radom noise as an act of nature will always be there, as it is practically impossible to have an R^2 to be equal to 1 (Sykes, 1993). However, it is obvious that the smallness of the R^2s in the above results, indicates that the minimum standard error of estimate is definately not attained by these models. Therefore, the evidence is sufficient to point finger on omitted variable bias, as the reason for low R^2s in all the models from the three hypotheses testing. What remains now is the question of what to do about this issue. Meanwhile, we first head to resolving the issue of data outliers that brough about the non normality in them. This is presented in the next sub-section below.

4.5 corrective transformations of data

Instead of transforming our data to natural log, we opted to tranform the remaining two of our dependent variables to be dichotomous

attempt to transform DTEM to their natural log, as the entire figures got deleted when the transformation command in respect of the DTEM was issued. Three other reasons informed this decision: one, Opportunistic earnings management can be categorically dichotomised to have a value of 1, where earnings management exists, or 0, where earnings management does not exists, (Bugshan, 2005). Secondly, our dependent variable in the third hypothesis (DTEM) is dichotomous and we believe that it is the best way to capture that form of earnings management in this context; but unfortunately, it is observed that OLS regression is a crude way to handle an equation in which dichotomous variable is involved as dependent variable since the usual assumptions of the error term will not be satisfied, and that the best way is to use logistic or probit regression (see Dogherty, 1992 pp. 283). The third reason is that, since the problem of our results arise from the fact that the data are not normally distributed due to existence of outliers in them, couple with the fact that dichotomous variables are used to nullify effects of outliers, we therefore decide to opt for dichotomising all our dependent variables. As Fidell (1989) observed: "a dichotomous variable can only have a linear relationship with another variable (if it has any relationship at all)". But dichotomous dependent variables hardly allow for the linear regression assumptions to hold. To remedy this, we decided to run a logit regression instead of linear. Our choice for logistic instead of probit regression here was informed by the fact that unlike logit, probit assumes that the relationship between dependent and independent variables are normally distributed; as such, Finney (1952) suggested that if data is not normal, logit is more preferred. Retaining the independent variables as they are (continuous variables), we dichotomised the three independent variables by assigning the value of 1 or 0, to respectively to represent the presence of earnings management or absence of it. Detail creteria for ascertainig each form of earnings management is given in the methodology.

In addition, we controlled for the unobserved fixed and random effects, and finally run Hausman specification tests for all the three hypotheses tests, to enable us select and interprete the results that best fit our panel data. In all the tests equations (excluding LEVTLIAB versus AEM), our Hausman test results indicated that random effects best fit panelled variables. LEVTLIAB against AEM is not significant and so we reported it without further diagnostic. See appendix G1 for detailed results. Summaries of the qualified results are presented and discussed below.

Table 4.9: Logistic regression result (hypothesis one)

AEM against LEVFINLIAB			*AEM against LEVTLIAB*		
Variables	*Coefficients*	*Z-scores*	*Variables*	*Coefficients*	*Z-scores*
Intercept	*-.7562635*	*-2.59****	*Intercept*	*-.1467948*	*-.46*
LEVFINLIAB	*1.83943*	*3.24****	*LEVTLIAB*	*.271988*	*.69*
Wald Chi^2	*10.49****		*Chi^2(LR)*	*.24*	
Pseudo R^2	*.0699*		*Pseudo R^2*	*.0025*	

Source: Author's computation using Stata-9 ***, ** & * = probability significance at 1%, 5% &10% respectively.

Looking at the result in table 4.9, the coefficient of LEVFINLIAB is positive and its corresponding Z-score is significant at 1%. This infers that for 1 unit change in LEVFINLIAB, Z-score increases by 1.84. The wald coefficient (Chi^2) with p-value of .001 indicates that the model as a whole is statistically significant, in the sense that it is better than a model without predictors. The smallness of the Pseudo R^2 from the initial logit test result, triggered our curiosity to conduct two tests of Goodness-of-fit. However, both the results of Andrews and Hosmer-Lemeshow tests of Goodness-of-fit tells us that the model doesfit the dat well when we structured our observations into quadrants. But we we used their distinct values, the test shows that the model does not fit the data well (see appendix G2). That is to say, while including LEVFINLIAB as explanatory variable to AEM proved to be statistically better than excluding it in the model (as revealed by the likelihood ratio), the predictive ability of the model is very low due to possibly inadequate information in the predictor or due to excl

explanatory power of the model. As a result of this observation, we run additional analysis to test for omitted variables (see result in appendix G3). The result of this test rejected the null hypothesis that the additional set of explanatory variables- ROE (returns on equity), FINBURDEN (financial burden) and LogTA (log of total assets) are jointly significant. This is to say that the coefficients of these additional variables are jointly equal to 0; thus, including them in the model will not contribute in improving the explanatory power of the model.

On the right side of the table is the robust test, using LEVTLIAB. the result shows that the coefficient of LEVTLIAB is also positive but the Z-score is not significant even at 10%. This means LEVTLIAB has no significant impact on AEM. The test for ommited variable (result in appendix G) shows no improvement in the situation. While LEVTLIAB remained insignificant even after adding ROE, FINBURDEN and LogTA, none of the the added variables is significant.

On the basis of the first result (LEVFINLIAB and AEM, which essentially is our main independent variable, LEVTLIAB is there to test for robustness); and owing to the fact that our aim is to find out whether debt-to-equity ratio has an impact on accrual earnings management, not to bring out a model, we can say therefore, that we have evidence, sufficient enough, to reject the null hypothesis and conclude that leverage has a significant impact on accrual earnings management. Also, since it is the result we controlled for random effect, we as well can state here that the variations in these coefficients across panels, are not influenced by the unobserved fixed effects within panels. The result is consistent with the one obtained using OLS (before transforming the dependendent variables, though in this one LEVFINLIAB is significant at 5%). This result upholds the assertion of positive accounting theorists (Watts and Zimmerman, 1978), that: “Ceteris paribus, the larger a firm’s equity-debt ratio, the more likely the firm is to select income-increasing accounting procedures”.

The next table below, displays a result of the logit regression of the impact of leverage on real earnings management (after transforming REM into dummy variable).

Table 4.10: Logistic regression result (hypothesis two)

REM against LEVFINLIAB			*REM against LEVTLIAB*		
Variables	*Coefficients*	*Z-scores*	*Variables*	*Coefficients*	*Z-scores*
Intercept	*.928809*	*3.24*	*Intercept*	*1.411809*	*2.71****
LEVFINLIAB	*-1.484127*	*-2.95****	*LEVTLIAB*	*-1.662306*	*-2.39****
Wald Chi^2	*8.70****		*Wald Chi^2*	*5.70****	
Pseudo R^2	*0.0495*		*Pseudo R^2*	*0.0278*	

Source: Author's computation using Stata-9 ***, ** & * = probability significance at 1%, 5% &10% respectively.

The test of our main independent variable (LEVFINLIAB) yielded a significant Z-score even at 1%. It indicates a negative relationship between LEVFINLIAB and REM. For every 1 unit of LEVFINLIAB, Z-score reduces by approximately -1.484. This shows that debt-to-equity ratio negatively impact on the managers' ability to engage in real earnings management. The likelyhood-ratio is significant at 1% too. Here also, the tests of goodness-of-fit shows that the model requires re-modelling as both Andrews and the Hosmer-Lemeshow results are not significant even at 10% (see result in appendix G2). Attempt to improve the model by omitted variable test using ROE, FINBURDEN and LogTA has not yielded any improvement (seeappendix G3). Since our likelyhood ratio and our Z-score show significant p-values even at 1%, and on the basis of the fact that our aim is not to produce a model rather to ascertain the impact of leverage on real earnings management; we therefore reject the null hypothesis which states that leverage does not have a significant impact on real earnings management.

Result of the robust test conducted using alternative leverage measure (LEVTLIAB) followed the same pattern here, with LEVTLIAB having a significant negative impact on REM. However, the coefficient here and the z-sc
(LEFINLIAB). However the result is signif

comparatively smaller as well. on this note, we conclude that leverage has a significant impact on real earnings management, and the result is robust for two acceptable measures of leverage.

The following table depicts a result of logistic regression, on the impact of leverage on deferred tax earnings management. Just as in the case of the preceeding table, the results displays the outcome of the tests using two different measures of leverage- LEVFINLIAB (as the main test variable) and LEVTLIAB (for further investigation). DTEM remained in dummy form as it has been.

Table 4.11: Logistic regression result (hypothesis three)

DTEM against LEVFINLIAB			*DTEM against LEVTLIAB*		
Variables	*Coefficients*	*Z-scores*	*Variables*	*Coefficients*	*Z-scores*
Intercept	*-.6069912*	*-2.20****	*Intercept*	*2.77611*	*3.90****
LEVFINLIAB	*-2.714116*	*-3.91****	*LEVTLIAB*	*-5.13614*	*-4.38****
Wald Chi^2	*15.32****		*Chi^2(LR)*	*19.17****	
Pseudo R^2	*0.105*		*Pseudo R^2*	*0.149*	.

Source: Author's computation using Stata-9 ***, ** & * = probability significance at 1%, 5% &10% respectively.

From the result on table 4.11, both LEVFINLIAB and LEVTLIAB displays a significant negative impact on the dependent variable, even at 1%. In both cases, the coefficients of the two measures of leverage are negative and their respective Z-scores are both significant at 1%. The Wald Ch^2 in both cases also display p-values of .001, repestively. However, the result of the first logit test indicates that the Pseudo R^{2}s are infinitesimally low in both cases. As such, we here again conducted the two tests of Goodness-of-fit supplied by Andrews and Hosmer-Lameshow. These test, whose results are appended as part of appendix G2, provide us with the evidence that both the two models above are in dire need of remodelling, as the two tests failed to reject the null hypothesis that the model is not well fitted. Since the p-values of our Z-scores and those of the Chi2 likelihood-ratios suggested that the exp

LEVTLIAB) have significant impact on their respective dependent variables, and that their inclusion in the respective models significantly contributes to these models; we therefore concluded that the remodelling of the two models (as suggested by the Goodness-of-fit test results) should not be by way of replacing these independent variables but rather, by adding more relevant control variables. This led us to go for omitted variable test here also.

In conducting the omitted variable tests for both the two cases, we included in the two models, three additional variables (ROE, FINBURDEN AND LogTA) which literature suggests that they have relationships with the variable that is being explained. The results of these tests provided us with evidence to justify excluding these addtional variables, from our two models, and thus, to look for other different variables that we could use in enhancing the fitness of the two models (see appendix G3). As mentioned earlier on, we wish to state here again that fitting the models is just secondary to our task, not our main goal. Ascertaining the impact of our explanatory variable is the main goal. As such, on the basis of the results obtained, we therefore reject the null hypothesis and uphold that leverage indeed has an impact on deferred tax earnings management. Also, as in REM, the direction of the impact here is negative direction. This finding is robust for two measures of leverage. The findings also coincide with the ones obtained using linear regression

4.6 Implications of the research findings

Studies relating to earnings are of far reaching significance. This is owing to the strategically important position which earnings (as an end result of accounting processes) holds, through the roles it plays in various decisions of organizations and individual investors; which have direct bearing on firms' present and potential employees' welfare, firms' expansion/contraction plans, individual investors' income, government's tax revenues, national output, and so on. For this, the findings from such studies that rela[illegible] have some implications.

First and foremost, in view of the majority of the previous findings supporting the positive relationship between accrual (accounting) earnings management and leverage, one of the finding of this research has therefore further strengthened this notion. The implication here is the additional confirmation hence obtained (from a developing economy, matching evidence from developed economies), of the proposition that regular relationships exists among accounting variables. And this has hence given the much needed additional leverage for accounting scholars to be up and doing, in their efforts to transform the field from the undue reliance on normative thoughts, to positivism.

Secondly, in light of the dwindling relevance of reported earnings, the findings has thus provided additional yardstick in assessing the relevance of the reported earnings and cash-flows. This is now possible using our independent variable as an indicator. Corporate boards, especially in the manufacturing sector, can also use leverage as control against incurring agency cost associated with free cash-flows, as the findings has documented the efficacy of leverage in preventing the generation of cash that is abnormal.

In addition, the finding implied that debt covenant hypothesis is strictly applicable to earnings management that are accounting based. Other forms with real cash-flow consequence seems to fit well with agency theory.

Lastly, in view of the fact that the methodology used in estimating deferred tax earnings management (DTEM) has yielded evidence of earnings management through the use of deferred taxation, the decision of FRCN to adopt IAS/IFRS seems to generate more room for deferred-tax based earnings management, inasmuchas SAS provisions relating to deferred taxation are more strict. IAS/IFRS are somewhat loose in this regards.

4.7 Summary

In this chapter, data presentation and analysis were carried out in respect of the hypotheses raised. The three hypotheses formulated by the study were tested. The tests results were discussed in view of the literature reviewed earlier on. Prior to the hypotheses tests, the data used for the tests were first subjected to tests for stationarity and normality, to fathom how findings should be qualified- whether valid for long or short run (in case of stationarity test), and also to determine the extent of data normality. Also, secondary regressions were first conducted for hypothesis one and two, to facilitate the estimation of the variables (AEM and REM) that has finally constituted our dependent variables in the hypotheses tests.

Debt-to-equity ratio (LEVFINLIAB) was used as the major independent variable in all the three hypotheses testing, with AEM as dependent variable in test for hypothesis one, REM as a dependent variable for hypothesis two and DTEM (hypothesis three). LEVTLIAB was used seperately (for robust test) in all the three equations, as independent variable. Simple OLS regressions were used for these tests, all through the first round. In the second round, logit regressions were estimated using the same variables and equations but after transforming all the dependent variables into dichotomous variables. Tests of Goodness-of-fit and omitted variable tests were also conducted in the chapter. The omitted variable tests covers three additional explanatory variables (ROE, FINBURDEN and LogTA).

The chapter ends with a brief highlights of the implications which the findings hold. It is observed that the findings may have far reaching implications on the accounting research, business owners, investors and also on the decisions of regulary agencies like NASB.

CHAPTER FIVE
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

The decade of 1990s and the one that precedes it, were decades of awakening as regards to the importance of reporting quality accounting earnings, devoid of manipulation. The decades witnessed a proliferation of studies on earnings management, which centres mostly on trying to better understand the various strategies employed by managers in manipulating reported earnings, how to identify/measure and confront these strategies by every plausible means necessary, so as to improve the fast-dwindling relevance of reported earnings. This trend took its course after the series of liquidations of giant corporations which had left their stake-holder in pathetic finacial turmoils, most of whom were beyond salvaging. The outcome of these researches has among other things, established with compelling evidence that cut across, that managers indeed manage earnings opportunistically, and that leverage (among other variables) is certainly a good indicator of earnings quality. Despite these findings, investors and other stake-holders continue to suffer losses, the reasons of which were identified to be as a result of basing their decisions on earnings (that are manipulated). This would obviously trigger questions as to the validity of these findings in respect of leverage relationship with earnings management, if at all the users are adhering to the findings of these researches. It also ought to propel scholars to actually go back to drawing room and further disseminate the information contained in their findings. At first, basing arguments on the thesis of agency theory, it was upheld that leverage aids in preventing the occurence of earnings management in an organization, due to its monitoring attribute. The monopoly enjoyed hitherto, by this notion was later broken by the emergence of another strong and compelling hypothesis, which has its root in positive accounting theory. The positive accounting theorists maintained that the shoe is actually in the other foot, that leverage induces managers to manage earnings. Whatever the contention here, the point of agreement bet

agency theory (which is rooted in managerial finance) is that, leverage is indeed of a significant impact on the managements' ability to manage earnings. The issue of whether positive or negative is a matter to be settled objectively by the outcomes of researches across nations over time.

This research has carried out a conceptual and theoretical study, as well as an emperical review of earnings management studies; its various manifestations, available techniques for its detection and measurement, as well as the findings of previous researches, on the relationship that exists between it and leverage ratio. Prior to the review, the study formulated three objectives and three hypotheses that covers three strategies of earnings management vis-a-vis leverage. The reviewed literature postulated the fact that, among the strategies, accrual earnings management (AEM) has more literature than the rest; and that majority of the findings in this line are in support of the notion propounded by the positive accounting theorists. Second to AEM is real earnings management, majority findings of which are also in support of positive accounting theory's debt-covenant hypothesis. The last but not the least is the deferred tax earnings management. This strategy, despite its perceived efficacy in earnings management research, it has very little literature, mostly of this decade. In addition, the study could not find a single research in this line that looks at its relationship with leverage or any monitoring mechanism. Nigerian researchers are evidently dormant in this line. At the end of the review, our study adopted debt-covenant hypothesis as the thesis on which it based its claims, owing to its perceived suitability; irrespective of the fact that the narration of debt-covenant hypothesis largely centred on earnings management that emanates from accounting choices. The majority of the findings in its favour informed our objective decision. With this, we set out and collected data to analyse, after defining the methodological boundaries that will guide our analysis.

Using historical method, we collected data from NSE issued fact-book of 2010, used it and other sources to screen our population. We then gather annual reports of firms that finally constituted our population and extracted the requsite data for our hypotheses tests. From there, we employed the use of discriptive method to compute our variables from the historical data we collected. The procedures employed in testing each of the three hypotheses, were guided by the requirements of the mothodologies we adopted for each. In testing hypothesis one, we adopted Dechow et al., (2002) model to compute the abnormal accrual proxy for AEM. This model requires two separate regression in order to obtain the AEM, which was then used as a dependent variable in the final test of hypothesis one. In testing hypothesis two, we adopted the normal cash-flow model as applied by Roychowhury (2006). Using this model, we estimated the coefficients that we used in computing the normal cash-flow for each year, and then subtracted it from the yearly cash-flow, to arrive at the abnormal cash-flow proxy for REM. The test of hypothesis three is a straight one, as it does not require any initial regression, only that its estimation requires matching positive deferred tax expenses with evidence of avoidance to report a decline in earnings. Prior to the hypotheses tests, we subjected our data some tests, one of which is normality test.

Using OLS regressions, we tested for the impact of leverage on each of the three strategies of earnings management, in a robust manner- using two measures of leverage. The result of hypothesis one indicated that both LEVFINLIAB and LEVTLIAB have positive impacts on AEM. However, it is only the result of LEVFINLIAB that is significant. Contrary to this, both results of hypotheses two and three indicated that both the two leverage measures are negatively related with REM and DTEM respectively. However, the R^2 in all the three cases were infinitesimally low, indicating a sign of omitted variable bias. The fact that our data-sets were initially proved to be not normal, we first went for corrective transformation of the data and the a re-run of the three equations. The first option open to us (logari

of our variable was deleted when the transformation command was issued. We thus resorted to transforming the remaining dependent variables and re-run the three hypotheses test-equations using logistic regression. Both Dougherty (1992) and Finney (1952) suggested the use of logistic regression in situation of a categorical or dichotomised dependent variable. Finney (1952) emphasized that the procedure better accomodates data that is not normally distributed. One shortcoming of logit is the non-reliability on its own version of R^2.as such, we run separate tests for goodness-of-fit for the three models, and we found them to be not well fitted. We then subjected the models to omitted-variable test, using three additional variables that were documented to have relationship with earnings management. The results in all cases showed that the models are better off without these added variable. All in all, the results obtained from OLS and those from logit were identical in all cases but the logit's results seems better for our main regressor (LEVFINLIAB). Bearing in mind that our aim is not to come up with models for prediction but rather, to document evidence of statistical impact of debt-toequity ratio (i.e LEVFINLIAB) on earnings management, we therefore rejected the null hypotheses in all the three cases.

From the findings, we observed that, with respect to the positive impact LEVFINLIAB on AEM, accounting researchers could be motivated to continue to dig further, in search of regular relationships among accounting variables, which may hence aid in empiricism; as this finding like many others, lived up to the prediction of positive accounting theorists. In addition, having positive relationship only in hypothesis one, confirmed our initial suspicion that debt-covenant hypothesis may be exclusively for earnings management that emanates from accounting choices. Obtaining significant results in all the three hypotheses answered the question that indeed leverage is significant and therefore, users of financial reports would have something to add in assessing the reliability of the earnings being reported. Finally, the findings implied that NASB's adoption of

IAS/IFRS has, along with the advantages, a price to pay; since it is going to pave way to additional discreation for earnings management.

5.2 Conclusions

In light of the findings of this study, the following conclusions are pertinent:

(i). Just like many other studies previously conducted, this research also concludes that leverage has significant positive impact on accrual earnings management. The study also concludes that debt-covenant hypothesis best suits accounting-based earnings management and financial leverage, as financial liability is the kind of debt that comes along with covenants/agreements. The inference derivable here is that, firms manage earnings upward, to avoid the cost of violating debt agreements.

(ii) The study also concludes that both financial and total leverage have significant negative impacts on real earnings management. This is logical in the sense that, just like financial liabilities, non financial liabilities too put pressures on a firm's cash-flow. Thus, the more the leverages (the liabilities), the more the pressures and consequently, the less excess (abnormal) cash will remain to be reported.

(iv) As in real earnings management, the study conclude here also, that both measures of leverage have significant negative impacts on deferred tax earnings management. Obtaining the same pattern here can be justified by the inter-woven relationships that exists between depreciation and deferred tax in one hand, and deprepreciation and cash-flow in the other hand. Note that depreciation is part of the cash-flows' non-cash items- due to its tax/cash saving trait.

5.3 Recommendations

Based on the findings, the following recommendations are forwarded:

(i) In view of the documented evidence of positive impact of financial leverage on accrual earnings management, users should factor in financial leverage in assessessing reported earning; by lowering/upping their expectations as to the reliability of the earnings if financial leverage is high/low.

(ii) Company boards and other users of financial reports, should always factor in leverage in their assessment of annual reports presented to them by firms' managers. If it is cash-flow they are assessing, they should raise their expectation, depending on how high the firm is leveraged by financial or non-financial debt.

(iii) Whenever, deferred tax expenses exists contemporaneously with high/low financial/total leverage, users should raise/lower their expectation as regards to the economic quality of the hard numbers as well as the soft numbers presented to them by the cashflow and earnings reports. This is in light of the perceived negative impact which leverage has on deferred tax earnings management.

Other Recommendations

In addition to the above, accounting scholars should double efforts in identifying regular relationships among accounting variables, as one of the study findings joins countless other findings in proving the prediction of positive accounting theory to be correct. This further shed light on the fact that accounting theories can indeed be developed through hypothetico-deductive as well as inductive researches. Thus, if scholars keep looking, they will surely continue to identify pattens of relatioships that will aid in develo

track the long over-due revolution needed i

up-to-date in servicing the need of the ever evolving myriads of business "packages". Also, deferred tax is continuously viewed to be a proven tool of earnings management and luckily, leverage curbs such tendency. Can leverage also be able to curb other more complicated dimensions of deferred tax earnings management such as the use of deferred tax valuation allowance to under/over provide for the deferred tax expenses? Thus, NASB should thread carefully in its adoption of IAS/IFRS.

5.4 Limitations of the study

The findings of this study should be viewed under the shades of the following limitations:

(i). As it is, opportunistic earnings management that is carried out by whatever means, cannot be directly captured. We only used estimates of these phonomena. And the techniques of these estimates are not easily applicable to certain firms with unique reporting format. For instance, as it is practically impossible to apply Dechow et al., (2002) model of abnormal accruals to banks, insurance or construction industries; in the same vein, study on the use of loan loss provision or claim loss reserves cannot be conducted using manufacturing firms.

(ii) Deferred tax usually comes from different sources, such as depreciation, prepayments received, provision for bad debts, pension liabilities, and so on. This study was unable to decompose the deferred tax expenses so as to be able to document evidence on which of the sources of deferred tax expenses is mostly used in deferred tax earnings management. This was as a result of poor voluntary disclosure by some of the firms in the study population.

(iii) The abnormal cash-flow model merely captures aggregate real earnings management. The issue of tracing the sources of the real earnings management can only be captured through the individual disaggregated models

model of abnormal discretionary expenses reveals the real earnings management that comes from expenses that are at the discretion of management. Also, abnormal production model, reveals real earnings management that comes from manipulation of production costs. Our abnormal cash-flow model reveal real earnings management in aggregate cash mode.

(iv) In the course of financial leverage computations, we did not made distinctions between public and private debts. As levels of supervisions between the two may differ, the result of this study too may differ if distinctions of the two sources of financial debt are made.

(v) Our inability to match our independent variable with proper interacting variable (control), rendered our model fitness to be very low. Obviously, debt covenant hypothesis is more effective in situation where the debts have covenants. This study merely assumed the presence of covenants- that the debt figures used in computing leverage (LEVFINLIAB), comes along with agreements from the lenders. In addition, we assume that the tightness of the covenants depends on the leverage level. This is to say, instead of obtaining the covenants and weigh the conditions contained, to arrive at the covenants' tightness; we merely assumed that the higher the leverage level the more the tightness.

Notwithstanding the above listed limitations, the validity of the findings and the reliability of the methodology followed to arrive at the study's conclusions are not affected. Users can rely on the study's findings for their various applications.

5.5 Areas of further studies

This study is not by any means exhaustive as to the strategies of earnings management being employed by managers of firms. In the same vein, it is obvious that it did covered only one phenomenon which was viewed to possibly have impact on managers' opportunistic tendencies. With this said, the following areas of further

(i) One good area to start with is the Nigerian banking sector. With the incessant reforms in banking sector, one shortly following the other; today is undercapitalization and tomorrow is poor risk management, it could be that the regulators are looking in the wrong directions. Too much regualtions usually squeeze up the little space for ethics and professionalism and thus opportunism takes course. With opportunism, no amount of corporate regulations may solve the problems therein. What then works is checks and balance. If we know them well, knows how they think, we can anticipate their moves, off-sets and check-mate them. Knowing that they are now living in cristally clear glass offices in which every little step they make can be viewed from afar, they will be forced to re-embrace the ethics and the professionalism which they had once abandoned. One of the way to do this is to explore and exhaust every manifestations and ramifications of opportunism. With this, we suggest a research on the the use of loan-loss provisions by Nigerian banks to manipulate earnings, as it is a signinificant item that calls for a substantial judgement.

(ii) Another interesting area of research in this field we suggest, is to look at the use of claim-loss reserve by insurance firms to manipulate earnings.

(iii) It is indeed going to be a value-adding input for financial report users and regulators as well, the outcome of research in which deferred tax expense is decomposed and traced back to the sources. This could lead to discovering which of the components of deferred tax expense has the maximum virile potency and frequency in use for earnings manipulation.

(iv) The use of fixed assets sales to boost cash-flows, or manipulating production costs and discreationary expenses seems to be fertile areas of research where ther is paucity of documentented evidence from Nigeria.

(v) Among the findings of this research is a hint from the goodness-of fit tests, that all the three primary models are in dire need of additional interacting variables so that they can stand as valid models for prediction. We recommend further extension of the models by controlling for debts that have covenants and giving weights to the covenants according to how tight is each of the agreement. This is for those who have extra-ordinary data-access. Additionally, distinction can also be made between public and private financial debts, as the level of supervisions could vary.

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APPENDIX A: POPULATION SCREENING

A1: Quoted Manufacturing Firms In Nigeria (Listed Prior To January, 2003 and not delisted as at 2010)

FIRM	MANUFACTURING OPERATION	NX , NCN	S, MG	LISTING	B or A	PAID UP CAPITAL
1. OKITIPUPA	Palm oil processing, maintenance of palm plantation			1989	B	48,000,000
2. OKUMO OIL	Oil milling, palm kernel processing, development of oil and rubber processing	NX		1991	A	238,477,500
3. LIVESTOCK FEEDS	Live stock feeds manufacturing			1978	A	600,000,000
4. PRESCO	Palm processing & plantation	NX		2002	A	500,000,000
5. CHAMPION BREWERIS	Brewing and bottling	NCN		1983	A	450,000,000
6. GOLDEN GUINEA	,, ,, ,,	NCN		1979	A	125,418,000
7. GUINNESS	,, ,, ,,			1965	A	737,463,000
8. INTERNATIONAL BREWERIES	,, ,, ,,			1995	A	1,056,457,341
9. JOS INTERNATIONAL BREWERIES	,, ,, ,,		S	1973	A	281,000,000
10. NIGERIAN BREWERIES	,, ,, ,,			1973	A	3,781,281,170
11. PREMIER BREWERIES	,, ,, ,,		S	1988	B	55,765,000
12. ASHAKA CEMENT	Manufacturing & marketing cement			1990	A	995,313,000
13. CEMENT COMPANY OF NORTHERN NIGERIA	Manufacturing & marketing cement	NCN		1993	A	628,338,885
14. BENUE CEMENT	Manufacturing & marketing cement		M	1991	A	7,747,009,834
15. LAFARGE CEMENT	Manufacturing & marketing cement			1979	A	1,500,800,002
16. NIGERIAN CEMENT COMPANY	Manufacturing & marketing cement			1954	B	65,000,000
17. NIGERIAN ROPES	Ropes manufacturing			1978	A	131,834,000
18. NIGERIAN WIRE INDUSTRY	Cable & wire manufacturing			1978	B	7,500,000
19. AFRIPAINTS	Manufacturing and marketing of paints	NCN		1996	A	130,000,000
20. FOREMOST DAIRIES	Dairy products manufacturers		D	1976		?
21. BERGER PAINTS	Paint manufacturers			1974	A	108,683,793
22. CHEMICALS & ALLIED PRODUCTS	Agro-chemicals & paints manufacturer			1978	A	105,000,000
23. DN MEYERS PAINT	Paints manufacturing & marketing			1979	A	145,745,000
24. IPWA PLC	Paints manufacturers		S	1978	A	257,070,000
25. PREMIER PAINTS	Paints manufacturers			1995	B	37,500,000
26. HALLMARK PAPER	Paper conversion			1993	B	25,000,000
27. THOMAS WYATT	Note books and stationery manufacturer			1978	A	110,000,000
28. WIGGINS TEAPE	Paper products manufacturers			1973	B	41,000,000
29. CHELLERAMS	Assembly, manufacturing of bicycles, etc.	NX		1977	A	361,462,000
30. PZ CUSSONS	House hold items producers			1974	A	1,588,190,818
31. SCOA	Manufacturing, leasing of generators, etc.	NX	S	1977	A	324,737,000
32. UAC	Food and drinks processing, etc.			1974	A	1,280,576,000
33. UNILEVER	House hold items producers			1973	A	1,891,649,000
34. ADSWITCH	Manufactures electrical switch gear			1991	B	25,001,050
35. AFRIC PHARMACEUTICALS	Manufacturing drugs			1992	B	12,449,425
36. ANINO INTERNATIONAL	Staple pins producers			1990	B	10,880,000
37. FLEXIBLE PACKAGING	Labels and packs producers			1993	B	8,500,000
38. NEW-PAK	Boxes and labels manufacturers			1989	B	21,131,425
39. ROKANA	Toiletries & hygiene products			1991	B	12,368,731
40. SMART PRODUCTS	Palm kernel processing			1992	B	18,000,000
41. UDEOFSON GARMENTS	Textile manufacturers			1994	B	7,525,000
42. WAAP	Aluminum products			1989	B	3,325,000
43. CUTIX	Manufacturing & marketing e					
44. INTERLINKED TECH	Manufacturing porcelain insul					
45. NIGERIAN WIRE & CABLE	Wire and cable					

						7,500,000
46. 7UP	Soft drinks bottling			1986	A	256,236,145
47. CADBURY	Beverages manufacturers			1976	A	1,564,594,000
48. FLOOR MILLS	Food manufacturing (flour, pasta, noodles)			1979	A	854,186,667
49. NN FLOUR MILLS	Food manufacturing (flour, pasta, etc.)			1,978	B	74,250,000
50. NATIONAL SALT COMPANY	Salt processing	NX		1992	A	1,324,719,000
51. NESTLE	Producers of assorted food items and likes			1973	A	330,273,438
52. NIGERIAN BOTTLING	Bottling soft drinks		S	1973	A	654,336,929.50
53. PS MANDRIDES	Pumps manufacturers		S	1979	B	20,000,000
54. UTC	Food manufacturing	NX	S	1972	A	616,688,000
55. UNION DICON	Crude salt processing	NX	S	1993	A	116,172,238
56. EVANS MEDICALS	Pharmaceutical and food items producers			1979	A	243,236,000
57. GLOXOSMITHKLINE	Drugs and associate items manufacturing			1977	A	478,350,595
58. MAY & BAKER	Drugs manufacturing			1994	A	350,000,000
59. MORISON INDUSTRIES	Disinfectants and consumable vaccines		S	1978	B	76,090,000
60. NEIMETH	Drugs			1979	A	410,788,000
61. PHARMA-DEKO	Drugs			1979	B	49,759,000
62. ALUMINIUM EXTRUSION	Aluminum	NCN		1986	A	109,978,000
63. ALUMACO	Aluminum		S	1972	B	37,800,000
64. 1ST ALUMINIUM	Aluminum		S	1992	A	1,055,333,000
65. B.OC GASES	Manufacturing industrial and medical gases			1979	A	196,560,000
66. ENAMEL WARES	Manufacturing wares			1979	B	31,680,000
67. VITA FOAM	Mattresses, foams, etc			1978	A	409,500,000
68. VONO	Mattresses, forms		S	1974	A	150,000,000
69. NIGERIAN SEWING MACHINE	Sewing machine manufacturers			1978	B	2,940,000
70. AB PLAST				1990	B	27,184,000
71. AVON CROWN CAPS	Corks and bottle caps producers			1994	A	341,987,000
72. BETA GLASS	Bottles and glass manufacturers			1986	A	249,986,627
73. GREIF	Metal drums manufacturers			1979	B	21,320,000
74. NAMPAK	Metal containers and crown corks producers			1974	A	107,044,183
75. POLY PRODUCTS	Polythene bags containers, etc			1979	A	120,000,000
76. STUDIO PRESS	Labels and packaging material manufacturer			1979	B	40,000,000
77. WA GLASS	Galas manufacturing	S		1985	A	104,307,000
78. ETERNA OIL	Manufacturing &marketing of lubricating oil	NX		1998	A	390,000,000
79. UNTL	Textiles manufacturers			1971	A	421,642,000

NX=Non exclusive manufacturing,

NCN= No complete footnotes,

S= Suspended for non-submission of annual report,

M= Merged/acquired,

B= Firms with paid-up capital below 100millions,

A= Firms with paid-up capital at or above 100millions

Appendix A2: Manufacturing Firms Listed After 1st January, 2003

FIRM	MANUFACTURING OPERATION	LISTING DATE	PAID UP CAPITAL
1. FTN COCOA	Palm kernel processing	2008	60,000,000
2. TRANSCORP	processing, semi-processing, hotel, etc	2006	11,256,836,092
3. MCNICHOLS CONSOLIDATED	Manufacturing chocolate powder	2009	100,942,667.50
4. BIG TREAT	Produces milk, drinks, loaves, etc	2007	1,000,000,000
5. DANGOTE FLOUR	Manufactures flour, pasta, noodles, etc.	2008	2,500,000,000
6. DANGOTE SUGAR	Sugar refining	2007	6,000,000,000
7. HONEY WELL	Flour manufacturers	2009	3,965,099,000
8. FIDSON HEALTH CARE	Drugs	2008	750,000,000
9. TANTALIZERS	Manufactures foods & drinks	2008	1,475,000,000
10. NIG. BAG MANUFACTURING	Bags	2008	3,107,500,000

SOURCE: NSE FACT BOOK, 2010

Appendix A3: List Of Defaulting Firms for Annul Report Rendition

Nigerian Stock Exchange sanctions 48 companies
Jack Acheme, Lagos

http://www.voiceofnigeria.org/Nigeria/Nigeria-Stock-Exchange-sanction.html accessed 23/10/2011

The Nigerian Stock Exchange (NSE) has placed on Technical Suspension, forty-eight quoted companies in default of audited account rendition, with effect from Friday, July 1, 2011.

The suspension means that there will be trading on the shares, but there will be no movement on their prices.

Offence

The affected companies failed to submit their Financial Statements for the year ended December 31, 2010, which is a violation of the Post-Listing Rules of The Exchange as contained in Key Issue No. 5 (Annual Accounts Procedures).

The Post – Listing Rules states that **"Audited Annual Accounts of companies ought to be submitted within three months of year ended".**

According to the Stock Exchange, ***"these companies' stocks will be on Technical Suspension for the next one month; after which The Exchange reserves the right to take further action."***

Need for corporate governance

This action is part of the on-going campaign for the practice of the code of corporate governance in the nation's capital market system.

The Nigerian Stock Exchange and the investing publics need timely financial information from listed companies in other to facilitate stock transactions that are based on market fundamentals.

This is essential for fair price discovery and investor confidence in Nigeria's capital market.

The Exchange in pursuant of Article **90** of The Exchange's rules, shall at its discretion, at any time suspend or lift suspension in trading in particular securities.

List of sanctioned companies

S/NO	COMPANY	SECTOR	YEAR 2010
1	FTN Cocoa Processors Plc	*Agriculture/Agro-Allied*	December
2	Jos Int. Brew. Plc	*Breweries*	December
3	Ipwa Plc	*Chemical & Paints*	December
4	Premier Paints Plc	*Chemical & Paints*	December
5	Omatek Ventures Plc	*Computer & Office Equipment*	December
6	Scoa Nigeria Plc		
7	Transnational Corporation Plc		

8	Cappa & D'alberto Plc	Construction	MARCH
9	G & Cappa Plc	Construction	MARCH
10	Nigerian Wire & Cable Plc	Engineering Technology	September
11	P.S. Mandrides & Co Plc	Food/Beverages & Tobacco	September
12	Dangote Flour Mills Plc	*Food/Beverages & Tobacco*	December
13	Nig Bottling Co. Plc	*Food/Beverages & Tobacco*	December
14	Union Dicon Salt Plc	*Food/Beverages & Tobacco*	December
15	UTC Nigeria Plc	*Food/Beverages & Tobacco*	December
16	Lennards	Footwear	September
17	Ekocorp Plc	*Healthcare*	December
18	Morison Industries Plc	*Healthcare*	December
19	Ikeja Hotel Plc	*Hotel & Tourism*	December
20	Tourist Company Of Nigeria	*Hotel & Tourism*	December
21	First Aluminium	Industrial/Domestic Prd	December
22	Aluminium Man. Co. Of Nigeria Plc	*Industrial/Domestic Prd*	December
23	Vono Products Plc	*Industrial/Domestic Prd*	December
24	Etranzact Plc	*Info Comm & Telcomm*	December
25	First Assurance Plc(Equity Assr.)	*Insurance*	December
26	African Alliance Insurance Plc	*Insurance*	December
27	Great Nigeria Insurance Plc	*Insurance*	December
28	Guinea Insurance Plc	*Insurance*	December
29	International Energy Insurance	*Insurance*	December
30	Lasaco Assurance Plc	*Insurance*	December
31	Linkage Assurance	*Insurance*	December
32	Oasis Insurance Plc	*Insurance*	December
33	Staco Plc	*Insurance*	December
34	Standard Allance Plc	*Insurance*	December
35	Crusader (Nig) Plc	*Other Fincl Institution*	December
36	Chams Plc	*Info Comm & Telcomm*	December
37	Mtech Plc	*Info Comm & Telcomm*	December
38	Mti Plc	*Info Comm & Telcomm*	December
39	Invesment & Allied Assurance	*Insurance*	December
40	Daar Communication Plc	*Media*	December
41	Nigeria Energy Sector	*Other Fincl Institution*	March
42	Resort Savings & Loans Plc	*Other Fincl Institution*	December
43	Studio Press(Nig) Plc	*Packaging*	December
44	W.A Glass Ind. Plc	*Packaging*	December
45	Forte Oil (African Petroleum)	*Petroleum(Marketing)*	December
46	Afroil Plc	*Petroleum(Marketing)*	December
47	Longman Plc	Printing & Publishing	December
48	UNTL	*Textiles*	December

Appendix A4: Study Population

FIRM	MANUFACTURING OPERATION	LISTING	PAID UP CAPITAL
1. LIVESTOCK FEEDS	Live stock feeds manufacturing	1978	600,000,000
2. GUINNESS	,, ,, ,,	1965	737,463,000
3. INTERNATIONAL BREWERIES	,, ,, ,,	1995	1,056,457,341
4. NIGERIAN BREWERIES	,, ,, ,,	1973	3,781,281,170
5. ASHAKA CEMENT	Manufacturing & marketing cement	1990	995,313,000
6. LAFARGE CEMENT	Manufacturing & marketing cement	1979	1,500,800,002
7. NIGERIAN ROPES	Ropes manufacturing	1978	131,834,000
8. BERGER PAINTS	Paint manufacturers	1974	108,683,793
9. CHEMICALS & ALLIED PRODUCTS	Agro-chemicals & paints manufacturer	1978	105,000,000
10. DN MEYERS PAINT	Paints manufacturing & marketing	1979	145,745,000
11. THOMAS WYATT	Note books and stationery manufacturer	1978	110,000,000
12. PZ CUSSONS	House hold items producers	1974	1,588,190,818
13. UAC	Food and drinks processing, etc.	1974	1,280,576,000
14. UNILEVER	House hold items producers	1973	1,891,649,000
15. CUTIX	Manufacturing & marketing electrical, auto…	1987	264,198,354
16. 7UP	Soft drinks bottling	1986	256,236,145
17. CADBURY	Beverages manufacturers	1976	1,564,594,000
18. FLOOR MILLS	Food manufacturing (flour, pasta, noodles)	1979	854,186,667
19. NESTLE	Producers of assorted food items and likes	1973	330,273,438
20. EVANS MEDICALS	Pharmaceutical and food items producers	1979	243,236,000
21. GLOXOSMITHKLINE	Drugs and associate items manufacturing	1977	478,350,595
22. MAY & BAKER	Drugs manufacturing	1994	350,000,000
23. NEIMETH	Drugs	1979	410,788,000
24. B.OC GASES	Manufacturing industrial and medical gases	1979	196,560,000
25. VITA FOAM	Mattresses, foams, etc	1978	409,500,000
26. AVON CROWN CAPS	Corks and bottle caps producers	1994	341,987,000
27. BETA GLASS	Bottles and glass manufacturers	1986	249,986,627
28. NAMPAK	Metal containers and crown corks producers	1974	107,044,183
29. POLY PRODUCTS	Polythene bags containers, etc	1979	120,000,000

S0URCE: Nse Factbook 2010, Firms' Annual Reports & Voice Of Nigeria Website

APPENDIX B: PROCESSED DATA (COMPLETE)

DATE	FIRM	REMDMY	DTEMDMY	REM	LEVTLIAB	LEVFINLIAB	ROE	FINBURDEN	LOGTA
2005	ASHKA CEMENT	1	0	0.15	0.52	0.00	0.54	0.00	16.67
2006	ASHKA CEMENT	1	1	0.03	0.37	0.01	0.29	0.00	16.73
2007	ASHKA CEMENT	1	0	0.15	0.52	0.15	0.15	0.00	16.92
2008	ASHKA CEMENT	1	1	0.15	1.22	0.00	0.16	0.00	16.12
2009	ASHKA CEMENT	1	1	0.25	0.49	0.00	0.03	NA	17.06
2010	ASHKA CEMENT	0	0	-0.06	0.43	0.01	0.19	0.00	17.15
2005	AVON CROWN CAP	0	0	-0.33	0.73	0.78	0.08	0.03	15.35
2006	AVON CROWN CAP	1	1	0.02	0.65	0.57	0.12	0.14	15.17
2007	AVON CROWN CAP	1	1	0.16	0.63	0.61	0.11	0.11	15.23
2008	AVON CROWN CAP	1	0	0.41	0.68	0.04	0.00	0.44	15.53
2009	AVON CROWN CAP	1	0	0.29	0.73	0.71	0.13	0.10	15.77
2010	AVON CROWN CAP	0	0	-0.22	0.78	0.83	0.04	0.07	15.97
2005	BERGER PAINTS	0	0	-0.20	0.57	0.55	-0.58	0.13	14.54
2006	BERGER PAINTS	1	1	0.07	0.52	0.32	0.08	0.19	14.51
2007	BERGER PAINTS	1	0	0.08	0.46	0.04	0.10	0.51	14.52
2008	BERGER PAINTS	0	1	-0.07	0.40	0.02	0.12	0.48	14.53
2009	BERGER PAINTS	1	1	0.06	0.41	0.01	0.14	0.07	14.64
2010	BERGER PAINTS	1	1	-0.09	0.36	0.00	0.26	0.06	14.77
2005	BETA GLASS	0	1	-0.05	0.43	0.36	0.04	0.09	15.98
2006	BETA GLASS	0	1	-0.07	0.43	0.38	0.07	0.06	16.06
2007	BETA GLASS	1	1	0.18	0.49	0.46	0.14	0.03	16.31
2008	BETA GLASS	0	1	-0.03	0.48	0.41	0.16	0.05	16.45
2009	BETA GLASS	0	1	-0.01	0.36	0.12	0.16	0.30	16.40
2010	BETA GLASS	1	1	0.03	0.38	0.12	0.15	0.15	16.59
2005	BOC GASSES	1	1	0.01	0.63	0.36	0.37	0.13	14.26
2006	BOC GASSES	1	0	0.11	0.69	0.29	0.28	0.16	14.24
2007	BOC GASSES	1	0	0.04	0.62	0.21	0.36	0.11	14.38
2008	BOC GASSES	1	0	0.04	0.60	0.09	0.29	0.25	14.47
2009	BOC GASSES	1	1	0.02	0.55	0.07	0.27	0.06	14.53
2010	BOC GASSES	1	1	0.05	0.46	0.00	0.30	NA	14.57
2005	CADBURY	0	0	-0.23	0.66	0.59	0.25	0.07	17.28
2006	CADBURY	0	0	-0.44	0.93	0.94	-2.13	0.05	17.21
2007	CADBURY	1	0	0.08	1.07	1.00	-20.71	0.06	17.01
2008	CADBURY	0	0	-0.14	1.13	0.91	-0.89	0.07	16.99
2009	CADBURY	1	1	-0.06	0.50	0.04	-0.10	5.38	17.04
2010	CADBURY	0	1	-0.11	0.54	0.00	0.09	NA	17.16
2005	CHEMICALS & ALLIED PRD	1	0	-0.34	0.47	0.00	0.47	0.00	14.12
2006	CHEMICALS & ALLIED PRD	1	0	0.23	0.63	0.00	0.31	NA	14.25
2007	CHEMICALS & ALLIED PRD	1	1	0.12	0.35	0.00	0.35	NA	14.50
2008	CHEMICALS & ALLIED PRD	1	0	0.20	0.69	0.00	1.07	NA	14.61
2009	CHEMICALS & ALLIED PRD	0	0	-0.03	0.65	0.00	0.45	NA	14.59
2010	CHEMICALS & ALLIED PRD	1	0	0.14	0.57	0.00	0.86	NA	14.68
2005	CUTIX	1	0	0.46	0.62	0.50	0.24	0.09	12.90
2006	CUTIX	1	0	0.34	0.57	0.84	1.49	0.06	12.94
2007	CUTIX	0	0	-0.31	0.58	0.99	0.45	0.00	13.37
2008	CUTIX	1	0	0.17	0.49	0.47	0.30	0.05	13.54
2009	CUTIX	1	1	0.04	0.39	0.53	0.20	0.08	13.57
2010	CUTIX	0	0	-0.02	0.55	0.65	0.29	0.05	13.87
2005	EVANS MEDICALS	1	1	0.29	0.53	0.62	0.05	0.07	15.02
2006	EVANS MEDICALS	1							
2007	EVANS MEDICALS	1							
2008	EVANS MEDICALS	0							

2009	EVANS MEDICALS	0	0	-0.08	1.02	1.01	13.52	0.11	15.19
2010	EVANS MEDICALS	0	0	-0.14	1.01	1.01	-0.15	0.10	15.22
2005	FLOUR MILLS OF NIGERIA	0	1	-0.03	0.71	0.58	0.13	0.10	17.50
2006	FLOUR MILLS OF NIGERIA	1	1	0.11	0.68	0.44	0.29	0.10	17.75
2007	FLOUR MILLS OF NIGERIA	0	0	-0.21	0.70	0.57	0.33	0.07	18.15
2008	FLOUR MILLS OF NIGERIA	0	0	-0.16	0.68	0.67	0.18	0.04	18.51
2009	FLOUR MILLS OF NIGERIA	1	0	0.00	0.73	0.72	0.10	0.04	18.74
2010	FLOUR MILLS OF NIGERIA	1	1	0.00	0.63	0.58	0.32	0.13	18.78
2005	GLOXO SMITHKLINE	0	1	-0.18	0.63	0.24	0.31	0.03	15.93
2006	GLOXO SMITHKLINE	1	1	0.24	0.50	0.01	0.26	0.90	15.95
2007	GLOXO SMITHKLINE	1	0	0.10	0.42	0.02	0.18	0.07	15.98
2008	GLOXO SMITHKLINE	1	1	0.07	0.43	0.00	0.23	NA	16.08
2009	GLOXO SMITHKLINE	1	1	0.17	0.45	0.00	0.26	NA	16.31
2010	GLOXO SMITHKLINE	0	1	-0.02	0.43	0.00	0.30	NA	16.51
2005	GUINNESS	1	0	0.02	0.64	0.41	0.27	0.15	17.73
2006	GUINNESS	1	0	0.17	0.57	0.25	0.29	0.18	17.91
2007	GUINNESS	1	0	0.16	0.56	0.30	0.34	0.11	18.09
2008	GUINNESS	1	1	0.03	0.50	0.17	0.32	0.06	18.11
2009	GUINNESS	0	0	-0.11	0.95	0.30	0.43	0.15	18.12
2010	GUINNESS	1	1	0.08	0.56	0.06	0.40	0.46	18.18
2005	INTERNATIONAL BREW'	0	0	-0.76	3.07	0.03	-0.63	0.09	12.90
2006	INTERNATIONAL BREW'	0	0	-0.05	2.28	-0.03	0.30	0.09	13.74
2007	INTERNATIONAL BREW'	1	1	-0.41	0.00	-0.07	90.37	298.27	20.27
2008	INTERNATIONAL BREW'	1	0	0.01	1.03	0.98	28.98	101.25	14.29
2009	INTERNATIONAL BREW'	1	1	0.98	1.06	0.33	-1.01	0.20	15.44
2010	INTERNATIONAL BREW'	1	0	0.24	1.01	1.01	-2.36	0.01	16.11
2005	LARFARGE	0	0	-0.15	0.69	0.60	0.19	0.15	17.57
2006	LARFARGE	1	0	0.07	0.48	0.38	0.43	0.09	17.70
2007	LARFARGE	1	1	0.12	0.35	0.22	0.34	0.09	17.74
2008	LARFARGE	1	0	0.14	0.35	0.26	0.27	0.02	17.94
2009	LARFARGE	1	0	0.03	0.24	0.36	0.11	0.00	18.28
2010	LARFARGE	0	0	0.02	0.59	0.66	0.10	0.00	18.59
2005	LIVESTOCK FEEDS	0	0	-0.50	3.53	3.15	0.22	0.16	12.69
2006	LIVESTOCK FEEDS	0	0	-0.44	2.07	1.84	-0.12	0.01	12.68
2007	LIVESTOCK FEEDS	0	0	-0.09	1.87	1.68	0.08	0.00	12.87
2008	LIVESTOCK FEEDS	1	0	0.03	0.64	0.58	0.13	0.08	13.81
2009	LIVESTOCK FEEDS	1	0	0.02	0.55	0.48	0.08	0.15	13.68
2010	LIVESTOCK FEEDS	1	1	-0.04	0.46	0.14	0.07	0.95	14.17
2005	MAY & BAKER	0	1	-0.13	0.61	0.43	0.13	0.16	14.48
2006	MAY & BAKER	1	0	0.26	0.32	0.34	0.08	0.09	15.19
2007	MAY & BAKER	0	0	-0.04	0.38	0.42	0.08	0.06	15.31
2008	MAY & BAKER	0	0	-0.08	0.60	0.52	0.05	0.04	15.56
2009	MAY & BAKER	1	1	0.06	0.48	0.60	0.09	0.04	15.63
2010	MAY & BAKER	0	0	-0.09	0.43	0.56	0.07	0.05	15.73
2005	MEYER PAINTS	0	0	-0.49	0.89	0.92	-2.03	0.10	13.79
2006	MEYER PAINTS	0	0	-0.24	0.85	0.87	0.37	0.10	13.91
2007	MEYER PAINTS	1	1	0.09	0.69	0.71	0.11	0.07	14.47
2008	MEYER PAINTS	0	0	-0.01	0.55	0.56	-0.21	0.07	14.98
2009	MEYER PAINTS	0	0	-0.12	0.69	0.66	-0.59	0.13	14.79
2010	MEYER PAINTS	1	0	0.24	0.78	0.50	-0.40	0.37	14.81
2005	NAMPAK	0	0	-0.12	0.62	0.62	0.07	0.09	14.50
2006	NAMPAK	1	0	0.01	0.67	0.48	0.17	0.16	14.67
2007	NAMPAK	0	0	-0.28	0.72	0.73	0.05	0.06	14.88
2008	NAMPAK	1							
2009	NAMPAK	0							
2010	NAMPAK	1							

2005	NEIMETH PHARM	0	1	-0.15	0.67	0.55	0.18	0.24	14.30
2006	NEIMETH PHARM	0	0	-0.45	0.40	0.32	0.05	0.22	14.78
2007	NEIMETH PHARM	1	1	0.02	0.41	0.32	0.07	0.11	14.82
2008	NEIMETH PHARM	0	0	-0.15	0.50	0.41	0.06	0.11	15.00
2009	NEIMETH PHARM	0	0	-0.09	0.63	0.57	-0.42	0.09	14.88
2010	NEIMETH PHARM	0	0	-0.01	0.66	0.49	-0.13	0.14	14.84
2005	NESTLE	1	0	0.12	0.90	0.00	3.03	NA	16.64
2006	NESTLE	1	0	0.19	1.00	0.00	0.89	NA	16.76
2007	NESTLE	1	0	0.04	1.00	0.00	0.87	NA	16.87
2008	NESTLE	1	1	0.01	0.69	0.40	0.92	0.01	17.19
2009	NESTLE	1	0	0.06	0.69	0.63	0.93	0.11	17.61
2010	NESTLE	1	0	0.03	1.00	0.66	0.85	0.03	17.92
2005	NIGERIAN BREWERIES	1	0	0.05	0.61	0.42	0.29	0.13	18.11
2006	NIGERIAN BREWERIES	1	1	0.11	0.52	0.00	0.30	NA	18.14
2007	NIGERIAN BREWERIES	1	0	0.13	0.52	0.00	0.44	0.73	18.32
2008	NIGERIAN BREWERIES	1	0	0.23	0.69	0.00	0.80	NA	18.46
2009	NIGERIAN BREWERIES	1	1	0.12	0.56	0.02	0.60	0.74	18.49
2010	NIGERIAN BREWERIES	1	1	0.09	0.56	0.00	0.60	1.42	18.56
2005	NIGERIAN ROPES	0	0	-0.11	0.58	0.63	0.05	0.06	13.35
2006	NIGERIAN ROPES	1	1	0.13	0.58	0.63	0.08	0.05	13.42
2007	NIGERIAN ROPES	0	0	0.00	0.51	0.51	0.07	0.02	13.36
2008	NIGERIAN ROPES	1	1	0.16	0.62	0.52	0.10	0.02	13.55
2009	NIGERIAN ROPES	0	0	-0.08	0.78	0.71	0.00	0.04	13.42
2010	NIGERIAN ROPES	0	0	-0.08	0.77	0.78	-0.01	0.03	13.36
2005	POLY PRODUCTS	0	0	-0.11	0.75	0.66	-0.03	0.27	13.76
2006	POLY PRODUCTS	1	1	0.02	0.77	0.68	0.00	0.22	13.86
2007	POLY PRODUCTS	1	1	0.14	0.72	0.29	0.06	0.88	13.67
2008	POLY PRODUCTS	0	0	-0.07	0.72	0.21	0.05	0.14	13.74
2009	POLY PRODUCTS	0	0	-0.08	0.72	0.25	0.19	0.16	13.90
2010	POLY PRODUCTS	1	1	0.01	0.53	0.30	0.21	0.14	14.34
2005	PZ CUSSONS	0	1	-0.12	0.38	0.00	0.17	5.10	17.31
2006	PZ CUSSONS	0	1	-0.18	0.30	0.04	0.12	0.12	17.55
2007	PZ CUSSONS	0	1	-0.11	0.31	0.09	0.13	0.04	17.63
2008	PZ CUSSONS	1	1	0.05	0.33	0.08	0.16	0.13	17.74
2009	PZ CUSSONS	0	1	-0.03	0.32	0.00	0.14	17.52	17.82
2010	PZ CUSSONS	1	1	0.09	0.32	0.00	0.14	NA	17.89
2005	SEVEN UPS	0	0	-0.08	0.68	0.67	0.22	0.04	16.45
2006	SEVEN UPS	0	1	-0.12	0.67	0.69	0.21	0.03	16.65
2007	SEVEN UPS	1	1	0.01	0.71	0.69	0.19	0.05	16.89
2008	SEVEN UPS	0	1	-0.02	0.70	0.66	0.22	0.06	16.99
2009	SEVEN UPS	0	0	-0.09	0.75	0.77	0.21	0.10	17.28
2010	SEVEN UPS	0	1	-0.17	0.73	0.72	0.20	0.08	17.33
2005	THOMAS WYATT	1	0	0.08	2.08	2.54	0.41	0.11	12.49
2006	THOMAS WYATT	1	0	0.15	1.30	1.27	-0.01	0.00	13.06
2007	THOMAS WYATT	0	0	-0.04	1.07	1.05	1.01	0.01	12.98
2008	THOMAS WYATT	1	1	0.13	0.65	0.56	0.01	0.05	13.32
2009	THOMAS WYATT	0	0	-0.20	0.67	0.59	0.01	0.01	13.28
2010	THOMAS WYATT	1	0	0.03	0.70	0.77	-0.03	0.01	13.36
2005	UACN	0	1	-0.24	0.48	0.35	0.13	0.09	17.09
2006	UACN	1	1	0.00	0.37	0.16	0.16	0.16	17.14
2007	UACN	1	1	0.02	0.56	0.15	0.01	0.10	18.19
2008	UACN	1	0	0.10	0.52	0.40	0.15	0.03	18.37
2009	UACN	0	0	-0.01	0.52	0.45	0.14	0.04	18.36
2010	UACN	0							
2005	UNILEVER	0							
2006	UNILEVER	1							

2007	UNILEVER	0	0	-0.01	0.75	0.62	0.26	0.08	16.83
2008	UNILEVER	1	1	0.04	0.18	0.44	0.39	0.05	18.37
2009	UNILEVER	1	1	-0.02	0.65	0.27	0.57	0.21	16.98
2010	UNILEVER	1	0	0.18	0.68	0.15	0.55	0.22	17.07
2005	VITA FOAM	0	0	-0.22	0.59	0.27	0.14	0.23	14.48
2006	VITA FOAM	1	1	0.09	0.56	0.35	0.14	0.09	14.70
2007	VITA FOAM	0	0	-0.29	0.59	0.44	0.31	0.03	15.05
2008	VITA FOAM	1	0	0.02	0.59	0.42	0.37	0.07	15.35
2009	VITA FOAM	0	0	-0.11	0.60	0.50	0.24	0.09	15.51
2010	VITA FOAM	0	1	-0.09	0.60	0.51	0.21	0.10	15.63

YEAR	FIRM	AEMDMY	AEM	LEVTLIAB	LEVFINLIAB	ROE	FINBURDEN	LGTA
2005	ASHKA CEMENT	0	-0.31	0.52	0.00	0.54	0.00	16.67
2006	ASHKA CEMENT	1	0.19	0.37	0.01	0.29	0.00	16.73
2007	ASHKA CEMENT	0	-0.03	0.52	0.15	0.15	0.00	16.92
2008	ASHKA CEMENT	0	-0.24	1.22	0.00	0.16	0.00	16.12
2009	ASHKA CEMENT	0	-0.04	0.49	0.00	0.03	NA	17.06
2005	AVON CROWN CAP	1	0.42	0.73	0.78	0.08	0.03	15.35
2006	AVON CROWN CAP	0	-0.20	0.65	0.57	0.12	0.14	15.17
2007	AVON CROWN CAP	1	3.82	0.63	0.61	0.11	0.11	15.23
2008	AVON CROWN CAP	1	0.06	0.68	0.04	0.00	0.44	15.53
2009	AVON CROWN CAP	1	0.59	0.73	0.71	0.13	0.10	15.77
2005	BERGER PAINTS	0	-0.05	0.57	0.55	-0.58	0.13	14.54
2006	BERGER PAINTS	0	-0.07	0.52	0.32	0.08	0.19	14.51
2007	BERGER PAINTS	1	5.23	0.46	0.04	0.10	0.51	14.52
2008	BERGER PAINTS	0	-0.26	0.40	0.02	0.12	0.48	14.53
2009	BERGER PAINTS	0	-0.01	0.41	0.01	0.14	0.07	14.64
2005	BETA GLASS	0	-0.96	0.43	0.36	0.04	0.09	15.98
2006	BETA GLASS	0	-0.12	0.43	0.38	0.07	0.06	16.06
2007	BETA GLASS	1	-0.40	0.49	0.46	0.14	0.03	16.31
2008	BETA GLASS	1	3.59	0.48	0.41	0.16	0.05	16.45
2009	BETA GLASS	0	-3.22	0.36	0.12	0.16	0.30	16.40
2005	BOC GASSES	0	-0.11	0.63	0.36	0.37	0.13	14.26
2006	BOC GASSES	1	0.08	0.69	0.29	0.28	0.16	14.24
2007	BOC GASSES	1	-4.63	0.62	0.21	0.36	0.11	14.38
2008	BOC GASSES	0	-0.22	0.60	0.09	0.29	0.25	14.47
2009	BOC GASSES	1	0.23	0.55	0.07	0.27	0.06	14.53
2005	CADBURY	0	-0.30	0.66	0.59	0.25	0.07	17.28
2006	CADBURY	1	0.21	0.93	0.94	-2.13	0.05	17.21
2007	CADBURY	0	1.60	1.07	1.00	-20.71	0.06	17.01
2008	CADBURY	0	-0.29	1.13	0.91	-0.89	0.07	16.99
2009	CADBURY	0	-0.10	0.50	0.04	-0.10	5.38	17.04
2005	CHEMICALS & ALLIED PROD	1	0.19	0.47	0.00	0.47	NA	14.12
2006	CHEMICALS & ALLIED PROD	0	-0.06	0.63	0.00	0.31	NA	14.25
2007	CHEMICALS & ALLIED PROD	0	-0.93	0.35	0.00	0.35	NA	14.50
2008	CHEMICALS & ALLIED PROD	0	-0.59	0.69	0.00	1.07	NA	14.61
2009	CHEMICALS & ALLIED PROD	0	-0.02	0.65	0.00	0.45	NA	14.59
2005	CUTIX	0	-0.25	0.62	0.50	0.24	0.09	12.90
2006	CUTIX	0	-0.08	0.57	0.34	1.40	0.06	13.04
2007	CUTIX	1	6					
2008	CUTIX	0	-					

2009	CUTIX	0	-0.20	0.39	0.53	0.20	0.08	13.57
2005	EVANS MEDICALS	1	0.17	0.53	0.62	0.05	0.07	15.02
2006	EVANS MEDICALS	1	0.24	0.57	0.67	0.08	0.06	15.16
2007	EVANS MEDICALS	1	0.05	0.70	0.77	-0.24	0.08	15.29
2008	EVANS MEDICALS	0	-0.28	0.82	0.87	0.62	0.06	15.36
2009	EVANS MEDICALS	0	-0.09	1.02	1.01	13.52	0.11	15.19
2005	FLOUR MILLS OF NIGERIA	0	-0.30	0.71	0.58	0.13	0.10	17.50
2006	FLOUR MILLS OF NIGERIA	1	-0.12	0.68	0.44	0.29	0.10	17.75
2007	FLOUR MILLS OF NIGERIA	0	-5.29	0.70	0.57	0.33	0.07	18.15
2008	FLOUR MILLS OF NIGERIA	1	0.25	0.68	0.67	0.18	0.04	18.51
2009	FLOUR MILLS OF NIGERIA	1	0.15	0.73	0.72	0.10	0.04	18.74
2005	GLOXO SMITHKLINE	0	-0.34	0.63	0.24	0.31	0.03	15.93
2006	GLOXO SMITHKLINE	1	0.40	0.50	0.01	0.26	0.90	15.95
2007	GLOXO SMITHKLINE	1	0.23	0.42	0.02	0.18	0.07	15.98
2008	GLOXO SMITHKLINE	0	-0.28	0.43	0.00	0.23	NA	16.08
2009	GLOXO SMITHKLINE	0	-0.04	0.45	0.00	0.26	NA	16.31
2005	GUINNESS	1	0.06	0.64	0.41	0.27	0.15	17.73
2006	GUINNESS	1	0.09	0.57	0.25	0.29	0.18	17.91
2007	GUINNESS	0	-0.28	0.56	0.30	0.34	0.11	18.09
2008	GUINNESS	0	-0.18	0.50	0.17	0.32	0.06	18.11
2009	GUINNESS	1	0.07	0.95	0.30	0.43	0.15	18.12
2005	INTERNATIONAL BREWERIES	0	-0.23	3.07	0.03	-0.63	0.09	12.90
2006	INTERNATIONAL BREWERIES	0	-1.92	2.28	-0.03	0.30	0.09	13.74
2007	INTERNATIONAL BREWERIES	1	5.78	0.00	-0.07	90.37	298.27	20.27
2008	INTERNATIONAL BREWERIES	1	0.04	1.03	0.98	28.98	101.25	14.29
2009	INTERNATIONAL BREWERIES	1	0.11	1.06	0.33	-1.01	0.20	15.44
2005	LARFARGE	1	0.05	0.69	0.60	0.19	0.15	17.57
2006	LARFARGE	1	0.29	0.48	0.38	0.43	0.09	17.70
2007	LARFARGE	1	3.90	0.35	0.22	0.34	0.09	17.74
2008	LARFARGE	0	-0.11	0.35	0.26	0.27	0.02	17.94
2009	LARFARGE	1	0.39	0.24	0.36	0.11	0.00	18.28
2005	LIVESTOCK FEEDS	1	4.34	3.53	3.15	0.22	0.16	12.69
2006	LIVESTOCK FEEDS	1	6.10	2.07	1.84	-0.12	0.01	12.68
2007	LIVESTOCK FEEDS	1	1.91	1.87	1.68	0.08	0.00	12.87
2008	LIVESTOCK FEEDS	1	0.20	0.64	0.58	0.13	0.08	13.81
2009	LIVESTOCK FEEDS	1	0.14	0.55	0.48	0.08	0.15	13.68
2005	MAY & BAKER	1	0.19	0.61	0.43	0.13	0.16	14.48
2006	MAY & BAKER	0	0.08	0.32	0.34	0.08	0.09	15.19
2007	MAY & BAKER	0	-6.81	0.38	0.42	0.08	0.06	15.31
2008	MAY & BAKER	0	-0.04	0.60	0.52	0.05	0.04	15.56
2009	MAY & BAKER	1	0.59	0.48	0.60	0.09	0.04	15.63
2005	MEYER PAINTS	0	-0.41	0.89	0.92	-2.03	0.10	13.79
2006	MEYER PAINTS	0	-0.22	0.85	0.87	0.37	0.10	13.91
2007	MEYER PAINTS	1	2.57	0.69	0.71	0.11	0.07	14.47
2008	MEYER PAINTS	0	-0.26	0.55	0.56	-0.21	0.07	14.98
2009	MEYER PAINTS	1	0.21	0.69	0.66	-0.59	0.13	14.79
2005	NAMPAK	1	0.28	0.62	0.62	0.07	0.09	14.50
2006	NAMPAK	0	-0.16	0.67	0.48	0.17	0.16	14.67
2007	NAMPAK	1	1.93	0.72	0.73	0.05	0.06	14.88
2008	NAMPAK	0	-0.25	0.85	0.75	-1.02	0.16	14.74
2009	NAMPAK	0	-0.27	0.86	0.49	0.10	0.42	14.91
2005	NEIMETH PHARM	0	-0.14	0.67	0.55	0.18	0.24	14.30
2006	NEIMETH PHARM	1	0.50	0.40	0.32	0.05	0.22	14.78
2007	NEIMETH PHARM	0	-					
2008	NEIMETH PHARM	1						
2009	NEIMETH PHARM	0	-					

2005	NESTLE	0	-0.32	0.90	0.00	3.03	NA	16.64
2006	NESTLE	0	-0.11	1.00	0.00	0.89	NA	16.76
2007	NESTLE	0	-4.40	1.00	0.00	0.87	NA	16.87
2008	NESTLE	1	0.01	0.69	0.40	0.92	0.01	17.19
2009	NESTLE	1	0.18	0.69	0.63	0.93	0.11	17.61
2005	NIGERIAN BREWERIES	0	-0.44	0.61	0.42	0.29	0.13	18.11
2006	NIGERIAN BREWERIES	1	0.02	0.52	0.00	0.30	NA	18.14
2007	NIGERIAN BREWERIES	0	-5.08	0.52	0.00	0.44	0.73	18.32
2008	NIGERIAN BREWERIES	0	-0.56	0.69	0.00	0.80	NA	18.46
2009	NIGERIAN BREWERIES	1	0.18	0.56	0.02	0.60	0.74	18.49
2005	NIGERIAN ROPES	0	-0.10	0.58	0.63	0.05	0.06	13.35
2006	NIGERIAN ROPES	1	0.29	0.58	0.63	0.08	0.05	13.42
2007	NIGERIAN ROPES	1	3.59	0.51	0.51	0.07	0.02	13.36
2008	NIGERIAN ROPES	0	-0.32	0.62	0.52	0.10	0.02	13.55
2009	NIGERIAN ROPES	0	-0.03	0.78	0.71	0.00	0.04	13.42
2005	POLY PRODUCTS	1	0.12	0.75	0.66	-0.03	0.27	13.76
2006	POLY PRODUCTS	1	0.25	0.77	0.68	0.00	0.22	13.86
2007	POLY PRODUCTS	0	-3.18	0.72	0.29	0.06	0.88	13.67
2008	POLY PRODUCTS	0	-0.49	0.72	0.21	0.05	0.14	13.74
2009	POLY PRODUCTS	0	-0.27	0.72	0.25	0.19	0.16	13.90
2005	PZ CUSSONS	0	-0.07	0.38	0.00	0.17	5.10	17.31
2006	PZ CUSSONS	1	0.21	0.30	0.04	0.12	0.12	17.55
2007	PZ CUSSONS	0	-5.87	0.31	0.09	0.13	0.04	17.63
2008	PZ CUSSONS	0	-0.13	0.33	0.08	0.16	0.13	17.74
2009	PZ CUSSONS	1	0.22	0.32	0.00	0.14	17.52	17.82
2005	SEVEN UPS	1	0.15	0.68	0.67	0.22	0.04	16.45
2006	SEVEN UPS	1	0.30	0.67	0.69	0.21	0.03	16.65
2007	SEVEN UPS	1	4.73	0.71	0.69	0.19	0.05	16.89
2008	SEVEN UPS	1	5.01	0.70	0.66	0.22	0.06	16.99
2009	SEVEN UPS	1	6.36	0.75	0.77	0.21	0.10	17.28
2005	THOMAS WYATT	1	7.17	2.08	2.54	0.41	0.11	12.49
2006	THOMAS WYATT	1	0.46	1.30	1.27	-0.01	0.00	13.06
2007	THOMAS WYATT	1	3.38	1.07	1.05	1.01	0.01	12.98
2008	THOMAS WYATT	1	0.08	0.65	0.56	0.01	0.05	13.32
2009	THOMAS WYATT	1	0.34	0.67	0.59	0.01	0.01	13.28
2005	UACN	1	0.03	0.48	0.35	0.13	0.09	17.09
2006	UACN	0	-0.06	0.37	0.16	0.16	0.16	17.14
2007	UACN	0	-2.81	0.56	0.15	0.01	0.10	18.19
2008	UACN	0	-0.08	0.52	0.40	0.15	0.03	18.37
2009	UACN	1	0.08	0.52	0.45	0.14	0.04	18.36
2005	UNILEVER	1	0.52	0.77	0.76	0.29	0.05	17.01
2006	UNILEVER	1	0.12	0.79	0.74	-0.35	0.09	16.74
2007	UNILEVER	1	0.52	0.75	0.62	0.26	0.08	16.83
2008	UNILEVER	0	-0.62	0.18	0.44	0.39	0.05	18.37
2009	UNILEVER	0	-0.03	0.65	0.27	0.57	0.21	16.98
2005	VITA FOAM	1	0.35	0.59	0.27	0.14	0.23	14.48
2006	VITA FOAM	1	-0.06	0.56	0.35	0.14	0.09	14.70
2007	VITA FOAM	1	0.21	0.59	0.44	0.31	0.03	15.05
2008	VITA FOAM	0	-0.17	0.59	0.42	0.37	0.07	15.35
2009	VITA FOAM	1	0.15	0.60	0.50	0.24	0.09	15.51

APPENDIX C: STATIONARITY, DESCRIPTIVE STATISTICS AND NORMALITY TESTS

STATIONARITY TESTS:

Null Hypothesis: LEVFINLIAB has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=13)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.518413	0.0000
Test critical values:	1% level	-3.468295	
	5% level	-2.878113	
	10% level	-2.575684	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LEVFINLIAB)
Method: Least Squares
Date: 01/30/12 Time: 00:45
Sample (adjusted): 1901 2073
Included observations: 173 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LEVFINLIAB(-1)	-0.394860	0.060576	-6.518413	0.0000
C	0.179953	0.037461	4.803776	0.0000

R-squared	0.199025	Mean dependent var	0.002947
Adjusted R-squared	0.194341	S.D. dependent var	0.378147
S.E. of regression	0.339419	Akaike info criterion	0.688332
Sum squared resid	19.70014	Schwarz criterion	0.724787
Log likelihood	-57.54076	Hannan-Quinn criter.	0.703122
F-statistic	42.48970	Durbin-Watson stat	2.025513

Null Hypothesis: LEVTLIAB has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=13)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.326897	0.0000
Test critical values:	1% level	-3.468295	
	5% level	-2.878113	
	10% level	-2.575684	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LEVTLIAB)
Method: Least Squares
Date: 01/30/12 Time: 00:47
Sample (adjusted): 1901 2073
Included observations: 173 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LEVTLIAB(-1)	-0.576691	0.069256	-8.326897	0.0000
C	0.395175	0.055263	7.150753	0.0000

R-squared	0.288500	Mean dependent var	0.000416
Adjusted R-squared	0.284339	S.D. dependent var	0.441556
S.E. of regression	0.373542	Akaike info criterion	0.879919
Sum squared resid	23.86021	Schwarz criterion	0.916373
Log likelihood	-74.11298	Hannan-Quinn criter.	0.894708
F-statistic	69.33721	Durbin-Watson stat	1.940801
Prob(F-statistic)	0.000000		

Null Hypothesis: AEM has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=13)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-11.96365	0.0000
Test critical values:	1% level	-3.476143	
	5% level	-2.881541	
	10% level	-2.577514	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(AEM)
Method: Least Squares
Date: 01/30/12 Time: 01:04
Sample (adjusted): 1901 2044
Included observations: 144 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AEM(-1)	-1.003952	0.083917	-11.96365	0.0000
C	0.021101	0.553951	0.038092	0.9697

R-squared	0.501980	Mean dependent var	0.003144
Adjusted R-squared	0.498473	S.D. dependent var	9.386491
S.E. of regression	6.647382	Akaike info criterion	6.640115
Sum squared resid	6274.651	Schwarz criterion	6.681362
Log likelihood	-476.0883	Hannan-Quinn criter.	6.656875
F-statistic	143.1290	Durbin-Watson stat	2.000021
Prob(F-statistic)	0.000000		

DESCRIPTIVE STATISTICS and NORMALITY TESTS

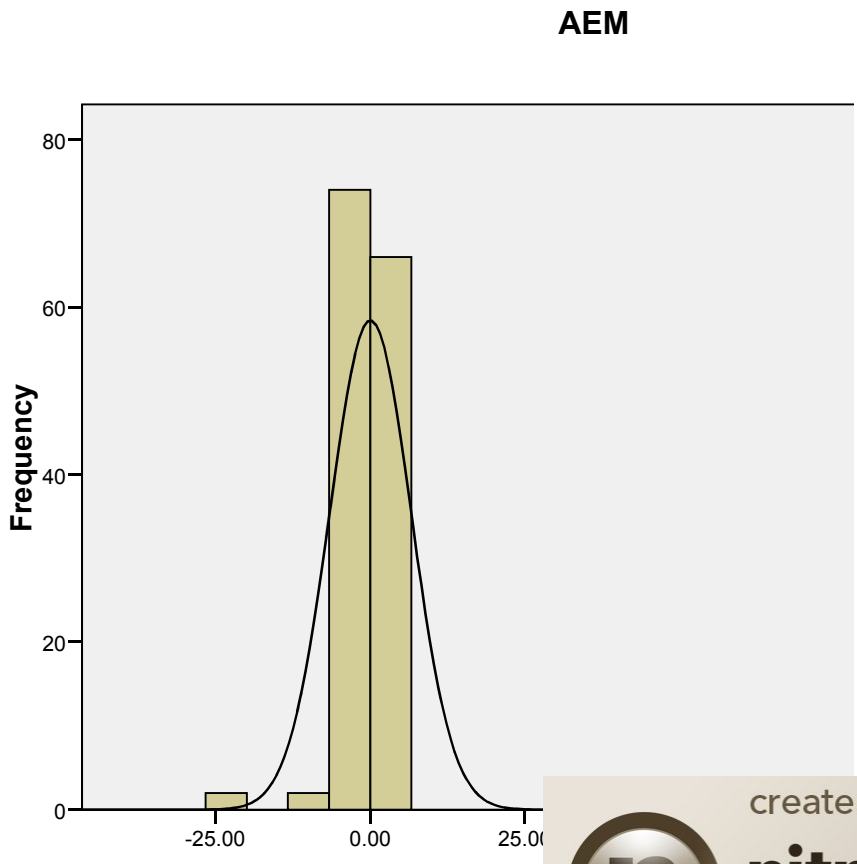
```
FREQUENCIES
  VARIABLES=AEM REM DTEM LEVFINLIAB LEVTLIAB  /FORMAT=NOTABLE
  /STATISTICS=STDDEV VARIANCE MEAN MEDIAN SKEWNESS SESKEW KURTOSIS SEKURT
  /HISTOGRAM  NORMAL
  /ORDER=  ANALYSIS .
```

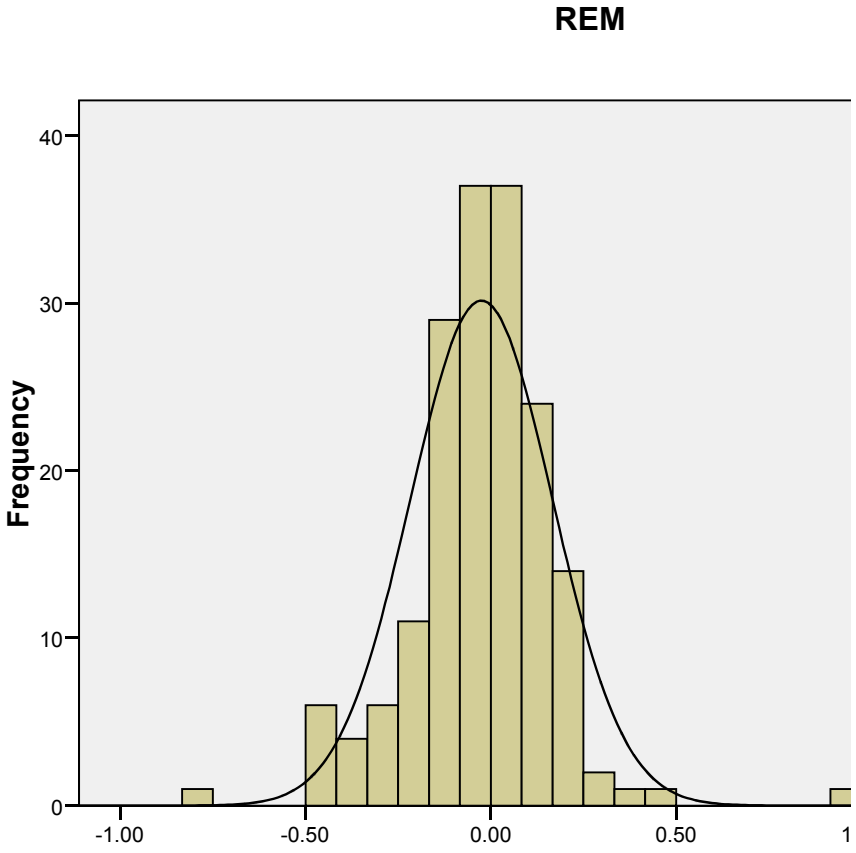
Frequencies

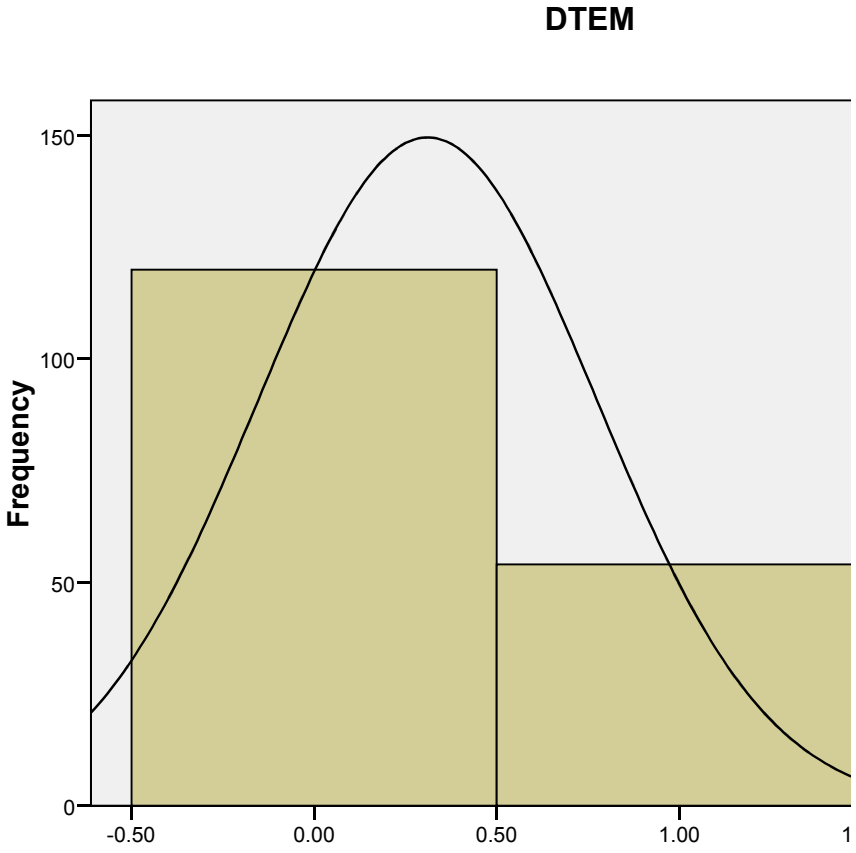
Statistics

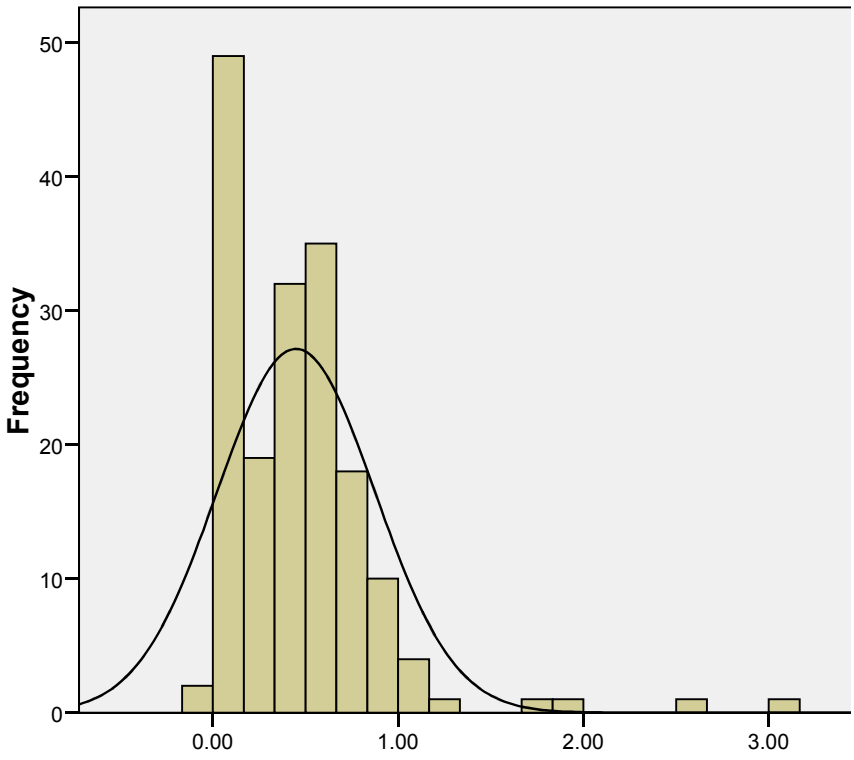
		AEM	REM	DTEM	LEVFINLIAB	LEVTLIAB
N	Valid	145	174	174	174	174
	Missing	29	0	0	0	0
Mean		.0188	-.0254	.3103	.4486	.6840
Median		-.0341	-.0147	.0000	.4326	.6171
Std. Deviation		6.60117	.19183	.46397	.42603	.41012
Variance		43.575	.037	.215	.182	.168
Skewness		7.679	.171	.827	2.453	3.984
Std. Error of Skewness		.201	.184	.184	.184	.184
Kurtosis		88.081	4.910	-1.331	11.837	21.170
Std. Error of Kurtosis		.400	.366	.366	.366	.366

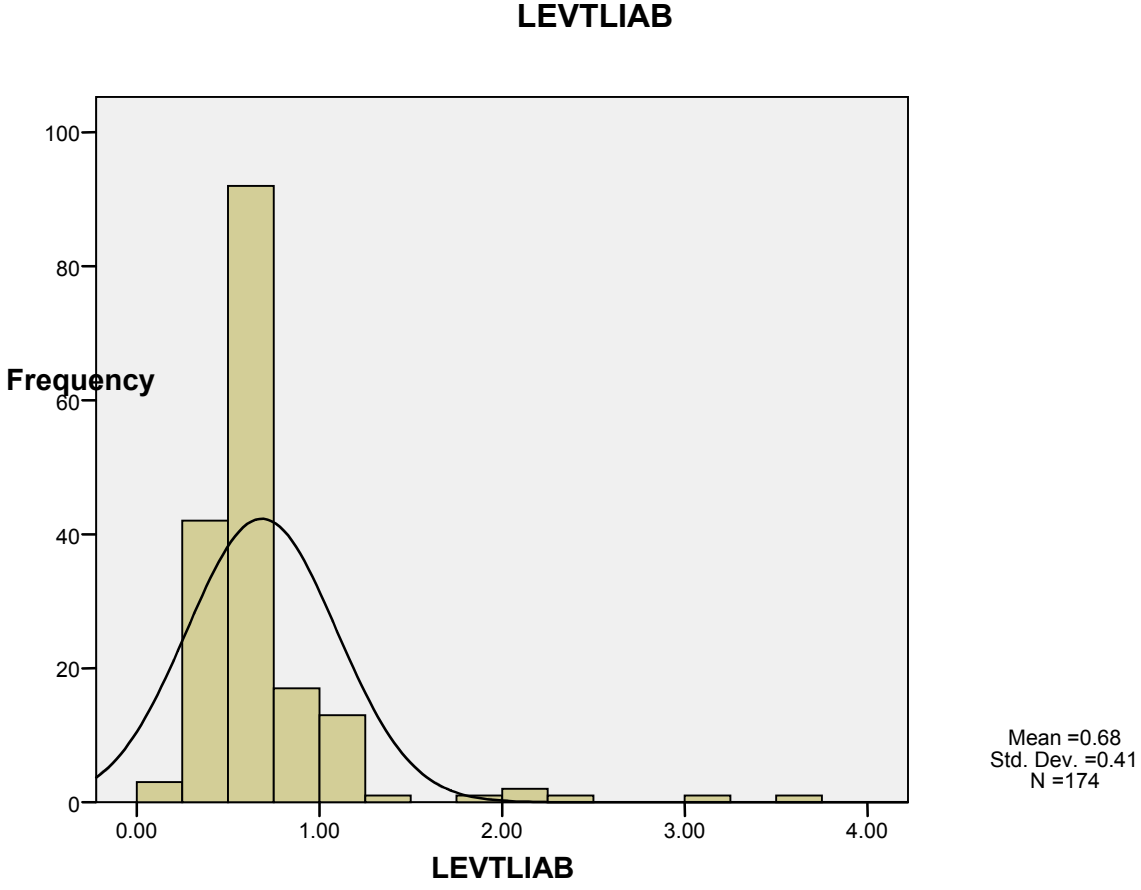
Histogram











Statistics/Data Analysis

User: stata normality tast output{space -6}
Project: a

Statistics/Data Analysis 9.1

Notes:
1. (/m# option or -set memory-) 1.00 MB allocated to data

```
1 . use "C:\Stata 9.1\data normality.dta", clear

2 . swilk aem rem dtem levfinliab levtliab
```

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
aem	145	0.28048	81.325	9.954	0.00000
rem	174	0.93556	8.519	4.894	0.00000
dtem	174	0.98752	1.650	1.144	0.12637
levfinliab	174	0.81932	23.888	7.250	0.00000
levtliab	174	0.62578	49.476	8.913	0.00000

```
3 . sfrancia aem rem dtem levfinliab levtliab
```

Shapiro-Francia W' test for normal data

Variable	Obs	W'	V'	z	Prob>z
aem	145	0.26206	90.632	8.496	0.00001
rem	174	0.92640	10.531	4.740	0.00001
dtem	174	1.00000	-0.000	.	0.00001
levfinliab	174	0.81320	26.727	6.480	0.00001
levtliab	174	0.61638	54.889	7.777	0.00001

```
4 .
```

APPENDIX D1: YEARLY CROSS-SECTIONAL REGRESSION RESULTS

(IMPACT OF CHANGE IN REVENUES ON CHANGE IN RECEIVABLES)

PERIOD 2004/2005/2006

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.786(a)	.618	.583	1.36244

a Predictors: (Constant), chnrev05

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	33.019	1	33.019	17.788	.001(a)
	Residual	20.419	11	1.856		
	Total	53.438	12			

a Predictors: (Constant), chnrev05
b Dependent Variable: chnrec05

Coefficients(a)

		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
Model		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.018	2.870		.006	.995
	chnrev05	.893	.212	.786	4.218	.001

a Dependent Variable: chnrec05

PERIOD 2005/2006/2007

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.848(a)	.719	.699	1.05505

a Predictors: (Constant), chnrev06

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	39.819	1	39.819	35.772	.000(a)
	Residual	15.584	14	1.113		
	Total	55.403	15			

a Predictors: (Constant), chnrev06
b Dependent Variable: chnrec06

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-2.444	2.413		-1.013	.328
	chnrev06	1.062	.178	.848	5.981	.000

a Dependent Variable: chnrec06

PERIOD 2006/2007/2008

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.800(a)	.640	.612	1.00141

a Predictors: (Constant), chnrev07

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23.192	1	23.192	23.127	.000(a)
	Residual	13.037	13	1.003		
	Total	36.229	14			

a Predictors: (Constant), chnrev07
b Dependent Variable: chnrec07

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	4.003	1.801		2.223	.045
	chnrev07	.593	.123	.800	4.809	.000

a Dependent Variable: chnrec07

PERIOD 2007/2008/2009

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.807(a)	.652	.627	1.37154

a Predictors: (Constant), chnrev08

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	49.327	1	49.327	26.222	.000(a)
	Residual	26.336	14	1.881		
	Total	75.662	15			

a Predictors: (Constant), chnrev08
b Dependent Variable: chnrec08

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.636	2.519		-.252	.804
	chnrev08	.898	.175	.807	5.121	.000

a Dependent Variable: chnrec08

PERIOD 2008/2009/2010

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.708(a)	.502	.446	1.67152

a Predictors: (Constant), chnrev09

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25.309	1	25.309	9.058	.015(a)
	Residual	25.146	9	2.794		
	Total	50.455	10			

a Predictors: (Constant), chnrev09
b Dependent Variable: chnrec09

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.160	3.847		-.042	.968
	chnrev09	.806	.268	.708	3.010	.015

a Dependent Variable: chnrec09

To measure the impact of change in revenues on change in receivables, we use the difference between revenues in year t and revenues in year t-1 as revenue change; the difference between receivables in year t and that of year t-1 as change in receivables. Since we did not scale this by lagged total assets, we first transformed the data by taking their natural log before running the yearly cross-sectional. the coefficients were used in computing the normal receivables to be subtracted from total receivables before substracting the receivables changes (abnormal) from revenue change; and finally regress the total accruals against all the proxies of normal accruals, using OLS to estimate the coefficients Tthat were used in computing the normal accruals which was then subtracted from the total accruals to obtain the abnormal accrual (aggregate). This abnormal accrual is what is used as a proxy for accrual earnings management during the final regression of impact of leverage on accrual earnings management.

APPENDIX D2

CROSS SECTIONAL OLS RESULTS OF IMPACT OF NORMAL ACCRUALS ON TOTAL ACCRUALS

PERIOD 2004/2005/2006

Dependent Variable: TAC
Method: Least Squares
Date: 12/29/11 Time: 20:10
Sample: 2001 2029
Included observations: 29

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REVREC	0.563579	0.278385	2.024459	0.0537
PPE	-0.040426	0.172780	-0.233975	0.8169
TAC2	-0.067149	0.068891	-0.974712	0.3390
SLGR	-0.464417	0.290122	-1.600765	0.1220

R-squared	0.179496	Mean dependent var	0.039229
Adjusted R-squared	0.081036	S.D. dependent var	0.445395
S.E. of regression	0.426967	Akaike info criterion	1.263224
Sum squared resid	4.557528	Schwarz criterion	1.451816
Log likelihood	-14.31674	Durbin-Watson stat	1.764768

PERIOD 2005/2006/2007

Dependent Variable: TAC06
Method: Least Squares
Date: 12/09/11 Time: 16:36
Sample: 2001 2029
Included observations: 29

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REVREC06	0.346695	0.302270	1.146971	0.2623
PPE06	-0.573007	0.202995	-2.822768	0.0092
TAC206	-0.404766	0.199348	-2.030450	0.0531
SLGR06	0.285663	0.295657	0.966198	0.3432

R-squared	0.279540	Mean dependent var	-0.187965
Adjusted R-squared	0.193085	S.D. dependent var	0.517978
S.E. of regression	0.465292	Akaike info criterion	1.435137
Sum squared resid	5.412407	Schwarz criterion	1.623730
Log likelihood	-16.80949	Hannan-Quinn criter.	1.494202
Durbin-Watson stat	2.308125		

PERIOD 2006/2007/2008

Dependent Variable: TAC07
Method: Least Squares
Date: 12/09/11 Time: 16:39
Sample: 2001 2029
Included observations: 29

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REVREC07	23.82753	9.994226	2.384130	0.0250
PPE07	-4.932220	7.034705	-0.701127	0.4897
TAC207	5.074148	6.654331	0.762533	0.4529
SLGR07	1.857182	4.185294	0.443740	0.6610

R-squared	0.195230	Mean dependent var	3.094524
Adjusted R-squared	0.098657	S.D. dependent var	16.63809
S.E. of regression	15.79605	Akaike info criterion	8.484839
Sum squared resid	6237.880	Schwarz criterion	8.673431
Log likelihood	-119.0302	Hannan-Quinn criter.	8.543904
Durbin-Watson stat	1.835999		

PERIOD 2007/2008/2009

Dependent Variable: TAC08
Method: Least Squares
Date: 12/09/11 Time: 16:41
Sample: 2001 2029
Included observations: 29

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REVREC08	0.215296	0.186930	1.151746	0.2603
PPE08	0.109942	0.300903	0.365374	0.7179
TAC208	-0.657340	0.008770	-74.95509	0.0000
SLGR08	0.101887	0.571377	0.178318	0.8599

R-squared	0.995523	Mean dependent var	-1.919803
Adjusted R-squared	0.994986	S.D. dependent var	10.95834
S.E. of regression	0.775942	Akaike info criterion	2.457963
Sum squared resid	15.05214	Schwarz criterion	2.646556
Log likelihood	-31.64047	Hannan-Quinn criter.	2.517028
Durbin-Watson stat	2.131258		

PERIOD 2008/2009/2010

Dependent Variable: TAC09
Method: Least Squares
Date: 12/09/11 Time: 16:47
Sample: 2001 2029
Included observations: 29

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REVREC09	0.032578	0.612354	0.053201	0.9580
PPE09	-0.339723	0.284789	-1.192894	0.2441
TAC209	-0.006094	0.011981	-0.508629	0.6155
SLGR09	0.509309	0.743855	0.684688	0.4998

R-squared	0.044034	Mean dependent var	-0.104026
Adjusted R-squared	-0.070682	S.D. dependent var	0.669704
S.E. of regression	0.692968	Akaike info criterion	2.231776
Sum squared resid	12.00511	Schwarz criterion	2.420369
Log likelihood	-28.36075	Hannan-Quinn criter.	2.290841
Durbin-Watson stat	2.044005		

Note that all equations were estimated without constant. Refer to the data analysis section and methodology for detail.

APPENDIX D3

DECHOW ET'AL. (2002) TEST OF THE POWER OF THE MODEL

Model Summary(b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.475(a)	.225	.203	7.98438	2.005

a Predictors: (Constant), SLGRitplus1, PPEit, TACitminus1, REVRECit
b Dependent Variable: TACit

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2595.131	4	648.783	10.177	.000(a)
	Residual	8925.052	140	63.750		
	Total	11520.183	144			

a Predictors: (Constant), SLGRitplus1, PPEit, TACitminus1, REVRECit
b Dependent Variable: TACit

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta	Zero-order	Partial	Part	Tolerance	VIF	B	Std. Error
1	(Constant)	.247	1.515		.163	.871					
	REVRECit	2.366	1.484	.119	1.594	.113	.094	.133	.119	.989	1.011
	PPEit	-1.260	2.699	-.035	-.467	.641	-.023	-.039	-.035	.992	1.008
	TACitminus1	-.462	.075	-.462	-6.201	.000	-.457	-.464	-.461	.997	1.003
	SLGRitplus1	.802	1.491	.040	.538	.591	.049	.045	.040	.998	1.002

a Dependent Variable: TACit

Collinearity Diagnostics(a)

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions				
		(Constant)	REVRECit	PPEit	TACitminus1	SLGRitplus1	(Constant)	REVRECit
1	1	2.390	1.000	.03	.05	.03	.00	.05
	2	1.014	1.536	.00	.03	.00	.90	.04
	3	.850	1.677	.00	.34	.00	.10	.55
	4	.641	1.930	.04	.57	.05	.00	.35
	5	.106	4.755	.93	.00	.92	.00	.01

a Dependent Variable: TACit

Residuals Statistics(a)

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-40.8718	26.8972	.1844	4.24520	145
Residual	-26.86650	87.67538	.00000	7.87271	145
Std. Predicted Value	-9.671	6.292	.000	1.000	145
Std. Residual	-3.365	10.981	.000	.986	145

a Dependent Variable: TACit

APPENDIX E: CROSS SECTIONAL OLS OUTPUT FOR THE YEARLY ABNORMAL CASHFLOW MODELS

PERIOD 2004/2005

Model Summary(b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.508(a)	.258	.169	.24844	2.287

a Predictors: (Constant), saleschang2005, asst2005, sales2005
b Dependent Variable: cfo2005

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.537	3	.179	2.900	.055(a)
	Residual	1.543	25	.062		
	Total	2.080	28			

a Predictors: (Constant), saleschang2005, asst2005, sales2005
b Dependent Variable: cfo2005

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.017	.138		.124	.902		
	asst2005	-103202.314	46567.886	-.390	-2.216	.036	.960	1.042
	sales2005	-.014	.101	-.027	-.136	.893	.760	1.316
	saleschang2005	.329	.185	.347	1.784	.087	.783	1.277

a Dependent Variable: cfo2005

PERIOD 2005/2006

Model Summary(b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.654(a)	.427	.358	.22895	2.590

a Predictors: (Constant), saleschng2006, asst2006, sales2006
b Dependent Variable: cfo2006

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.977	3	.326	6.212	.003(a)
	Residual	1.310	25	.052		
	Total	2.287	28			

a Predictors: (Constant), saleschng2006, asst2006, sales2006
b Dependent Variable: cfo2006

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.167	.127		1.310	.202		
	asst2006	-152504.923	42881.332	-.541	-3.556	.002	.992	1.008
	sales2006	-.086	.106	-.164	-.813	.424	.559	1.788
	saleschng2006	.466	.197	.478	2.367	.026	.561	1.782

a Dependent Variable: cfo2006

PERIOD 2006/2007

Model Summary(b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.551(a)	.303	.220	.16857	2.273

a Predictors: (Constant), saleschng2007, asst2007, sales2007
b Dependent Variable: cfo2007

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.309	3	.103	3.626	.027(a)
	Residual	.710	25	.028		
	Total	1.020	28			

a Predictors: (Constant), saleschng2007, asst2007, sales2007
b Dependent Variable: cfo2007

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.125	.078		-1.604	.121		
	asst2007	-79005.326	40595.219	-.327	-1.946	.063	.985	1.016
	sales2007	.155	.062	.491	2.489	.020	.717	1.395
	saleschng2007	-.025	.135	-.036	-.183	.857	.721	1.387

a Dependent Variable: cfo2007

PERIOD 2007/2008

Model Summary(b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.297(a)	.088	-.021	.14414	2.148

a Predictors: (Constant), saleschng2008, asst2008, sales2008
b Dependent Variable: cfo2008

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.050	3	.017	.808	.502(a)
	Residual	.519	25	.021		
	Total	.570	28			

a Predictors: (Constant), saleschng2008, asst2008, sales2008
b Dependent Variable: cfo2008

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.054	.067		.797	.433		
	asst2008	-55557.589	46243.636	-.272	-1.201	.241	.711	1.406
	sales2008	.049	.057	.371	.851	.403	.192	5.206
	saleschng2008	-.031	.079	-.183	-.395	.696	.170	5.869

a Dependent Variable: cfo2008

PERIOD 2008/2009

Model Summary(b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.340(a)	.116	.009	.23279	2.216

a Predictors: (Constant), saleschng2009, asst2009, sales2009
b Dependent Variable: cfo2009

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.177	3	.059	1.089	.372(a)
	Residual	1.355	25	.054		
	Total	1.532	28			

a Predictors: (Constant), saleschng2009, asst2009, sales2009
b Dependent Variable: cfo2009

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.078	.113		.689	.497		
	asst2009	-22637.864	95726.012	-.045	-.236	.815	.990	1.011
	sales2009	.014	.086	.036	.169	.867	.779	1.284
	saleschng2009	.301	.205	.314	1.468	.155	.772	1.296

a Dependent Variable: cfo2009

PERIOD 2009/2010

Model Summary(b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.713(a)	.508	.449	.12102	1.960

a Predictors: (Constant), saleschng2010, asst2010, sales2010
b Dependent Variable: cfo2010

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.378	3	.126	8.595	.000(a)
	Residual	.366	25	.015		
	Total	.744	28			

a Predictors: (Constant), saleschng2010, asst2010, sales2010
b Dependent Variable: cfo2010

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.120	.059		2.047	.051		
	asst2010	-100108.145	49573.142	-.295	-2.019	.054	.921	1.086
	sales2010	-.018	.044	-.061	-.406	.688	.868	1.153
	saleschng2010	.494	.131	.590	3.772	.001	.804	1.244

a Dependent Variable: cfo2010

The coefficients obtained for each year were used in calculating the normal cash-flow using excel. From there, the normal cash-flow calculated is then subtracted from the actual cash-flow, to arrive at the abnormal cash-flow. This abnormal cash flow represents the proxy for Real Earnings Management (REM), which was then used in the final regression, to ascertain the impact of leverage on Real Earnings Management. To do this (i.e the final regression), time series regression was executed using SPSS, having ascertained the stationarity of the time series data using Auugumented Dicky Fuller (ADF). This primary (final) time series regression was executed using two different acceptable measures of Leverages.

APPENDIX F: LINEAR REGRESSION RESULTS (FIRST ROUND OF HYPOTHESES TEST)

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  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT aem
  /METHOD=ENTER levf
  /RESIDUALS DURBIN .
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Regression

```
[DataSet1] C:\Program Files\SPSS Evaluation\aem thesis 1st may 2012.sav
```

Variables Entered/Removed(b)

Model	Variables Entered	Variables Removed	Method
1	levf(a)	.	Enter

a All requested variables entered.
b Dependent Variable: aem

Model Summary(b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.233(a)	.054	.048	5.94373	2.054

a Predictors: (Constant), levf
b Dependent Variable: aem

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	289.520	1	289.520	8.195	.005(a)
	Residual	5051.885	143	35.328		
	Total	5341.405	144			

a Predictors: (Constant), levf
b Dependent Variable: aem

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.832	.714			
	levf	3.211	1.122			

a Dependent Variable: aem

Residuals Statistics(a)

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-1.0566	9.2844	.6439	1.41794	145
Residual	-7.32699	67.23246	.00000	5.92305	145
Std. Predicted Value	-1.199	6.094	.000	1.000	145
Std. Residual	-1.233	11.312	.000	.997	145

a Dependent Variable: aem

```
REGRESSION
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  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT aem
  /METHOD=ENTER levt
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Regression

```
[DataSet1] C:\Program Files\SPSS Evaluation\aem thesis 1st may 2012.sav
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Variables Entered/Removed(b)

Model	Variables Entered	Variables Removed	Method
1	levt(a)	.	Enter

a All requested variables entered.
b Dependent Variable: aem

Model Summary(b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.057(a)	.003	-.004	6.10174	1.987

a Predictors: (Constant), levt
b Dependent Variable: aem

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.346	1	17.346	.466	.496(a)
	Residual	5324.059	143	37.231		
	Total	5341.405	144			

a Predictors: (Constant), levt
b Dependent Variable: aem

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.097	.949		.102	.919
	levt	.788	1.155	.057	.683	.496

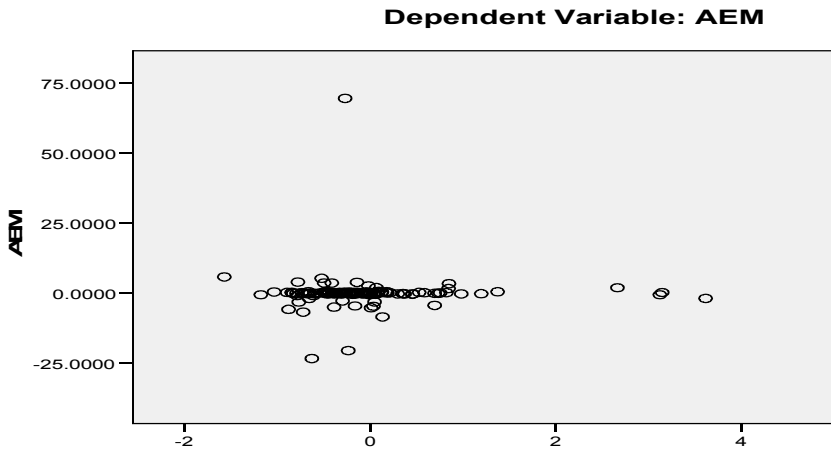
a Dependent Variable: aem

Residuals Statistics(a)

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.0966	2.8794	.6439	.34707	145
Residual	-7.20615	69.02618	.00000	6.08051	145
Std. Predicted Value	-1.577	6.441	.000	1.000	145
Std. Residual	-1.181	11.313	.000	.997	145

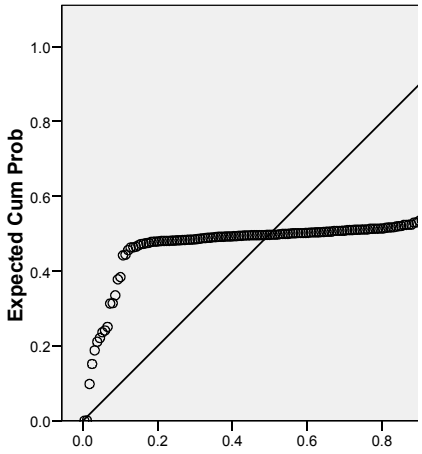
a Dependent Variable: aem

Scatterplot



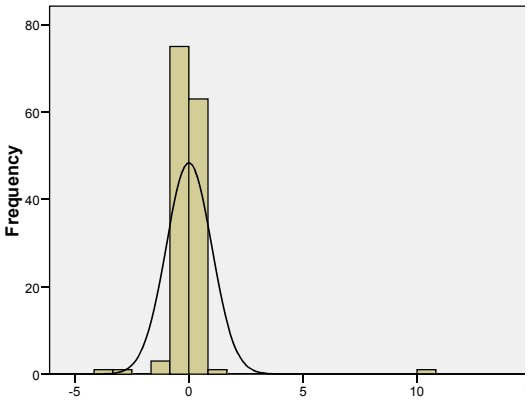
Normal P-P Plot of Regression Standardized

Dependent Variable: AEM



Histogram

Dependent Variable: AEM




```
CORRELATIONS
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  /PRINT=TWOTAIL NOSIG
  /MISSING=PAIRWISE .
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Correlations

Correlations

		AEM	Unstandardized Residual
AEM	Pearson Correlation	1	1.000(**)
	Sig. (2-tailed)		.000
	N	145	145
Unstandardized Residual	Pearson Correlation	1.000(**)	1
	Sig. (2-tailed)	.000	
	N	145	145

** Correlation is significant at the 0.01 level (2-tailed).

```
                                                      ___  ____  ____  ____  ____tm
                                                     /__    /   ____/   /   ____/
                                                    ___/   /   /___/   /   /___/
                                                      Statistics/Data Analysis

                                                         User: JIBRIL IBRAHIM YERO

  > e -58}
1 . estat hettest

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

           chi2(1)      =     3.31
           Prob > chi2  =   0.0690

2 .
```

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  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT REM
  /METHOD=ENTER LEVFLIAB
  /RESIDUALS DURBIN .
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Regression

[DataSet1] C:\Program Files\SPSS Evaluation\aem thesis 1st may 2012.sav

Variables Entered/Removed(b)

Model	Variables Entered	Variables Removed	Method
1	LEVFLIAB(a)	.	Enter

a All requested variables entered.
b Dependent Variable: REM

Model Summary(b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.306(a)	.094	.089	.18190	1.764

a Predictors: (Constant), LEVFLIAB
b Dependent Variable: REM

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.590	1	.590	17.830	.000(a)
	Residual	5.691	172	.033		
	Total	6.281	173			

a Predictors: (Constant), LEVFLIAB
b Dependent Variable: REM

Coefficients(a)

		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
Model		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.061	.020		3.049	.003
	LEVFLIAB	-.137	.032	-.306	-4.223	.000

a Dependent Variable: REM

Residuals Statistics(a)

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-.3707	.0708	-.0003	.05840	174
Residual	-.81704	.96409	.00000	.18137	174
Std. Predicted Value	-6.342	1.218	.000	1.000	174
Std. Residual	-4.492	5.300	.000	.997	174

a Dependent Variable: REM

```
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT REM
  /METHOD=ENTER LEVTLIAB
  /RESIDUALS DURBIN .
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Regression

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```

Variables Entered/Removed(b)

Model	Variables Entered	Variables Removed	Method
1	LEVTLIAB(a)	.	Enter

a All requested variables entered.
b Dependent Variable: REM

Model Summary(b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.319(a)	.102	.096	.18113	1.754

a Predictors: (Constant), LEVTLIAB
b Dependent Variable: REM

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.638	1	.638	19.449	.000(a)
	Residual	5.643	172	.033		
	Total	6.281	173			

a Predictors: (Constant), LEVTLIAB
b Dependent Variable: REM

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.101	.027		3.771	.000
	LEVTLIAB	-.148	.034	-.319	-4.410	.000

a Dependent Variable: REM

Residuals Statistics(a)

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-.4213	.1008	-.0003	.06073	174
Residual	-.49166	1.03596	.00000	.18060	174
Std. Predicted Value	-6.931	1.666	.000	1.000	174
Std. Residual	-2.714	5.720	.000	.997	174

a Dependent Variable: REM

```
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT DTEM
  /METHOD=ENTER LEVFLIAB
  /RESIDUALS DURBIN .
```

Regression

```
[DataSet1] C:\Program Files\SPSS Evaluation\aem thesis 1st may 2012.sav
```

Variables Entered/Removed(b)

Model	Variables Entered	Variables Removed	Method
1	LEVFLIAB(a)	.	Enter

a All requested variables entered.
b Dependent Variable: DTEM

Model Summary(b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.324(a)	.105	.100	.46764	1.825

a Predictors: (Constant), LEVFLIAB
b Dependent Variable: DTEM

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.415	1	4.415	20.190	.000(a)
	Residual	37.614	172	.219		
	Total	42.029	173			

a Predictors: (Constant), LEVFLIAB
b Dependent Variable: DTEM

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.576	.052		11.176	.000
	LEVFLIAB	-.375	.083	-.324	-4.493	.000

a Dependent Variable: DTEM

Residuals Statistics(a)

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-.6051	.6026	.4080	.15975	174
Residual	-.58755	.69374	.00000	.46628	174
Std. Predicted Value	-6.342	1.218	.000	1.000	174
Std. Residual	-1.256	1.483	.000	.997	174

a Dependent Variable: DTEM

```
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT DTEM
  /METHOD=ENTER LEVTLIAB
  /RESIDUALS DURBIN .

 [DataSet1] C:\Program Files\SPSS Evaluation\aem thesis 1st may 2012.sav
```

Variables Entered/Removed(b)

Model	Variables Entered	Variables Removed	Method
1	LEVTLIAB(a)	.	Enter

a All requested variables entered.
b Dependent Variable: DTEM

Model Summary(b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.315(a)	.099	.094	.46912	1.806

a Predictors: (Constant), LEVTLIAB
b Dependent Variable: DTEM

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.176	1	4.176	18.973	.000(a)
	Residual	37.853	172	.220		
	Total	42.029	173			

a Predictors: (Constant), LEVTLIAB
b Dependent Variable: DTEM

Coefficients(a)

		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
Model		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.667	.069		9.630	.000
	LEVTLIAB	-.378	.087	-.315	-4.356	.000

a Dependent Variable: DTEM

Residuals Statistics(a)

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-.6688	.6669	.4080	.15536	174
Residual	-.57605	.79475	.00000	.46777	174
Std. Predicted Value	-6.931	1.666	.000	1.000	174
Std. Residual	-1.228	1.694	.000	.997	174

a Dependent Variable: DTEM

APPENDIX G1: LOGISTIC REGRESSION RESULTS

```
                                                                  ___  ____  ____  ____  ____tm
                                                                 /__    /   ____/   /   /___/
                                                                ___/   /   /___/   /   /___/
                                                                  Statistics/Data Analysis

                                                                  User: JIBRIL IBRAHIM YERO
> e -58)

1 . logit aemdummy levf

Iteration 0:   log likelihood =  -100.4753
Iteration 1:   log likelihood = -93.980918
Iteration 2:   log likelihood =  -93.45983
Iteration 3:   log likelihood = -93.453541
Iteration 4:   log likelihood = -93.453541

Logistic regression                                     Number of obs     =        145
                                                        LR chi2(1)        =      14.04
                                                        Prob > chi2       =     0.0002
Log likelihood = -93.453541                             Pseudo R2         =     0.0699

------------------------------------------------------------------------------
    aemdummy |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        levf |     1.83943   .5678123     3.24   0.001     .7265385    2.952322
       _cons |    -.7562635   .2915982    -2.59   0.010    -1.327785   -.1847416
------------------------------------------------------------------------------

2 . xtlogit aemdummy levf,fe
note: multiple positive outcomes within groups encountered.
note: 3 groups (15 obs) dropped due to all positive or
      all negative outcomes.

Iteration 0:   log likelihood = -52.222922
Iteration 1:   log likelihood = -51.568818
Iteration 2:   log likelihood = -51.567845
Iteration 3:   log likelihood = -51.567845

Conditional fixed-effects logistic regression   Number of obs      =        130
Group variable (i): id                          Number of groups   =         26

                                                Obs per group: min =          5
                                                               avg =        5.0
                                                               max =          5

                                                LR chi2(1)        =       5.51
Log likelihood  = -51.567845                    Prob > chi2       =     0.0189

------------------------------------------------------------------------------
    aemdummy |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        levf |    2.515751   1.133313     2.22   0.026     .2944984    4.737003
------------------------------------------------------------------------------

3 . estimates store fixed

4 . xtlogit aemdummy levf,re

Fitting comparison model:

Iteration 0:   log likelihood =  -100.4753
Iteration 1:   log likelihood = -93.980918
Iteration 2:   log likelihood =  -93.45983
Iteration 3:   log likelihood = -93.453541
Iteration 4:   log likelihood = -93.453541

Fitting full model:

tau =  0.0     log likelihood = -93.453541
tau =  0.1     log likelihood = -93.673918

Iteration 0:   log likelihood = -93.453545
Iteration 1:   log likelihood = -93.453545

Random-effects logistic regression              Number of obs      =        145
Group variable (i): id                          Number of groups   =         29

Random effects u_i ~ Gaussian                   Obs per group: min =          5
                                                               avg =        5.0
                                                               max =          5

                                                Wald chi2(1)      =      10.49
Log likelihood  = -93.453545                    Prob > chi2       =     0.0012
```

aemdummy	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
levf	1.83943	.5678125	3.24	0.001	.7265382	2.952322
_cons	-.7562635	.2915983	-2.59	0.010	-1.327786	-.1847414
/lnsig2u	-14.99999	1512.569			-2979.581	2949.581
sigma_u	.0005531	.4182906			0	.
rho	9.30e-08	.0001406			0	.

Likelihood-ratio test of rho=0: chibar2(01) = 0.00 Prob >= chibar2 = 1.000

```
5 . estimates store random

6 . hausman fixed random
```

	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
levf	2.515751	1.83943	.6763207	.9808094

b = consistent under Ho and Ha; obtained from xtlogit
B = inconsistent under Ha, efficient under Ho; obtained from xtlogit

Test: Ho: difference in coefficients not systematic

chi2(1) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 0.48
Prob>chi2 = 0.4905

```
7 . logit aemdummy levt

Iteration 0:   log likelihood =  -100.4753
Iteration 1:   log likelihood = -100.22817
Iteration 2:   log likelihood = -100.22798

Logistic regression                               Number of obs   =        145
                                                  LR chi2(1)      =       0.49
                                                  Prob > chi2     =     0.4819
Log likelihood = -100.22798                       Pseudo R2       =     0.0025
```

aemdummy	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
levt	.2719884	.3942623	0.69	0.490	-.5007516	1.044728
_cons	-.1467948	.3181481	-0.46	0.645	-.7703536	.476764

```
8 . xtlogit aemdummy levt,fe
note: multiple positive outcomes within groups encountered.
note: 3 groups (15 obs) dropped due to all positive or
      all negative outcomes.

Iteration 0:   log likelihood = -52.651475
Iteration 1:   log likelihood = -52.013085
Iteration 2:   log likelihood = -52.012917
Iteration 3:   log likelihood = -52.012917

Conditional fixed-effects logistic regression   Number of obs      =        130
Group variable (i): id                          Number of groups   =         26

                                                Obs per group: min =          5
                                                               avg =        5.0
                                                               max =          5

                                                LR chi2(1)         =       4.62
Log likelihood  = -52.012917                    Prob > chi2        =     0.0316
```

aemdummy	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
levt	-1.877179	1.098362	-1.71	0.087	-4.029929	.2755715

```
 9 . estimates store fixed

10 . xtlogit aemdummy levt,re

   Fitting comparison model:

   Iteration 0:   log likelihood =  -100.4753
   Iteration 1:   log likelihood = -100.22817
   Iteration 2:   log likelihood = -100.22798

   Fitting full model:

   tau =  0.0     log likelihood = -100.22798
   tau =  0.1     log likelihood = -100.20922
   tau =  0.2     log likelihood = -100.37359

   Iteration 0:   log likelihood = -100.20921
   Iteration 1:   log likelihood = -100.19019
   Iteration 2:   log likelihood = -100.18946
   Iteration 3:   log likelihood = -100.18946

   Random-effects logistic regression              Number of obs      =       145
   Group variable (i): id                          Number of groups   =        29

   Random effects u_i ~ Gaussian                   Obs per group: min =         5
                                                                  avg =       5.0
                                                                  max =         5

                                                   Wald chi2(1)       =      0.26
   Log likelihood  = -100.18946                    Prob > chi2        =    0.6103

------------------------------------------------------------------------------
    aemdummy |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        levt |    .224455   .4404323     0.51   0.610    -.6387764    1.087686
       _cons |  -.1130136   .3518126    -0.32   0.748    -.8025536    .5765265
-------------+----------------------------------------------------------------
    /lnsig2u |  -2.566202   3.861468                     -10.13454    5.002136
-------------+----------------------------------------------------------------
     sigma_u |   .2771764   .5351539                      .0062996    12.19551
         rho |   .0228196   .0861065                      .0000121     .978359
------------------------------------------------------------------------------
   Likelihood-ratio test of rho=0: chibar2(01) =     0.08 Prob >= chibar2 = 0.391

11 . xtlogit aemdummy levt,re

   Fitting comparison model:

   Iteration 0:   log likelihood =  -100.4753
   Iteration 1:   log likelihood = -100.22817
   Iteration 2:   log likelihood = -100.22798

   Fitting full model:

   tau =  0.0     log likelihood = -100.22798
   tau =  0.1     log likelihood = -100.20922
   tau =  0.2     log likelihood = -100.37359

   Iteration 0:   log likelihood = -100.20921
   Iteration 1:   log likelihood = -100.19019
   Iteration 2:   log likelihood = -100.18946
   Iteration 3:   log likelihood = -100.18946

   Random-effects logistic regression              Number of obs      =       145
   Group variable (i): id                          Number of groups   =        29

   Random effects u_i ~ Gaussian                   Obs per group: min =         5
                                                                  avg =       5.0
                                                                  max =         5

                                                   Wald chi2(1)       =      0.26
   Log likelihood  = -100.18946                    Prob > chi2        =    0.6103
```

aemdummy	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
levt	.224455	.4404323	0.51	0.610	-.6387764	1.087686
_cons	-.1130136	.3518126	-0.32	0.748	-.8025536	.5765265
/lnsig2u	-2.566202	3.861468			-10.13454	5.002136
sigma_u	.2771764	.5351539			.0062996	12.19551
rho	.0228196	.0861065			.0000121	.978359

Likelihood-ratio test of rho=0: chibar2(01) = 0.08 Prob >= chibar2 = 0.391

```
12 . estimates store random

13 . hausman fixed random
```

	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
levt	-1.877179	.224455	-2.101634	1.00619

b = consistent under Ho and Ha; obtained from xtlogit
B = inconsistent under Ha, efficient under Ho; obtained from xtlogit

Test: Ho: difference in coefficients not systematic

chi2(1) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 4.36
Prob>chi2 = 0.0367

```
14 .
```

```
  > e -58)
1 . logit remdmy levfinliab

Iteration 0:   log likelihood = -119.21308
Iteration 1:   log likelihood = -113.47339
Iteration 2:   log likelihood = -113.31356
Iteration 3:   log likelihood = -113.31305

Logistic regression                             Number of obs   =        174
                                                LR chi2(1)      =      11.80
                                                Prob > chi2     =     0.0006
Log likelihood = -113.31305                     Pseudo R2       =     0.0495

------------------------------------------------------------------------------
      remdmy |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   levfinliab |  -1.441886   .4729975    -3.05   0.002    -2.368944    -.514828
       _cons |   .8953043   .2596417     3.45   0.001     .3864159    1.404193
------------------------------------------------------------------------------

2 . xtlogit remdmy levfinliab,fe
note: multiple positive outcomes within groups encountered.
note: 3 groups (18 obs) dropped due to all positive or
      all negative outcomes.

Iteration 0:   log likelihood =  -65.54547
Iteration 1:   log likelihood = -65.423224
Iteration 2:   log likelihood = -65.422987
Iteration 3:   log likelihood = -65.422987

Conditional fixed-effects logistic regression   Number of obs      =        156
Group variable (i): id                          Number of groups   =         26

                                                Obs per group: min =          6
                                                               avg =        6.0
                                                               max =          6

                                                LR chi2(1)         =       6.09
Log likelihood  = -65.422987                    Prob > chi2        =     0.0136

------------------------------------------------------------------------------
      remdmy |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   levfinliab |  -1.405079   .6367324    -2.21   0.027    -2.653051   -.1571064
------------------------------------------------------------------------------

3 .
```

```
                                                      ___  ____  ____  ____  ____(R)
                                                     /__    /   ____/   /   ____/
                                                    ___/   /   /___/   /   /___/
                                                      Statistics/Data Analysis

                                                            User: JIBRIL IBRAHIM YERO
> e -58)
Group variable (i): id                              Number of groups   =        26

                                                    Obs per group: min =         6
                                                                   avg =       6.0
                                                                   max =         6

                                                    LR chi2(1)         =      6.09
Log likelihood  = -65.422987                        Prob > chi2        =    0.0136
```

remdmy	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
levfinliab	-1.405079	.6367324	-2.21	0.027	-2.653051	-.1571064

```
1 . estimates store fixed

2 . xtlogit remdmy levfinliab,re

Fitting comparison model:

Iteration 0:   log likelihood = -119.21308
Iteration 1:   log likelihood = -113.47339
Iteration 2:   log likelihood = -113.31356
Iteration 3:   log likelihood = -113.31305

Fitting full model:

tau =  0.0     log likelihood = -113.31305
tau =  0.1     log likelihood = -113.10564
tau =  0.2     log likelihood = -113.14604

Iteration 0:   log likelihood = -113.10564
Iteration 1:   log likelihood = -113.09695
Iteration 2:   log likelihood = -113.08458
Iteration 3:   log likelihood =  -113.0845
Iteration 4:   log likelihood =  -113.0845

Random-effects logistic regression              Number of obs      =       174
Group variable (i): id                          Number of groups   =        29

Random effects u_i ~ Gaussian                   Obs per group: min =         6
                                                               avg =       6.0
                                                               max =         6

                                                Wald chi2(1)       =      8.70
Log likelihood  =  -113.0845                    Prob > chi2        =    0.0032
```

remdmy	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
levfinliab	-1.484127	.5030572	-2.95	0.003	-2.470101	-.4981528
_cons	.928809	.2867242	3.24	0.001	.3668399	1.490778
/lnsig2u	-1.830071	1.713581			-5.188627	1.528486
sigma_u	.4005025	.3431466			.0746971	2.147368
rho	.0464898	.0759604			.0016931	.5836167

```
Likelihood-ratio test of rho=0: chibar2(01) =     0.46 Prob >= chibar2 = 0.249

3 . estimates store random

4 . hausman fixed random
```

	Coefficients (b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
levfinliab	-1.405079	-1.484127	.0790479	.3903352

```
                b = consistent under Ho and Ha; obtained from xtlogit
     B = inconsistent under Ha, efficient under Ho; obtained from xtlogit

  Test:  Ho:  difference in coefficients
```

```
                chi2(1) =  (b-B)'[(V_b-V_B)^(-1)](b-B)
                        =          0.04
              Prob>chi2 =        0.8395
```

```
5 . logit remdmy levtliab

Iteration 0:   log likelihood = -119.21308
Iteration 1:   log likelihood = -115.98725
Iteration 2:   log likelihood = -115.90303
Iteration 3:   log likelihood = -115.90246
Iteration 4:   log likelihood = -115.90246

Logistic regression                                     Number of obs   =        174
                                                        LR chi2(1)      =       6.62
                                                        Prob > chi2     =     0.0101
Log likelihood = -115.90246                             Pseudo R2       =     0.0278

------------------------------------------------------------------------------
      remdmy |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    levtliab |  -1.126264   .5127799    -2.20   0.028    -2.131294   -.1212337
       _cons |   1.014083   .3707011     2.74   0.006     .2875223    1.740644
------------------------------------------------------------------------------
```

```
6 . xtlogit remdmy levtliab,fe
note: multiple positive outcomes within groups encountered.
note: 3 groups (18 obs) dropped due to all positive or
      all negative outcomes.

Iteration 0:   log likelihood = -62.532078
Iteration 1:   log likelihood = -61.220805
Iteration 2:   log likelihood = -61.218597
Iteration 3:   log likelihood = -61.218597

Conditional fixed-effects logistic regression   Number of obs      =        156
Group variable (i): id                          Number of groups   =         26

                                                Obs per group: min =          6
                                                               avg =        6.0
                                                               max =          6

                                                LR chi2(1)         =      14.50
Log likelihood  = -61.218597                    Prob > chi2        =     0.0001

------------------------------------------------------------------------------
      remdmy |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    levtliab |  -2.498697   .8813914    -2.83   0.005    -4.226193   -.7712019
------------------------------------------------------------------------------
```

```
7 . estimates store fixed

8 . xtlogit remdmy levtliab,re

Fitting comparison model:

Iteration 0:   log likelihood = -119.21308
Iteration 1:   log likelihood = -115.98725
Iteration 2:   log likelihood = -115.90303
Iteration 3:   log likelihood = -115.90246
Iteration 4:   log likelihood = -115.90246

Fitting full model:

tau =  0.0     log likelihood = -115.90246
tau =  0.1     log likelihood = -115.05931
tau =  0.2     log likelihood = -114.54089
tau =  0.3     log likelihood = -114.33762
tau =  0.4     log likelihood = -114.46928

Iteration 0:   log likelihood = -114.33762
Iteration 1:   log likelihood =  -113.9841
Iteration 2:   log likelihood = -113.98005
Iteration 3:   log likelihood = -113.98005

Random-effects logistic regression              Number of obs      =        174
Group variable (i): id                          Number of groups   =         29
```

```
Random effects u_i ~ Gaussian                   Obs per group: min =         6
                                                               avg =       6.0
                                                               max =         6

                                                Wald chi2(1)       =      5.70
Log likelihood  = -113.98005                    Prob > chi2        =    0.0170
```

remdmy	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
levtliab	-1.662306	.696185	-2.39	0.017	-3.026804	-.2978087
_cons	1.411809	.520563	2.71	0.007	.3915247	2.432094
/lnsig2u	-.4952486	.7709327			-2.006249	1.015752
sigma_u	.7806532	.3009155			.3667318	1.661758
rho	.1562899	.1016578			.0392751	.4563375

```
Likelihood-ratio test of rho=0: chibar2(01) =     3.84 Prob >= chibar2 = 0.025

 9 . estimates store random

10 . hausman fixed random
```

	Coefficients (b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
levtliab	-2.498697	-1.662306	-.8363911	.5405343

```
                b = consistent under Ho and Ha; obtained from xtlogit
     B = inconsistent under Ha, efficient under Ho; obtained from xtlogit

  Test:  Ho:  difference in coefficients not systematic

              chi2(1) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                      =         2.39
            Prob>chi2 =       0.1218

11 . logit dtemdmy levfinliab

Iteration 0:   log likelihood = -117.64827
Iteration 1:   log likelihood = -106.86457
Iteration 2:   log likelihood = -105.37639
Iteration 3:   log likelihood =  -105.3503
Iteration 4:   log likelihood = -105.35029

Logistic regression                             Number of obs   =        174
                                                LR chi2(1)      =      24.60
                                                Prob > chi2     =     0.0000
Log likelihood = -105.35029                     Pseudo R2       =     0.1045
```

dtemdmy	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
levfinliab	-2.497982	.5756203	-4.34	0.000	-3.626178	-1.369787
_cons	.6271333	.2683609	2.34	0.019	.1011557	1.153111

```
12 . xtlogit dtemdmy levfinliab,fe
note: multiple positive outcomes within groups encountered.
note: 2 groups (12 obs) dropped due to all positive or
      all negative outcomes.

Iteration 0:   log likelihood = -59.406733
Iteration 1:   log likelihood = -58.303341
Iteration 2:   log likelihood = -58.296231
Iteration 3:   log likelihood = -58.296229

Conditional fixed-effects logistic regression   Number of obs      =       162
Group variable (i): id                          Number of groups   =        27

                                                Obs per group: min =         6
                                                               avg =       6.0
                                                               max =         6
```

```
                                                LR chi2(1)      =      16.60
Log likelihood  = -58.296229                    Prob > chi2     =     0.0000
```

dtemdmy	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
levfinliab	-3.726575	1.115728	-3.34	0.001	-5.913362	-1.539788

```
13 . estimates store fixed

14 . xtlogit dtemdmy levfinliab,re

Fitting comparison model:

Iteration 0:   log likelihood = -117.64827
Iteration 1:   log likelihood = -106.86457
Iteration 2:   log likelihood = -105.37639
Iteration 3:   log likelihood =  -105.3503
Iteration 4:   log likelihood = -105.35029

Fitting full model:

tau =  0.0     log likelihood = -105.35029
tau =  0.1     log likelihood = -105.07909
tau =  0.2     log likelihood = -105.07761
tau =  0.3     log likelihood = -105.35912

Iteration 0:   log likelihood = -105.07761
Iteration 1:   log likelihood = -104.99254
Iteration 2:   log likelihood = -104.99244
Iteration 3:   log likelihood = -104.99244

Random-effects logistic regression              Number of obs      =       174
Group variable (i): id                          Number of groups   =        29

Random effects u_i ~ Gaussian                   Obs per group: min =         6
                                                               avg =       6.0
                                                               max =         6

                                                Wald chi2(1)       =     15.32
Log likelihood  = -104.99244                    Prob > chi2        =    0.0001
```

dtemdmy	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
levfinliab	-2.714116	.6933617	-3.91	0.000	-4.07308	-1.355152
_cons	.6968912	.3161745	2.20	0.028	.0772006	1.316582
/lnsig2u	-1.540073	1.421952			-4.327048	1.246902
sigma_u	.4629962	.3291792			.1149194	1.865355
rho	.0611733	.0816643			.0039982	.51401

```
Likelihood-ratio test of rho=0: chibar2(01) =     0.72 Prob >= chibar2 = 0.199

15 . estimates store random

16 . hausman fixed random
```

	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
levfinliab	-3.726575	-2.714116	-1.012459	.8741274

```
                b = consistent under Ho and Ha; obtained from xtlogit
     B = inconsistent under Ha, efficient under Ho; obtained from xtlogit

  Test:  Ho:  difference in coefficients not systematic

              chi2(1) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                      =          1.34
            Prob>chi2 =        0.2468
```

```
17 . logit dtemdmy levtliab

Iteration 0:   log likelihood = -117.64827
Iteration 1:   log likelihood = -106.67302
Iteration 2:   log likelihood = -101.13716
Iteration 3:   log likelihood = -100.11716
Iteration 4:   log likelihood = -100.09526
Iteration 5:   log likelihood = -100.09525

Logistic regression                               Number of obs   =        174
                                                  LR chi2(1)      =      35.11
                                                  Prob > chi2     =     0.0000
Log likelihood = -100.09525                       Pseudo R2       =     0.1492

------------------------------------------------------------------------------
     dtemdmy |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    levtliab |  -5.048271    1.10376    -4.57   0.000    -7.211601   -2.884941
       _cons |   2.725685   .6694591     4.07   0.000     1.413569    4.0378
------------------------------------------------------------------------------

18 . xtlogit dtemdmy levtliab,fe
note: multiple positive outcomes within groups encountered.
note: 2 groups (12 obs) dropped due to all positive or
      all negative outcomes.

Iteration 0:   log likelihood = -56.827002
Iteration 1:   log likelihood = -56.177196
Iteration 2:   log likelihood = -56.171789
Iteration 3:   log likelihood = -56.171787

Conditional fixed-effects logistic regression   Number of obs      =       162
Group variable (i): id                          Number of groups   =        27

                                                Obs per group: min =         6
                                                               avg =       6.0
                                                               max =         6

                                                LR chi2(1)         =     20.85
Log likelihood  = -56.171787                    Prob > chi2        =     0.0000

------------------------------------------------------------------------------
     dtemdmy |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    levtliab |  -5.999164   1.844949    -3.25   0.001    -9.615198   -2.38313
------------------------------------------------------------------------------

19 . estimates store fixed

20 . xtlogit dtemdmy levtliab,re

Fitting comparison model:

Iteration 0:   log likelihood = -117.64827
Iteration 1:   log likelihood = -106.67302
Iteration 2:   log likelihood = -101.13716
Iteration 3:   log likelihood = -100.11716
Iteration 4:   log likelihood = -100.09526
Iteration 5:   log likelihood = -100.09525

Fitting full model:

tau =  0.0     log likelihood = -100.09525
tau =  0.1     log likelihood = -100.06693
tau =  0.2     log likelihood = -100.25731

Iteration 0:   log likelihood = -100.06693
Iteration 1:   log likelihood = -100.05041
Iteration 2:   log likelihood = -100.04962
Iteration 3:   log likelihood = -100.04962

Random-effects logistic regression              Number of obs      =       174
Group variable (i): id                          Number of groups   =        29

Random effects u_i ~ Gaussian                   Obs per group: min =         6
                                                               avg =       6.0
                                                               max =         6
```

```
                                                Wald chi2(1)      =     19.17
Log likelihood  = -100.04962                    Prob > chi2       =     0.0000
```

dtemdmy	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
levtliab	-5.13614	1.173144	-4.38	0.000	-7.43546	-2.83682
_cons	2.77611	.7115831	3.90	0.000	1.381433	4.170788
/lnsig2u	-2.622682	3.546959			-9.574595	4.32923
sigma_u	.2694584	.477879			.008335	8.711246
rho	.0215936	.0749376			.0000211	.9584485

Likelihood-ratio test of rho=0: chibar2(01) = 0.09 Prob >= chibar2 = 0.381

```
21 . estimates store random

22 . hausman fixed random
```

	Coefficients (b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
levtliab	-5.999164	-5.13614	-.863024	1.423928

```
                b = consistent under Ho and Ha; obtained from xtlogit
     B = inconsistent under Ha, efficient under Ho; obtained from xtlogit

  Test:  Ho:  difference in coefficients not systematic

              chi2(1) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                      =          0.37
            Prob>chi2 =        0.5445

23 .
```

APPENDIX G2: TEST FOR GOODNESS-OF-FIT

AEM VS LEVFINLIAB

Goodness-of-Fit Evaluation for Binary Specification
Andrews and Hosmer-Lemeshow
Tests
Equation: UNTITLED
Date: 02/03/12 Time: 13:40
Grouping based upon predicted risk (randomize ties)

	Quantile of Risk		Dep=0		Dep=1		Total	H-L
	Low	High	Actual	Expect	Actual	Expect	Obs	Value
1	0.2631	0.2802	11	10.1007	3	3.89934	14	0.28750
2	0.2802	0.2895	10	10.7466	5	4.25342	15	0.18291
3	0.2896	0.3355	11	9.63434	3	4.36566	14	0.62079
4	0.3387	0.3652	10	9.70477	5	5.29523	15	0.02544
5	0.3691	0.3873	7	8.69650	7	5.30350	14	0.87364
6	0.3884	0.4168	8	8.97278	7	6.02722	15	0.26247
7	0.4169	0.4377	10	7.99489	4	6.00511	14	1.17239
8	0.4391	0.4619	7	8.23566	8	6.76434	15	0.41112
9	0.4642	0.5072	6	7.28370	8	6.71630	14	0.47160
10	0.5165	0.9385	7	5.63011	8	9.36989	15	0.53359
		Total	87	87.0000	58	58.0000	145	4.84143

H-L Statistic	4.8414	Prob. Chi-Sq(8)	0.7744
Andrews Statistic	5.0336	Prob. Chi-Sq(10)	0.8889

AEM VS LEVTLIAB

Goodness-of-Fit Evaluation for Binary Specification
Andrews and Hosmer-Lemeshow
Tests
Equation: UNTITLED
Date: 02/03/12 Time: 13:48
Grouping based upon predicted risk (randomize ties)

	Quantile of Risk		Dep=0		Dep=1		Total	H-L
	Low	High	Actual	Expect	Actual	Expect	Obs	Value
1	0.3693	0.3855	8	8.64936	6	5.35064	14	0.12756
2	0.3858	0.3902	12	9.18254	3	5.81746	15	2.22900
3	0.3902	0.3922	8	8.52392	6	5.47608	14	0.08233
4	0.3922	0.3944	9	9.09873	6	5.90127	15	0.00272
5	0.3945	0.3965	10	8.46316	4	5.53684	14	0.70565
6	0.3965	0.3987	10	9.03773	5	5.96227	15	0.25776
7	0.3987	0.3999	4	8.40777	10	5.59223	14	5.78494
8	0.3999	0.4024	7	8.98528	8	6.01472	15	1.09393
9	0.4025	0.4137	10	8.30286	4	5.69714	14	0.85247
10	0.4137	0.5298	9	8.34793	6	6.65207	15	0.11485
		Total	87	86.9993	58	58.0007	145	11.2512

H-L Statistic	11.2512	P	
Andrews Statistic	10.8662	P	

REM VS LEVFINLIAB

Goodness-of-Fit Evaluation for Binary Specification
Andrews and Hosmer-Lemeshow
Tests
Equation: UNTITLED
Date: 02/03/12 Time: 13:54
Grouping based upon predicted risk (randomize ties)

	Quantile of Risk		Dep=0		Dep=1		Total	H-L
	Low	High	Actual	Expect	Actual	Expect	Obs	Value
1	0.0279	0.3302	12	12.7510	5	4.24897	17	0.17698
2	0.3391	0.3798	11	10.8328	6	6.16721	17	0.00711
3	0.3815	0.4037	13	10.9293	5	7.07073	18	0.99876
4	0.4074	0.4310	13	9.90536	4	7.09464	17	2.31670
5	0.4312	0.4583	11	9.99458	7	8.00542	18	0.22741
6	0.4587	0.4887	7	8.96628	10	8.03372	17	0.91245
7	0.4906	0.5262	6	8.39527	11	8.60473	17	1.35016
8	0.5269	0.5809	9	7.93033	9	10.0697	18	0.25791
9	0.5819	0.5920	7	6.98171	10	10.0183	17	8.1E-05
10	0.5920	0.6141	5	7.31338	13	10.6866	18	1.23256
		Total	94	94.0000	80	80.0000	174	7.48014

H-L Statistic	7.4801	Prob. Chi-Sq(8)	0.4858
Andrews Statistic	9.1413	Prob. Chi-Sq(10)	0.5187

REM VS LEVTLIAB

Goodness-of-Fit Evaluation for Binary Specification
Andrews and Hosmer-Lemeshow
Tests
Equation: UNTITLED
Date: 02/03/12 Time: 13:58
Grouping based upon predicted risk (randomize ties)

	Quantile of Risk		Dep=0		Dep=1		Total	H-L
	Low	High	Actual	Expect	Actual	Expect	Obs	Value
1	0.0770	0.3924	11	11.8063	6	5.19375	17	0.18022
2	0.3940	0.4393	9	9.85347	8	7.14653	17	0.17585
3	0.4397	0.4539	14	9.93784	4	8.06216	18	3.70718
4	0.4544	0.4599	9	9.23797	8	7.76203	17	0.01343
5	0.4601	0.4700	12	9.61561	6	8.38439	18	1.26934
6	0.4706	0.4798	9	8.91513	8	8.08487	17	0.00170
7	0.4800	0.4892	6	8.77664	11	8.22336	17	1.81598
8	0.4894	0.4996	7	9.10007	11	8.89993	18	0.98019
9	0.5013	0.5175	9	8.34434	8	8.65566	17	0.10118
10	0.5178	0.5940	8	8.41267	10	9.58733	18	0.03801
		Total	94	94.0000	80	80.0000	174	8.28307

H-L Statistic	8.2831	Prob. Chi-Sq(8)	0.4063
Andrews Statistic	8.6943	Prob. Chi-Sq(10)	0.5613

DTEM VS LEVFINLIAB

Goodness-of-Fit Evaluation for Binary Specification
Andrews and Hosmer-Lemeshow
Tests
Equation: UNTITLED
Date: 02/03/12 Time: 14:02
Grouping based upon predicted risk (randomize ties)

	Quantile of Risk		Dep=0		Dep=1		Total	H-L
	Low	High	Actual	Expect	Actual	Expect	Obs	Value
1	0.0120	0.1967	17	14.5617	0	2.43834	17	2.84663
2	0.2035	0.2354	12	13.2278	5	3.77222	17	0.51357
3	0.2368	0.2550	11	13.5715	7	4.42852	18	1.98040
4	0.2581	0.2782	12	12.4695	5	4.53046	17	0.06634
5	0.2783	0.3023	14	12.7760	4	5.22397	18	0.40403
6	0.3026	0.3301	11	11.6415	6	5.35853	17	0.11214
7	0.3319	0.3660	11	11.1067	6	5.89326	17	0.00296
8	0.3667	0.4218	9	10.8073	9	7.19267	18	0.75637
9	0.4228	0.4336	8	9.67690	9	7.32310	17	0.67458
10	0.4336	0.4577	15	10.1611	3	7.83892	18	5.29143
		Total	120	120.000	54	54.0000	174	12.6485

H-L Statistic	12.6485	Prob. Chi-Sq(8)	0.1245
Andrews Statistic	27.4150	Prob. Chi-Sq(10)	0.0022

DTEM VS LEVTLIAB

Goodness-of-Fit Evaluation for Binary Specification
Andrews and Hosmer-Lemeshow
Tests
Equation: UNTITLED
Date: 02/03/12 Time: 14:06
Grouping based upon predicted risk (randomize ties)

	Quantile of Risk		Dep=0		Dep=1		Total	H-L
	Low	High	Actual	Expect	Actual	Expect	Obs	Value
1	0.0002	0.1392	16	15.6554	1	1.34461	17	0.09591
2	0.1419	0.2323	15	13.7247	2	3.27535	17	0.61510
3	0.2331	0.2679	10	13.4455	8	4.55454	18	3.48936
4	0.2694	0.2837	15	12.3256	2	4.67442	17	2.11044
5	0.2841	0.3111	13	12.6080	5	5.39201	18	0.04069
6	0.3127	0.3389	11	11.4433	6	5.55666	17	0.05255
7	0.3396	0.3668	11	11.0412	6	5.95884	17	0.00044
8	0.3673	0.3986	11	11.1109	7	6.88914	18	0.00289
9	0.4040	0.4551	9	9.71306	8	7.28694	17	0.12213
10	0.4562	0.6953	9	8.93250	9	9.06750	18	0.00101
		Total	120	120.000	54	54.0000	174	6.53051

H-L Statistic	6.5305	P	
Andrews Statistic	9.3576	P	

APPENDIX G3: OMITTED VARIABLE TEST RESULTS

AEM VS LEVFINLIAB(TESTED ROE, FINBURDEN & LogTA)

Omitted Variables Test
Equation: UNTITLED
Specification: AEM C LEVFINLIAB
Omitted Variables: ROE FINBURDEN LOGTA

	Value	df	Probability
Likelihood ratio	4.567218	3	0.2064

LR test summary:

	Value	df
Restricted LogL	-93.87124	143
Unrestricted LogL	-91.58764	140

Unrestricted Test Equation:
Dependent Variable: AEM
Method: ML - Binary Logit (Quadratic hill climbing)
Date: 02/03/12 Time: 13:44
Sample: 1900 2044
Included observations: 145
Convergence achieved after 5 iterations
Covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-2.373392	1.878447	-1.263486	0.2064
LEVFINLIAB	1.400681	0.538454	2.601303	0.0093
ROE	0.057930	0.057870	1.001045	0.3168
FINBURDEN	0.285937	0.357923	0.798879	0.4244
LOGTA	0.072599	0.111345	0.652019	0.5144

McFadden R-squared	0.061474	Mean dependent var	0.400000
S.D. dependent var	0.491596	S.E. of regression	0.479048
Akaike info criterion	1.332243	Sum squared resid	32.12820
Schwarz criterion	1.434889	Log likelihood	-91.58764
Hannan-Quinn criter.	1.373952	Deviance	183.1753
Restr. deviance	195.1734	Restr. log likelihood	-97.58669
LR statistic	11.99811	Avg. log likelihood	-0.631639
Prob(LR statistic)	0.017365		

Obs with Dep=0	87	Total obs	145
Obs with Dep=1	58		

AEM VS LEVTLIAB (TESTED ROE, FINBURDEN & LogTA)

Omitted Variables Test
Equation: UNTITLED
Specification: AEM C LEVTLIAB
Omitted Variables: ROE FINBURDEN LOGTA

	Value	df	Probability
Likelihood ratio	3.466035	3	0.3252

LR test summary:

	Value	df
Restricted LogL	-97.46876	143
Unrestricted LogL	-95.73574	140

Unrestricted Test Equation:
Dependent Variable: AEM
Method: ML - Binary Probit (Quadratic hill climbing)
Date: 02/03/12 Time: 13:51
Sample: 1900 2044
Included observations: 145
Convergence achieved after 5 iterations
Covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-0.125482	1.140020	-0.110070	0.9124
LEVTLIAB	0.114353	0.261244	0.437726	0.6616
ROE	0.035672	0.035551	1.003396	0.3157
FINBURDEN	0.119236	0.214036	0.557081	0.5775
LOGTA	-0.018642	0.067174	-0.277523	0.7814

McFadden R-squared	0.018967	Mean dependent var	0.400000
S.D. dependent var	0.491596	S.E. of regression	0.493068
Akaike info criterion	1.389459	Sum squared resid	34.03618
Schwarz criterion	1.492105	Log likelihood	-95.73574
Hannan-Quinn criter.	1.431167	Deviance	191.4715
Restr. deviance	195.1734	Restr. log likelihood	-97.58669
LR statistic	3.701899	Avg. log likelihood	-0.660246
Prob(LR statistic)	0.447850		

Obs with Dep=0	87	Total obs	145
Obs with Dep=1	58		

REM VS LEVFINLIAB(TESTED ROE, FINBURDEN & LogTA)

Omitted Variables Test
Equation: UNTITLED
Specification: REM C LEVFINLIAB
Omitted Variables: ROE FINBURDEN LOGTA

	Value	df	Probability
Likelihood ratio	4.911753	3	0.1784

LR test summary:

	Value	df
Restricted LogL	-115.7071	172
Unrestricted LogL	-113.2512	169

Unrestricted Test Equation:
Dependent Variable: REM
Method: ML - Binary Logit (Quadratic hill climbing)
Date: 02/03/12 Time: 13:57
Sample: 1900 2073
Included observations: 174
Convergence achieved after 5 iterations
Covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-0.444664	1.644593	-0.270379	0.7869
LEVFINLIAB	-1.309506	0.514488	-2.545258	0.0109
ROE	-0.093908	0.092719	-1.012830	0.3111
FINBURDEN	-0.272794	0.317299	-0.859739	0.3899
LOGTA	0.063854	0.098417	0.648808	0.5165

McFadden R-squared	0.056584	Mean dependent var	0.459770
S.D. dependent var	0.499817	S.E. of regression	0.484295
Akaike info criterion	1.359209	Sum squared resid	39.63749
Schwarz criterion	1.449987	Log likelihood	-113.2512
Hannan-Quinn criter.	1.396034	Deviance	226.5024
Restr. deviance	240.0876	Restr. log likelihood	-120.0438
LR statistic	13.58514	Avg. log likelihood	-0.650869
Prob(LR statistic)	0.008744		

Obs with Dep=0	94	Total obs	174
Obs with Dep=1	80		

REM VS LEVTLIAB (TESTED ROE, FINBURDEN & LogTA)

Omitted Variables Test
Equation: UNTITLED
Specification: REM C LEVTLIAB
Omitted Variables: ROE FINBURDEN LOGTA

	Value	df	Probability
Likelihood ratio	4.835590	3	0.1842

LR test summary:

	Value	df
Restricted LogL	-118.2787	172
Unrestricted LogL	-115.8609	169

Unrestricted Test Equation:
Dependent Variable: REM
Method: ML - Binary Logit (Quadratic hill climbing)
Date: 02/03/12 Time: 14:01
Sample: 1900 2073
Included observations: 174
Convergence achieved after 5 iterations
Covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-1.124839	1.662093	-0.676761	0.4986
LEVTLIAB	-0.767832	0.538814	-1.425043	0.1541
ROE	-0.076780	0.078346	-0.980009	0.3271
FINBURDEN	-0.190067	0.311457	-0.610251	0.5417
LOGTA	0.101481	0.096719	1.049228	0.2941

McFadden R-squared	0.034845	Mean dependent var	0.459770
S.D. dependent var	0.499817	S.E. of regression	0.495181
Akaike info criterion	1.389205	Sum squared resid	41.43960
Schwarz criterion	1.479983	Log likelihood	-115.8609
Hannan-Quinn criter.	1.426030	Deviance	231.7217
Restr. deviance	240.0876	Restr. log likelihood	-120.0438
LR statistic	8.365827	Avg. log likelihood	-0.665867
Prob(LR statistic)	0.079060		

Obs with Dep=0	94	Total obs	174
Obs with Dep=1	80		

DEM VS LEVFINLIAB (TESTED ROE, FINBURDEN & LogTA)

Omitted Variables Test
Equation: UNTITLED
Specification: DTEM C LEVFINLIAB
Omitted Variables: ROE FINBURDEN LOGTA

	Value	df	Probability
Likelihood ratio	5.425211	3	0.1432

LR test summary:

	Value	df
Restricted LogL	-104.0202	172
Unrestricted LogL	-101.3076	169

Unrestricted Test Equation:
Dependent Variable: DTEM
Method: ML - Binary Logit (Quadratic hill climbing)
Date: 02/03/12 Time: 14:04
Sample: 1900 2073
Included observations: 174
Convergence achieved after 5 iterations
Covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-3.150477	1.790823	-1.759234	0.0785
LEVFINLIAB	-1.187905	0.567951	-2.091562	0.0365
ROE	-0.044009	0.046630	-0.943782	0.3453
FINBURDEN	0.486360	0.342435	1.420301	0.1555
LOGTA	0.163688	0.106872	1.531623	0.1256

McFadden R-squared	0.059978	Mean dependent var	0.310345
S.D. dependent var	0.463970	S.E. of regression	0.453440
Akaike info criterion	1.221926	Sum squared resid	34.74767
Schwarz criterion	1.312703	Log likelihood	-101.3076
Hannan-Quinn criter.	1.258751	Deviance	202.6151
Restr. deviance	215.5429	Restr. log likelihood	-107.7715
LR statistic	12.92783	Avg. log likelihood	-0.582227
Prob(LR statistic)	0.011634		

Obs with Dep=0	120	Total obs	174
Obs with Dep=1	54		

DTEM VS LEVTLIAB (TESTED ROE, FINBURDEN & LogTA)

Omitted Variables Test
Equation: UNTITLED
Specification: DTEM C LEVTLIAB
Omitted Variables: ROE FINBURDEN LOGTA

	Value	df	Probability
Likelihood ratio	6.910863	3	0.0748

LR test summary:

	Value	df
Restricted LogL	-101.3247	172
Unrestricted LogL	-97.86926	169

Unrestricted Test Equation:
Dependent Variable: DTEM
Method: ML - Binary Logit (Quadratic hill climbing)
Date: 02/03/12 Time: 14:05
Sample: 1900 2073
Included observations: 174
Convergence achieved after 5 iterations
Covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-1.536179	1.908975	-0.804714	0.4210
LEVTLIAB	-2.926855	1.021169	-2.866180	0.0042
ROE	-0.055480	0.047326	-1.172299	0.2411
FINBURDEN	0.570186	0.348764	1.634877	0.1021
LOGTA	0.143166	0.107938	1.326372	0.1847

McFadden R-squared	0.091882	Mean dependent var	0.310345
S.D. dependent var	0.463970	S.E. of regression	0.444250
Akaike info criterion	1.182405	Sum squared resid	33.35345
Schwarz criterion	1.273183	Log likelihood	-97.86926
Hannan-Quinn criter.	1.219230	Deviance	195.7385
Restr. deviance	215.5429	Restr. log likelihood	-107.7715
LR statistic	19.80442	Avg. log likelihood	-0.562467
Prob(LR statistic)	0.000546		

Obs with Dep=0	120	Total obs	174
Obs with Dep=1	54		