# The Impact of Ownership Structure and External Audit on Accruals and Real Activities Earnings Management in Jordan

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# Abstract

Agency theory predicts that ownership structure monitoring mechanisms can effectively align the interests of managers with those of the shareholders. In additions, it views external audit as a function that lends credibility to the information disclosed in financial reports. Prior research sustains these predictions in developed markets such as in the US. However, institutional settings such as ownership structure and regulatory oversight bodies differ around the world and accordingly, the sustainability of agency theory predictions might also differ. Further, little research differentiates between accruals and real activities earnings management in contexts such as the Jordanian where ownership is concentrated, investors' protection is weak and capital market is still evolving. Therefore, this study addresses these issues and investigates the validity of agency theory predictions concerning the effectiveness of ownership structure and external audit monitoring mechanisms in mitigating both accruals and real activities earnings management in Jordan.

In this study, four measures of earnings management are estimated through the models of Kothari et al. (2005) and Roychowdhury (2006). Magnitudes of abnormal accruals are obtained from the former model and magnitudes of abnormal cash flow from operating activities, abnormal production costs and abnormal discretionary expenses are obtained from the latter model. As a result, four empirical models are constructed in which the estimated earnings management measures represent the dependent variables. Independent variables in each empirical model are the same and are classified into three categories: first, ownership structure variables include ownership concentration, controlling shareholders, institutional ownership and foreign ownership. The second category includes external audit quality measured by auditor size. Third, a set of control variables include board size, leverage, growth and firm size.

These models are tested using the population of all manufacturing firms listed on Amman Stock Exchange over the period 2005 - 2008. The results reveal that controlling shareholders appear effective in constraining accruals manipulations, sales manipulations and production costs manipulations. As for manipulations in discretionary expenses, the results show that only high levels of institutional ownership can effectively deter abnormal discretionary expenses. Moreover, contrary to the popular convention, the results suggest that non-big 5 auditors in Jordan who in fact mitigate abnormal accruals not big 5 auditors. Finally, no evidence is found supportive of the substitutive effect. That is, firms that are prevented from managing their earnings through accruals due to the enhanced scrutiny of non-big 5 auditors, do not resort to sales manipulations, production costs manipulations or discretionary expenses manipulations as substitutes to achieve desired levels of reported earnings.

Given these findings, the present study provides understanding and extension for agency theory literature that focuses on earnings management in general and in emerging markets in particular. It highlights challenges to applicability of agency theory in emerging markets where corporate governance mechanisms are supposed to mitigate the practice of earnings management. As such, these findings could be helpful to investors and other stakeholders in making rational contractual decisions, especially when such decisions involve non-owner-controlled firms. Finally, Amman Stock Exchange could impose the corporate governance codes that actively promote internal corporate governance mechanisms to restrain accruals and real activities earnings management.

# Declaration

I declare that the work in this thesis was carried out in accordance with the regulations of the University of Gloucestershire and is original except where indicated by specific reference in the text. No part of the thesis has been submitted as part of any other academic award. The thesis has not been presented to any other education institution in the United Kingdom or overseas.

Any views expressed in the thesis are those of the author and in no way represent those of the University.

Mohammed Idris

Signature

Date

# Dedication

I dedicate this thesis to my parents, wife, brothers and sisters for their love, support and

encouragement at every step of the way.

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All praise is due to Allah, The Almighty. I thank Him for providing me with the strength to complete this thesis.

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# **Chapter One**

# Introduction

#### 1.1. Overview:

Financial reporting represents a means that allows managers to communicate firms' economic performance to stakeholders. It also provides a relatively low-cost and credible means that helps best-performing firms to distinguish themselves from poor-performing firms in the economy (Healy and Wahlen, 1999). However, managers may engage in earnings management practices to report earnings that do not accurately reflect their firms' underlying economic positions (Bedard et al., 2004). As such, the integrity of financial reporting would be distorted and users of financial reports would be misled.

In fact, accounting scandals such as Enron and WorldCom have drawn public attention towards managers' opportunistic utilisation of earnings management (Jiraporn et al., 2008). Agency theory posits that managers' decisions are motivated by self-interest behaviour. On this basis, researchers such as Arnold and Lange (2004) propose that the accounting scandal at Enron have occurred because managers manipulated Enron's accounts to maximise their interests at the expense of other stakeholders. Such harmful effects have indeed lead researchers to use agency theory as a framework (i.e. opportunistic hypothesis) in most of accounting research in earnings management (Louis and Robinson, 2005; Alexander, 2010). One stream of this research argues that the financial reporting process of publically traded companies includes monitoring mechanisms that enhance the accountability and transparency of financial reports (Rezaee, 2005), and hence protect stakeholders' interests from the harmful consequences of earnings management. As part of these monitoring mechanisms, agency theory suggests that ownership structure mechanisms align the interests of managements with those of the shareholders. Moreover, it views external audit as the most important, independent and professional mechanism in terms of control and monitoring (Nordberg, 2011). As such, these corporate governance mechanisms are supposed to act as deterrence devices and preserve shareholders wealth.

Bearing in mind that earnings management practices are classified accruals and real activities manipulations (McVay, 2006), the effectiveness of corporate governance monitoring mechanisms in constraining accruals earnings management has been extensively investigated (e.g. Warfield et al., 1995; Yeo et al., 2002; Wang, 2006; Teshima and Shuto, 2008; Ali et al., 2008). This scholarly evidence suggests that the effectiveness of corporate governance deterrence mechanisms varies as institutional settings, governance structures, and litigation environments differ. Thus, previous conclusions are somewhat inconclusive concerning accruals earnings management.

As for real activity earnings management, Graham et al. (2005) find that this type of manipulation has not received as much attention in the archival literature. Accordingly, the effect of corporate governance mechanisms on real activities earnings management has not been investigated as extensively as accruals earnings management outside the US market. Examples of US-based studies include, Cohen et al. (2008), Demers and Wang (2010) and Li (2010). Therefore, research in this particular area represents a fertile area for further investigation in general, and in emerging markets in particular.

In general, the apparent difference of volume and timing between accruals-based and real activities-based earnings management studies might be due to a lack of causal models that accurately measures earnings manipulation through real activities in early studies (Alexander, 2010). Since the introduction of Roychowdhury's model in 2006, however, a noticeable

amount of work has been produced on real activities earnings management (e.g. Cohen et al., 2008; Cohen and Zarowin, 2010; Zang, 2012). Jiambalvo (1996) considers accruals analysis as a comprehensive measure because accruals comprise the effect of both accounting choices and operating, financing and investment real decisions. Nevertheless, the distinction between the two types of manipulation is important for three reasons. First, unlike accruals, real activities earnings management has direct cash flow consequences (Gunny, 2010). Second, firms may use both types of manipulation simultaneously. This imposes the problem of arriving at tentative conclusions about the overall effect of earnings management has in fact been used at recent scandals such as Enron, it has often been overlooked in the literature (Yaping, 2005).

In addition, the extent to which corporate governance mechanisms affect real activities earnings management differs between ownership structures and external audit. Specifically, external auditors cannot challenge real economic actions made in the ordinary course of business (Graham et al., 2005). Thus, enhancing the scrutiny of external auditors over accruals earnings management may drive managers to substitute the reduction of accrual earnings management with real activity earnings management. This argument gave rise to a new stream of research that investigates the substitutive effect (e.g. Garver, 2009; Gunny, 2010; Cohen and Zarowin, 2010).

Against all economical difficulties and political circumstances, Amman Stock Exchange has witnessed significant increases in the number of listed companies, trading volumes and market capitalisation in recent years. Apparently, foreign ownership has contributed to that increase as Jordan became one of the favourable investment destinations in the Middle East. Given these characteristics, it is intuitive to expect the presence of earnings management in Jordan. Hence, the Jordanian business environment has distinctive characteristics that make Jordan a well suited case to examine earnings management in light of agency theory predictions. Therefore, by investigating the effectiveness of ownership structures and external audit on both types of earnings management in Jordan, the present research is expected to reveal new perceptions about real activities earnings management in general and emerging markets in particular.

# **1.2. Research Motivations:**

This research is driven by the following motivations.

1- The phenomenon of earnings management has intrinsic importance, affecting stakeholders not only in the US, but also stakeholders in other countries including Jordan. As a matter of fact, little research has been conducted to document the pervasiveness of accruals earnings management, and no research is found considering the more costly real activities earnings management in Jordan. Therefore, reliable results would be of great value to regulators, practitioners, investors and other stakeholders. That is, although Jordan adopts the International Financial Reporting Standards (IFRS), regulatory bodies in Jordan interfere in the implementation of these standards. For instance, Amman Stock Exchange banned listed companies from the use of fair value evaluation of property, plant and equipment stated in the International Accounting Standard No. 16. As such, regulators in Jordan can limit the degree of flexibility offered to managers if empirical evidence is provided about the pervasiveness of earnings management in Jordan. Further, such evidence would

emphasise the importance for stakeholders to discount the amounts of managed earnings and hence, make informed business decisions.

- 2- If the findings of this research document both types of earnings management in Jordan, it is important to specify whether limiting managerial discretion over accruals improves earnings quality; limiting accruals earnings management might induce the more costly real activities earnings management (Zang, 2012). The findings of US-based research document that the Sarbanes-Oxley Act has led to decrease in the use of accruals earnings management. However, this induced managers to use real activities earnings management to substitute the reduction in accruals earnings management (e.g. Graham et al., 2005; Cohen et al., 2008). Therefore, should the presence of real activities earnings management be documented in this research, regulatory bodies in Jordan could incorporate this finding in future reforms in order to avoid undesirable consequences such as those exist in the US. Moreover, a study that considers the trade-off between accruals and real activities earnings management would extend earnings management research outside the US in general and Jordan in particular.
- 3- There is a growing interest from regulators towards improving the governance of corporations in Jordan. Good corporate governance is a part of Jordan's reform efforts to create a more attractive investment climate and protect investors interests (Regional Corporate Governance Working Group, 2003). Nevertheless, the Jordanian guidance of good corporate governance has not been actually enforced (Shanikat and Abbadi, 2011) and investors protection in Jordan is weak (World Bank, 2009). The dearth of a research considering the effectiveness of corporate governance monitoring mechanisms in deterring both types of earnings management practices in Jordan shows that meaningful results would positively contribute to the ongoing regulatory reforms. For instance, empirical evidence that leads to an enhanced corporate

governance structure in Jordan would help the capital market avoid difficulties in convincing investors that their investments are managed responsibly.

- 4- The fact that Jordan is considered one of the favourable investment destinations in the Middle East (Jaafar and El-Shawa, 2009), provides strong incentive to investigate the role played by foreign investors in the governance of their corporate shareholdings. Bearing in mind that there is little research on the effect of foreign ownership on accruals earnings management, it is important to mention that the effect of foreign ownership on ownership on real activities earnings management has never been investigated before.
- 5- Although earnings management research has typically been implemented in the US (Jaime and Noguer, 2004), there is a considerable body of research examines the effect of corporate governance monitoring mechanisms on accruals earnings management in emerging markets such as Singapore (Yeo et al., 2002) and Malaysia (Ali et al., 2008). However, previous studies have turned up contradicting evidence concerning agency predictions of (i) the role of ownership structure mechanisms in aligning the interests of managers with those of shareholders, and (ii) the role of external auditors in providing credible and reliable information. Such inconclusive conclusions seem to be largely affected by differences in institutional settings, governance structures, and litigation environments. For instance, Maijoor and Vanstraelen (2006) find that audit quality provided by big auditors is affected by audit environments in different nations. Therefore, there is a strong incentive to empirically examine these relationships in Jordan. In addition, no research is found considering the effect of ownership structure deterrence mechanisms on real activities earnings management in developing markets. This provides another strong incentive to investigate these relationships in Jordan.

#### **1.3. Research Objectives and Questions:**

This study aims mainly to investigate the effectiveness of ownership structure and external audit corporate governance mechanisms in mitigating earnings management practices in Jordan. Three objectives are derived from the aim and accordingly, four research questions are formed to achieve the research objectives.

. The first objective is to examine the effect ownership structure mechanisms in aligning the interests of managers with those of shareholders. The second objective is to investigate whether clients of big 5 auditors in Jordan report lower levels of abnormal accruals than those reported by clients of non-big 5 auditors in Jordan. If so, then the final objective is to investigate whether the enhanced audit quality provided by big 5 auditors tempt managers to engage more in real activities earnings management that is beyond the scrutiny of external auditors.

The following research questions are developed in line with the research objectives. Questions number 1 and 2 are formed to achieve the first objective. The remaining two questions are assigned to achieve the second and third objectives, respectively.

- 1- What is the relationship between ownership structure monitoring mechanisms and accruals earnings management in Jordan?
- 2- What is the relationship between ownership structure monitoring mechanisms and real activities earnings management in Jordan?
- 3- Has the scrutiny of auditor size been effective in constraining accruals earnings management in Jordan?
- 4- If yes, have managers in Jordan been induced to substitute the reduction in accruals earnings management with real activities earnings management?

## **1.4. Research Methodology:**

This research is primarily post-positivist due to the belief that there are no universal solving conclusions to the phenomenon of earnings management. The methodological approach of post-positivism is primarily quantitative. Research questions and/or hypotheses are manipulated in propositional form and subjected to empirical tests to verify them.

To accomplish the research objectives empirically, an explanatory study is conducted. It involves the collection and analysis of secondary data to establish relationships between earnings management and corporate governance deterrence mechanisms in Jordan. Following the majority of accounting research on earnings management, the framework of agency theory is used where the opportunistic managerial behaviour is hypothesised.

The data set of the current study comprises financial and non-financial information about all manufacturing firms listed on Amman Stock exchange (ASE) over the period 2005 - 2008. Data of manufacturing firms are used because IFRS offers more flexibility to managements of manufacturing firms to choose among a number of treatment alternatives for the same accounting transaction (e.g. several measurement options). The study period is restricted to those four years in particular due to the layout of data in ASE data base.

Four proxies for earnings management are measured in this study. The first is abnormal accruals estimated through the model of Kothari et al. (2005). The remaining three dependent variables are abnormal cash flow from operating activities, abnormal production costs and abnormal discretionary expenses all estimated through the model of Roychowdhury (2006). Independent variables included in this study are ownership concentration, controlling shareholders, institutional ownership, foreign ownership and the only non-ownership structure independent variable of big 5 auditors in Jordan.

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As a result, four empirical models are developed to examine relationships between dependent and independent variables. Pooled cross-sectional multiple regression analyses are conducted using ordinary least squares method to estimate the empirical models. Consequently, research hypotheses are tested and statistical inferences are made. Finally, theoretical and practical implications are concluded so as to accomplish the objectives of this research.

## **1.5.** Contributions to Existing Knowledge:

The present research contributes to existing knowledge on three levels: the fields of earnings management and corporate governance as a whole, emerging markets level and country level (i.e. Jordan). The following is a summary of the theoretical and methodological contributions.

- 1- Accruals-based earnings management has been the primary focus of earnings management research until recently (Xu et al., 2007). That is, real activity earnings management has not received as much attention in the archival literature relative to accruals earnings management (Graham et al., 2005). Currently, existing literature on real activities earnings management is still US-based. Hence, evidence documenting the presence of real activities earnings management in Jordan would contribute to the ongoing research by filling the gap concerning the pervasiveness of the costly real activities earnings management in emerging markets.
- 2- To achieve the first contribution, the model of Roychowdhury (2006) is employed to compute abnormal levels of real manipulations. To the best of the researcher's knowledge, no research has yet to employ this model using Jordanian data.
- 3- Unlike real activities earnings management, the presence of accruals earnings management has already been documented in Jordan (e.g. Al-Fayoumi et al., 2010;

Shubita and Shubita, 2010). However, existing studies employ the modified Jones model to estimate abnormal accruals without controlling for firms' performance. By employing the model of Kothari et al. (2005), this research is the first to control for performance in the estimation of abnormal accruals in Jordan.

- 4- To the best of the researcher's knowledge, this research considers abnormal levels of real manipulations in absolute terms for the first time. Although effects of corporate governance mechanisms on magnitudes of abnormal accruals have widely been investigated in the literature, such effects on magnitudes of real earnings manipulations have never been tested before. In addition, effects of corporate governance mechanisms on signed abnormal current accruals and abnormal real earnings manipulations are also examined in this research unlike previous research conducted using Jordanian data.
- 5- Fields et al. (2001) argues that previous research examining a single type of earnings management imposes the problem of arriving at tentative conclusions about the overall effect of earnings management activities because firms usually use both types of manipulation simultaneously. In the same vein, this study investigates the effect of ownership structure corporate governance mechanisms on accruals and real activities earnings management in order to provide more reliable conclusions. Accordingly, this study is the first to comprehensively examine the effectiveness of ownership structure mechanism in deterring both types of earnings management in emerging markets in general and Jordan in particular.
- 6- The measurement of managerial ownership in the extant research requires data about proportions of shares held by directors and officers in a firm (e.g. Warfield et al., 1995). However, a review of the literature shows that such information are not necessarily available in databases in countries outside the US and UK. The database

in Amman Stock Exchange (ASE) suffers from such limitation. Therefore, the dummy variable approach in Peasnell et al. (2005) has been modified to proxy for managerial ownership as the largest shareholder who occupies the position of either chairman of the board or chief executive office. The novelty of this proxy is expected to overcome date limitation not only in the database of ASE but also any other database that suffers from similar limitation. As such, investigating the effect of managerial ownership (i.e. controlling shareholder) on both types of earnings management in Jordan for the first time contributes to the current debate of the effectiveness of managerial ownership in contexts where ownership is not dispersed as in the US and UK.

- 7- In theory, foreign investors are expected to improve the governance of their shareholdings (Leuz et al., 2009). However, a review of the literature shows that no research has ever examined the effect of foreign ownership on real activities earnings management, and little research on accruals earnings management. Therefore, this research advances new theoretical perceptions in the fields of corporate governance and earnings management by empirically investigating the effect of foreign ownership on both types of earnings management.
- 8- Last but not least, research examining the substitutive effect between the accruals and real activities earnings management is still young even in the US market. First, there is a new stream of research that examines the effect of enhancing the scrutiny of external audit, proxied by auditor size, over abnormal accruals on increasing the use of real activities earnings management (e.g. Cohen and Zarowin, 2010). Second, this research also investigates the substitutive effect in Jordan by employing the model developed in Zang (2012) that is based on costs associated with each type of manipulation. Therefore, with little research investigating issue in the US, this

research is the first to employ these new approaches in the setting of emerging markets.

## **1.6. Structure of the Thesis:**

This chapter has demonstrated how earnings management has an intrinsic importance affecting stakeholders such as shareholders, investors, and regulators. A brief discussion has shown that there are several motivations for such study to examine the widely accepted agency theory predictions in the setting of Jordan. Consequently, research objectives have been identified and research questions have been devised. Finally, contributions of this study to existing research on earnings management have been presented.

The remainder of this thesis has been structured in a manner that serves and helps achieve the objective of this research as follows,

Chapters two and three provide a background for the current study. Beginning with chapter two, an overview is provided about Jordan's economy, capital market, accounting and audit professions, corporate governance and ownership structure. The chapter shows the distinctive characteristics of the Jordanian business environment that make Jordan a well suited case to study earnings management issues.

Chapter three aims mainly to establish a clear distinction between accruals and real activities earnings management. It first starts with a discussion of earnings management definitions based on three aspects: managerial intent, type and direction. The chapter also provides a critical review of methodological issues attached to earnings management research designs. Moreover, popular models used to detect and measure levels of earnings management in the extant studies are critically discussed. Accordingly, the chapter concludes that the models of Kothari et al. (2005) and Roychowdhury (2006) are most appropriate to estimate abnormal accruals and abnormal levels of real earnings manipulations, respectively.

As for the literature review, chapter four is dedicated to comprehensively review the literature on ownership structure monitoring mechanisms and the role of external audit. In an agency theory setting, prior literature considers ownership structure mechanisms (i.e. ownership concentration, controlling shareholders, institutional ownership and foreign ownership) and external audit as effective monitoring devises that deter earnings management practices. These views are critically evaluated in chapter. This chapter concludes that different settings, among other conclusions, largely affect the influence of the corporate governance mechanisms on earnings management. Hence, this chapter provide the rationale for examining these relationships in Jordan.

Research methodology is presented in chapter five. It first justifies the choice of postpositivist paradigm for this research. Second, the chapter details the measurement of earnings management proxies and independent variables. Afterwards, it demonstrates the logical development of research hypotheses. The chapter then describes the process of population section and data collection method. Finally, the choice for statistical methods used for the secondary analysis is justified.

Chapter six involves testing the hypothesised relationships between earnings management proxies and five of corporate governance deterrence mechanisms (i.e. ownership concentration, managerial ownership, institutional ownership, foreign ownership and external audit). Therefore, after the estimation of earnings management proxies, the statistical analysis in chapter six comprises four empirical models corresponding to each dependent variable, which are: abnormal accruals model, abnormal cash flow from operating activities model, abnormal production costs model, and abnormal discretionary expenses model. Eventually, the results obtained from multiple regression analyses are interpreted in line with findings of prior studies.

Chapter seven provides an overview of the research, summarises the findings and conclusions of the research, presents the contributions made to existing research and implication of the study, highlights the limitations of the study and suggests recommendations for future research.

# **Chapter Two**

# **Overview of Jordan**

#### 2.1. Introduction:

This chapter provides an overview of Jordan where the empirical study of this research takes place. The aim is to offer an overview of the Jordanian environment through knowing the economic situation, financial market, accounting and audit professions and corporate governance. The knowledge about these aspects of Jordan is essential. It shows how the Jordanian environment is different from other Arab and developed countries. Finally, it reviews the perceptions of professionals on earnings management practices in Jordan. Hence, this chapter provides the basis for the literature review and development of research hypotheses.

## 2.2. Background:

Jordan is an Arab country located in the Middle East. Although the whole population of Jordan is slightly over 6.1 million, around 40% of that population are accommodated in the capital city Amman. The official currency of Jordan is Jordanian Dinar, which is pegged to the USD at a fixed rate equals to 1.41 Dollars (Central bank of Jordan, 2011).

Jordan is classified as a developing country with limited sources of income. According to the Central bank of Jordan (2011), main sources of income come from,

- 1- Limited number of natural resources such as phosphate, potash and cement.
- 2- Foreign aid.
- 3- Taxes which represent two thirds of the overall income.
- 4- Foreign investments.
- 5- Proceeds from providing medical and education services to Arabs from neighbouring countries; and
- 6- Skilled and talented human capital. Jordanians have earned a reputation of being skilled, educated and well-trained workforce. By working in other countries whether as employees or by opening branches for local existing companies, Jordanians contribute to the local economy by injecting funds into local businesses. Further, the competitive cost of labour in Jordan makes Jordanians an ideal workforce for incoming businesses and potential investment ventures.

The lack of natural resources such as expensive minerals and water resource, and heavy industries imposes several challenges against promoting the country's economy to a higher level. The global financial crisis has also lead to a decrease of foreign aid amounts on which Jordan depends to fulfil its obligations. However, Jordan was able to alleviate the impact of the financial crisis through benefiting from the independence of its financial market from those in the Gulf area (Alnajjar et al., 2010). The stability and strong structure of Jordan's banks and capital market have made Jordan the best destination to which investment, trade and economic interaction can be transferred (Al-Anani, 2009). Moreover, unlike western countries, banks in Jordan are not pure investments banks and complex financial instruments are not used in Jordan. Hence, Jordan was less exposed to the quake as was the west (Alnajjar

et al., 2010). Table 2.1 shows some key economic indicators over the period from 2004 to 2010.

Table 2.1. Key confinite indicators of Jordan from 2004 to 2010								
Economic Indicator	2004	2005	2006	2007	2008	2009	2010	
Gross Domestic Product (GDP)	1 5 1 1	1 620	1 052	2 200	0 752	2.070	2 104	
Per capita (JD)	1,311	1,030	1,835	2,200	2,755	2,979	5,194	
Inflation (%)	3.4	3.5	6.3	5.4	13.9	-0.7	5.0	
Unemployment	12.5	14.8	14.0	13.1	12.7	12.9	12.5	
Exports (million JD)	4,222	4,704	5,751	6,496	8,657	7,749	8,650	
Imports (million JD)	6,626	8,408	9,380	11,118	13,559	11,573	12,644	

Table 2.1. Key economic indicators of Jordan from 2004 to 2010

Source: Indicators of National Accounts, Department of Statistics (2011)

In spite of the economical challenges and the surrounding political circumstances that dominate the region as in Iraq, the government has selected the route of continuous development in all fields. Long run strategies have been set for improving the essential needs of the populace such as, accommodations, transportations, telecommunications, all utilities and mainly, education and healthcare (Jordan Investment Board, 2007).

Moreover, a thorough reforming process took place to create a favourable business environment. Legislations concerning international investor protection have been enacted, the banking system has been strengthened and attractive tax incentives and custom duty exemptions have been offered. As a result, the ratio of external debt to GDP has decreased from 66.1% in 2004 to 23.6% in 2010 (Jordan Investment Board, 2011).

As a result of the attractive climate and incentive packages provided to investors by the government, Jordan became one of the favourable investment destinations in the Middle East (Jaafar and El-Shawa, 2009). They report that Amman Stock Exchange has witnessed significant increases in the number of listed companies, trading volumes and market capitalisation in recent years.

Given these economical and political circumstances, it is plausible to question the integrity of financial reports of listed firms in Jordan. Managers may engage in harmful earnings management practices to attract additional capital, obtain debt at low costs or even avoid high tax payments. This intuitively calls for investigating the effectiveness of current corporate governance deterrence mechanisms in Jordan.

## 2.3. Jordanian Capital Market "Amman Financial Market":

The establishment of public companies in Jordan has started long before establishing the Jordanian Securities market. In 1930, the Arab Bank was the first public shareholding company whose shares were traded. One year later, the flotation of Jordan Tobacco and Cigarettes Company took place. It was not until 1951 that Jordan Cement Factories went public. At that time, Jordanians traded public companies' shares through few brokerage firms in an unregulated market. In 1979, the number of trading transactions has risen to an extent with which it became impossible to continue without a financial market that organizes the issuance and trading of securities. This has led the Central Bank of Jordan to establish Amman Financial Market (AFM) (Jordan Securities Commission, 2011).

Due to a constant annual economic growth, the capital market adopted a reforming policy in 1997. The policy aimed mainly at improving the regulations of the market in compliance with international standards to enhance transparency and conditions of safe trading. As a result, the capital market has been restructured into three institutions to serve the purpose of distinguishing between the supervisory and legislative role and the executive role. The three institutions were and still named as: Jordan Securities Commission, Amman Stock Exchange

and Securities Depository Commission. The main role, duties and responsibilities of each institution are as follows,

#### 1- Jordan Securities Commission (JSC):

JSC is considered as the regulator of the Capital market. The commission has been given a superior power over the other two institutions in order to execute roles of supervision, regulating and monitoring. In addition, the JSC organises the disclosure and transparency of information pertaining to issuers, securities, insider trading and major shareholders.

Hence, the JSC has positively contributed to the restructuring process of the capital market in Jordan. It currently ensures a fair trading environment through the enactment of legal framework and the separation between the regulatory function and trading in accordance with international standards (JSC, 2011).

#### 2- Amman Stock Exchange (ASE):

ASE was established in March 1999 as a private and non-profit institution. This institution functions as an exchange for the trading of securities with a legal and financial independence. It is particularly concerned with the principles of transparency, fairness, liquidity, and efficiency. To that end, the exchange has implemented international standard regulations and listing system. Hence, ASE provides a secure and strong environment for its securities, and protects the rights of investors. In addition, ASE works directly with JSC and maintains strong connection with other exchanges and international organizations to act in accordance with international principles and best practices (ASE, 2011).

#### **3-** Securities Depository Commission (SDC):

SDC has started operating in May 1999. It aims to fulfil the task of ensuring a safe custody of securities ownership. The commission's main responsibilities include registration of securities, ownership transfer, clearance and settlement of trades and securities deposit (SDC, 2011).

# 2.4. Market Efficiency:

Despite the fact that ASE was one of the earliest stock exchange markets in the region and, all studies that examine its efficiency report that ASE is an inefficient market even at the weak form level. Examples of studies that investigate the efficiency of ASE include Atmeh (2003) and Al-barghoughti (2005). The former employs advanced statistical techniques like GARCH, whereas the later uses traditional statistical techniques such as Autocorrelation and the Run tests. Both results contend that ASE is inefficient at the weak form level of efficiency. Accordingly, both researchers recommend that existing and potential investors consider the implications of the findings in the process of making an investment decision pertaining to companies in which they are interested.

## 2.5. Accounting Profession:

In 1989, many companies voluntarily started adopting the International Accounting standards (IAS) based on the recommendation of Jordan Association of Certified Public Accountants (JACPA) to replace the then existing Jordanian Accounting Standards (JAS) which was introduced by Income tax department. This move was carried out because those local

Accounting Standards did not define guidelines of keeping accounting books and preparing annual reports (Rawashdeh, 2003).

In an effort to facilitate Jordan's plans for implementing privatisation and making ASE an internationally recognised market, the government enacted the "1997 Company Law" and the "2002 Securities Law" which mandate the adoption of the full version of IAS (Al-Akra et al., 2009). Those laws serve the purposes of ensuring holding legitimate accounts in compliance with the international accounting standards, and monitoring the disclosures of publicly traded companies in particular. For instance, Article No. 14 of Securities law No. 76 issued by Jordan Securities Commission states that "all institutions monitored by the Commission are subject to follow the International Accounting Standards in recording their financial information and disclose them to the public".

#### 2.6. Audit Profession:

Similar to the adoption of IAS, the adoption of the International Standards of Auditing (ISA) became compulsory in Jordan in 1998 to improve the overall status of financial reporting. Companies law of 1997 article 22 mandates all public shareholding companies, general partnerships, limited partnerships, private shareholding companies and foreign companies to prepare and present annual audited financial statements in accordance with international accounting and audit standards.

Recently, the enactment of the new Accountancy Profession Law 73 of 2003 has led to the establishment of the High Council for Accounting and Auditing headed by the Minister of Industry and Trade. Moreover, under the Accountancy Profession Law 73, the JACPA became the main professional body in Jordan. The law also states the roles of, and working

mechanism between, the two bodies. While the High Council is entrusted with the responsibility for the oversight of auditing profession, the JACPA is the responsible body for monitoring compliance with the accounting and auditing standards. The JACPA recommends the adoption of auditing standards to the High Council which is entrusted for approval of accounting and auditing standards (World Bank's Report on the Observance of Standards and Codes, 2004). As a result, a number of big international audit firms have entered the Jordanian audit market either on their own or as an affiliation to local audit firms (Naser et al., 2007).

## 2.7. Corporate Governance:

Corporate governance is the rule and practices that govern the relationship between the managers and shareholders of corporations, as well as stakeholders like employees and creditors. It contributes to growth and financial stability by reinforcement of market confidence, financial market integrity and economic efficiency (OECD 2004, p.1)

Corporate governance reforms have been an important agenda item in Jordan's pursuit of strengthened and sustainable economic growth since the 1990s (Jaafar and El-Shawa, 2009). Company Law of 1997 introduced the first provisions of the framework of governance-policy (Omran et al., 2008). However, it was not until 2006 that Jordan Securities Commission has issued a guidance of good corporate governance (Omran et al., 2008).

The current corporate governance guidelines are mainly derived from the governance framework of the Organisation of Economic Cooperation and Development (OECD). Good corporate governance is a part of Jordan's reform efforts to create a more attractive investment climate and protect investors interests (Regional Corporate Governance Working Group, 2003). Yet the Jordanian guidance of good corporate governance has not been actually enforced (Shanikat and Abbadi, 2011). Rather, regulations for these guidelines have been enacted in the amendments of Company Law of 1997 and Securities Law of 2002. These laws mainly require listed companies to appoint independent directors, form audit committees and monitor the compliance with the requirements of the Securities Law of 2002 (Al-Akra, et al., 2009).

Nevertheless, according to World Bank's "Doing Business" report (2009), investor protection in Jordan in 2008 was still below the average achieved by member states of the OECD. This implies that investors' rights are weak and hence, the capital market may face difficulties in convincing investors that their investments are managed responsibly. This could be attributable to the Jordanian corporate legal framework that has its origins in French civil law, as the findings of La Porta et al. (1999) and Nenova (2003) contend that French civil law countries have weaker legal protection of investors than it in common law countries.

#### 2.8. Ownership Structure:

Omran et al. (2008) find that ownership tends to be highly concentrated in Arab countries. This substantiates that ownership concentration is considered as a key characteristic of corporate governance in Arab countries to overcome the weakness of legal protection of investors.

Although Omran et al. (2008) report that concentrated ownership in Jordan is the lowest among Arab countries, they note that levels of private ownership in ASE in higher than those in other Arab countries such as the Egyptian, Tunisian and Omani. The reason for this difference is that the Jordanian government had to adopt economic measure including privatisation. Unable to repay its commitments, the government relinquished shares in 50 major corporations which substantially increased the market capitalisation of ASE listed equity shares (Al-Akra et al., 2009).

Moreover, approximately 80% of shareholdings are privately held by individuals and institutions, both foreign and Jordanian. The country adopts an open economic policy where both Arab and Non-Arab foreign investors are openly permitted to invest in most companies listed on Amman Stock Exchange (ASE) (Naser et al., 2007). For instance, total foreign investment amounted to 20% of total trading volume of shares in March 2002, divided almost equally between Arab and Non-Arab investors (ASE annual report, 2002). In addition, around half of private shareholdings (i.e. 40%) are owned by controlling individuals, families or institutions as they seek to manage companies in which they own large portion of shares (Jaafar and El-Shawa, 2009). Consequently, institutional ownership, foreign ownership and managerial ownership are also considered key corporate governance characteristic in Jordan.

To sum up, ownership structure mechanisms in Jordan comprise four types: ownership concentration, managerial ownership, institutional investors' ownership and foreign investors' ownership.

## 2.9. Earnings Management in Jordan:

A research conducted by Al-Khabash and Al-Thuneibat (2009) investigate whether earnings management practices exist among manufacturing and service Jordanian firms. Through a questionnaire survey, they attempt to explore external and internal auditors' perceptions regarding the existence, direction and legitimacy of earnings management in Jordan. The researchers document that external auditors believe that income increasing and decreasing earnings management is legitimately practiced in Jordan. From the perspective of internal auditors, earnings management exists legitimately merely to increase reported income.

However, the survey methodology suffers from several potential limitations (Graham et al, 2005). Apparently, this survey measures beliefs of external and internal auditors although their research implications confirm the need "*train external and internal auditors regarding earnings management techniques and measures of detection*" (p.58). This also indicates that some of the survey questions are misunderstood. To avoid such problems, this research relies on regression analysis; using popular models used the vast majority of accounting research on earnings management.

## 2.10. Summary:

Understanding the economic conditions and regulatory environment of Jordan retains a particular importance in this research. This chapter shows the distinctive characteristics of the Jordanian business environment that make Jordan a well suited case to study earnings management issues. First, regardless of limited sources of income and reliance on foreign aid and capital, Jordan is considered one of the favourable investment destinations in the Middle East. Second, listed firms in Jordan are mandated to prepare their financial reports in compliance with international accounting standards, where the responsibility of oversight is assigned to external auditors. Finally, Jordan is characterised with limited awareness of corporate governance (Shanikat and Abbadi, 2011) and weak legal investor protection (World Bank, 2009), which highlight the importance of ownership structure corporate governance mechanisms.

# **Chapter Three**

# Earnings Management: Definition, Types and Methodological Issues

# **3.1. Introduction:**

The literature has long recognised that mangers can adjust reported earnings through taking both accounting and real economic actions (Graham et al., 2005). However, compared to real activity-based earnings management, much of the academic research focuses on accruals-based earnings management (Roychowdhury, 2006). Since this study investigates both accruals-based and real activities-based earnings management, this chapter aims at establishing a clear distinction between the two types of earnings management.

The chapter proceeds as follows. The next section discusses definitions of earnings management with an emphasis on three aspect; managerial intent, types and directions. Section three establishes the differences between accruals-based and real activities-based earnings management. Section four reviews the methodological issues regarding earnings management research designs. The last section presents a critical review of the most popular models that are used in the literature to document earnings management, and identifies the most suitable models for this study.

# **3.2. Defining Earnings Management:**

In general, earnings management occurs when managers manipulate firms' reported earnings in a manner that does not accurately reflect the actual underlying economic performance of
firms (Healy and Wahlen, 1999). However, this broad definition is less likely to provide a sufficient understanding about the phenomenon of earnings management. Further, from Beneish's (2001) perspective, there is a lack of consensus on the definition of earnings management. Researchers have considered several aspects when defining earnings management due to the broadness of this subject. To fulfil the objective of defining earnings management, three essential aspects are considered as the criteria for summarising a variety of definitions. These aspects are: i) why earnings management exists, ii) how it is accomplished, and iii) the direction to which earnings are managed. Diagram 3.1 is designed to demonstrate each aspect and its components on which the following discussion relies.

Figure 3.1 Aspects of Earnings Management Definition



The first aspect focuses on managerial intent toward misstatements of earnings. Managerial intent, as it is shown below, occupies a prominent place in the definitions of earnings management in both the professional and academic literatures.

Beginning with the professional literature, the National Association of Certified Fraud Examiners (1993) defines an extreme form of earnings management (i.e. financial fraud) as "the intentional, deliberate, misstatement or omission of material facts, or accounting data, which is misleading and, when considered with all information made available, would cause the reader to change or alter his or her judgement or decision" (as cited in Dechow and Skinner, 2000, p.238).

In terms of the widely accepted definition in the academic literature, Schipper (1989, p.92) defines earnings management as "a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain (as opposed to, say, merely facilitating the neutral operation of the process)". She adds later, "A minor extension to the definition would encompass real earnings management, accomplished by timing investment or financing decisions to alter reported earnings or some subset of it".

Moreover, in their comprehensive review, Healy and Wahlen (1999, p.368) state 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".

Clearly, the term earnings management has been given a negative connotation as the above definitions encompass two main elements pertaining to managerial intent (Holland and Ramsay, 2003): first, managers' deliberate intent to mislead, and second, managerial

opportunism which includes managers' intentions to either transfer wealth from other stakeholders to shareholders or gain personal benefits (Healy and Wahlen, 1999).

However, researchers do also articulate the beneficial purpose of earnings management. For instance, Beneish (2001, p.5) notes that "There are two perspectives on earnings management: the opportunistic perspective holds that managers seek to mislead investors, and the information perspective ... under which managerial discretion is a means for managers to reveal to investors their private expectations about the firm's future cash flows". Another definition that embraces signalling along with the opportunistic purpose is proposed by Fields, et al. (2001, p.260) as they state that earnings management occurs "When managers exercise their discretion over the accounting numbers with or without restrictions. Such discretion can be either firm value maximising or opportunistic". Here, it is argued that the practice of earnings management may be motivated by beneficial intent. In other words, managers could utilise earnings management practices to signal inside value-relevant information that is unlikely to be transparent to stakeholders about firm's future performance.

In terms of the second aspect, Schipper (1989), Healy and Wahlen (1999) and Degeorge et al. (1999) tackle the matter of how earnings management is accomplished. They posit two main types: timing reported and/or actual economic events. That is, earnings management is accomplished principally by i) utilising the flexibility offered in the accounting standards for managers to use their judgement in manipulating timing of reporting accruals (i.e. accruals-based earnings management), and/or ii) strategically timing real economic events such as investment, sales or expenditures (i.e. real activities-based earnings management).

Thirdly, earnings management could have either upwards or downwards directions. Incomeincreasing and income-decreasing manipulation decisions are conferred by managers' earnings targets. Mohanram (2003, p.1) state that "Earnings management does not always have to mean upwards manipulation.[...], there can be many instances when managers intentionally misreport earnings downwards".

The conclusion that could be stemmed from the above definitions is that managers may exercise discretion accorded by accounting standards and/or structure real activities to report earnings at desired levels. As such, they deliberately engage in earnings management practices to either increase or decrease current period's income. Yet managers are not necessarily driven by opportunistic intentions and hence reduce the credibility of financial reports. The practice of earnings management could also provide investors with useful information for decision making.

In this study, the term earnings management implies managerial opportunism following the definition provided by Healy and Wahlen (1999) which excludes the beneficial perspective of earnings management. Further, the definition of Healy and Wahlen (1999) is also used in this study because their definition emphasises that the types of earnings manipulation include not only accruals-based but also real activities-based types.

## **3.3.** Types of Earnings Management:

The vast body of literature on earnings management classifies types of earnings management into two categories: accruals and real activities manipulations (McVay, 2006). Although real activities earnings manipulation has been aggressively used at recent scandals such as Enron, it has often been overlooked in the literature (Yaping, 2005). This has lead researchers to emphasise the problem of arriving at tentative conclusions about the overall effect of earnings management when investigating one type of manipulation and ignoring the other one (e.g. Fields et al., 2001; Zang, 2012). Alexander (2010) attributes the dearth of literature on real activities earnings management to a lack of causal models that accurately measures earnings manipulation through real activities at that time. However, since the introduction of the Roychowdhury (2006) model, a noticeable amount of work that investigates the effect of both types of earnings management has been produced to fill this gab in the literature (e.g. Cohen et al., 2008; Cohen and Zarowin, 2010; Zang, 2012).

In an attempt to contribute to the above literature, this study investigates the effectiveness of ownership structure mechanisms in deterring the harmful effects of both types of earnings management in the developing market of Jordan. To accomplish this, it is necessary first to establish the differences between accruals-based and real activities-based earnings management.

#### **3.3.1 Earnings Management through Accruals:**

Bodies of accounting standards setters, such as the International Accounting Standards Board (IASB), have introduced the accrual basis accounting due to the ever increasing evolutions in businesses internationally. Cash basis accounting was no longer efficient as it imposes problems associated with measuring firms' performances when firms are in continuous operation. Complexities in economic transactions emerged and hence, necessitated the disclosure of earnings which are the summary measure of firms' performances produced under the accrual basis (Dechow, 1994). Accrual basis maintains that all revenues (expenses) pertaining to a financial period must be recognised in the same period regardless of the actual receipt (payment) of cash. Thereby, the effects of entities continuous business transactions are recorded in the financial period in which they occur rather than only in periods in which cash is paid or received by the entity (IASB, 2008).

Entities are required to prepare their financial statements in compliance with accrual accounting in order to reflect entities' performance as proximate as possible. However, the accounting standards may not include an accounting treatment for every single economic transaction (IASB 2008). Therefore, setters of accounting standards permit a range of flexibility for entities' managements to use their judgements (i.e. discretion) to maximise the value of accounting information offered to its users. For instance, managers must exercise discretion in working capital management such as the timing of stock shipment or purchases (Healy and Wahlen, 1999).

Nevertheless, management's use of discretion also creates opportunities for earnings management. As by exploiting their discretion, managers may shift earnings between periods in a manner that does not reflect the underlying economic performance of firms (Degeorge et al., 1999).

To amplify, the above literature suggests that accruals earnings management is merely about the timing of revenues and expenses recognition. It hence has no direct effect on the cash flow component of earnings. Managers may use income increasing (decreasing) accounting methods to shift excess (loss) in earnings between periods depending on managements' anticipations for the next period's income. So if managers expect to incur losses in the next period, they may postpone the recognition of revenues in the current profitable period to increase income in loss period or vice versa. For instance, in a loss period, managers may set a low level of provision for doubtful debts to shift that loss to the next period where income is expected to be high.

The term "Discretionary Accruals" is widely considered as a means to proxy for the presence of earnings management in related literature. According to Ronen and Yaari (2008, p.372), discretionary accruals are "accruals that arise from transactions made or accounting

*treatments chosen in order to manage earnings*". In other words, discretionary accruals are the reported accruals that deviate from an entity's expected normal levels of accruals. Clearly, to comprehend this definition, it is necessary to distinguish the expected normal (i.e. unmanaged) accruals that are called "Non-discretionary Accruals" in the earnings management literature. Therefore, Ronen and Yaari (ibid) define non-discretionary accruals as "accruals that arise from transactions made in the current period that are normal for the firm given its performance level and business strategy, industry conventions, macro-economic events, and other economic factors"<sup>1</sup>.

Moreover, any overstatement of accruals in one period entails an understatement of accruals in another, and vice versa (Dechow and Schrand 2004). It is more like borrowing from, or lending, future earnings. Stated differently, any accruals-based earnings management transaction entails another transaction, in the forthcomings financial period, that reverses the effect of the manipulation practiced in the preceding period. According to Ronen and Yaari (ibid) **Reversals** "are accruals originating from transactions made in previous periods". Ultimately, reported earnings must equal total cash, and total accruals must equal zero.

Finally, it is worth noting that while accruals earnings management is totally based on the discretion allowed by accounting standards, exercising accounting discretion in a manner that violates the Generally Accepted Accounting Principles (GAAP) is considered as financial fraud. For instance, recording fictitious sales to book from inventory to revenues is a financial fraud whereas timing the recognition of sales could be merely utilising the flexibility offered by accounting standards. To that end, Table 3.1 aims to distinguish between financial fraud and accruals-based earnings management.

<sup>&</sup>lt;sup>1</sup> In the literature of earnings management, discretionary accruals and non-discretionary accruals are used interchangeably with abnormal accruals and normal accruals, respectively.

Type of Earnings Management	Accounting Choices			
Within GAAP				
Conservative Accounting (i.e.	- Overly aggressive recognition of provisions or			
Income-decreasing choices)	reserves.			
	- Overvaluation of acquired in-process R&D in purchase acquisition.			
	- Overstatement of restructuring charges and asset write-offs.			
Neutral Accounting	- Earnings that result from neutral operation of the process.			
Aggressive Accounting (i.e.	- Understatement of the provision for bad debts.			
Income-increasing choices)	- Drawing down provisions or reserves in an overly			
	aggressive manner.			
Violates GAAP				
Fraudulent Accounting	- Recording sales before they are realisable.			
	- Recording fictitious sales.			
	- Backdating sales invoices.			
	- Overstating inventory by recording fictitious inventory.			

Table 3.1. The Distinction between Fraud and Earnings Management

Source: Dechow and Skinner (2000, p.239)

## 3.3.2. Earnings Management through Real Activities:

Recently, the focus of many researchers has turned to the measurement of the managerial intervention in the process of reporting through manipulating real operational activities. Real earnings management is a relatively new hypothesis that is concerned with the manipulation through changing the underlying operations of a firm in order to achieve target earnings through the strategic timing of making an actual investment, sales, expenditures, or financing decisions. For instance, offering discounts to boost sales or reducing maintenance expenditure to increase reported earnings (Degeorge et al., 1999). Roychowdhury (2006) defines real activities earnings management as "management actions that deviate from normal business practices, undertaken with the primary objective of meeting certain earnings thresholds".

Real activities earnings management entails a sacrifice or a reduction in the value of a firm (i.e. sacrifice future cash flows to achieve the desired current period's income). Therefore, accruals-based earnings management type is advantageous because there is no direct cash flow consequences associated with its application (Roychowdhury, 2006).

It is worth noting at this point that the direction of real earnings management practices might differ from that of cash management. The adoption of income-increasing real activities practices affects Cash Flow from Operation (CFO) either positively, negatively, or even ambiguously (Gunny, 2010). To illustrate, a reduction in cash expenditures for maintenance will lead to an increase in both reported earnings and CFO. However, an overproduction that aims at decreasing the cost of goods sold will increase reported earnings but will also result in higher holding cost which in turn lowers CFO. Hence, if a manger engages in both, or even more of real activities practices, the effect on CFO will be ambiguous.

Further, the manipulation of real activities must take place during a fiscal period to arrive at target earnings. This is mainly because such manipulation would not affect reported earnings if practiced at the end of the financial period. Here, accruals earnings management might seem advantageous because it is usually practiced at the end of the fiscal financial period when the need for meeting target earnings is most certain. However, if the accruals available for manipulation have been constrained by the manipulation in prior periods and/or the scrutiny of auditors, firms might run at the risk of a shortfall on meeting target earnings (Gunny, 2010).

While accruals earnings management could be either a GAAP violation or not, managing real activities is not a GAAP violation as long as the transactions are recorded properly (Dechow and Schrand 2004). So unlike accruals earnings management, real activities earnings

management is less likely to be subject to the scrutiny of regulators, standard setters and external auditors (Cohen and Zarowin, 2010).

Finally, Beneish (2001) argues that it is implausible to consider any real decision that departs from rational business behaviour as a means of real activities earnings management. Managers may forego a profitable investment opportunity simply because of their judgment on such an opportunity at the time of occurrence. Even if bad business decisions have been made, Lo (2008) remarks that it is difficult to find managers and directors liable for such decisions because they are protected by the law of "business judgement rule".

To conclude, the fact that firms may use both types of manipulation as substitutes makes examining either type of manipulation in isolation leads to tentative conclusions (Zang, 2012). Especially because of much of previous research on earnings management focuses on discretionary accruals and gives little attention to the widely used and more costly real activities manipulation (Graham et al., 2005; Roychowdhury, 2006; Alexander, 2010).

# 3.4. Earnings Management Research Design:

Although competing models differ in the process of predicting the normal levels of earnings, the statistical inference remains the critical research design issue that all models share. Models misspecifications impose methodological problems of which researchers should be aware. Interestingly, a thorough analysis of the design of the tests used to detect earnings management has been provided by Dechow et al. (1995). Therefore, this section draws mainly on Dechow et al. (1995) in discussing the framework of statistical testing procedure used to detect earnings management and the methodological issues related to it.

#### **3.4.1.** The Framework of the Testing Procedure for Earnings Management:

The estimation of the amount of managed earnings (ME) requires the researcher to identify an estimation period during which no systematic earnings management is hypothesised. Hence, the estimation period represents a benchmark which allows the comparison of earnings between this period and an event period where earnings management is predicted to take place.

According Dechow et al. (1995), tests for earnings management can be fashioned in a linear framework around a stimulus (i.e. condition) identified by the researcher. This stimulus is usually measured by a partitioning variable PART. Hence, if ME were observable, the following linear regression would characterise the tests of earnings management:

$$ME = \alpha + \beta PART + \varepsilon$$
(1)

Where,

ME : the amount of managed earnings

PART : a dummy variable that partitions the data into two groups for which earnings management predictions are specified by the researcher

 $\epsilon$  : an error term that is independently and identically normally distributed

The variable PART is set equal to one during firm-years in which earnings are predicted to be systematically managed in response to the stimulus identified by the researcher (i.e. the event period) and zero in other periods in which no earning management is predicted (i.e. the estimation period). The researcher would reject the null hypothesis of no earnings management and hence attribute earnings management that does take place to the research stimulus if the estimated coefficient on PART ( $\hat{\beta}$ ) has the hypothesised sign and statistically significant at conventional levels (Dechow et al., 1995).

In other words, the null hypothesis would be rejected and earnings management would be attributed to the stimulus identified by the researcher if:

- Earnings management does take place is response to the researcher's stimulus; the magnitude of earnings management is statistically significant [which is measured by the absolute difference between the estimation period and the event period], and
- (ii) The actual direction of earnings management matches that of the predicted; the sign of the estimated coefficient on PART ( $\hat{\beta}$ ), is the same sign of the hypothesised coefficient on PART ( $\beta$ ). [Noting that positive sign indicates income increasing earnings management and negative sign indicates income decreasing earnings management].

Yet in fact, managed earnings are unobservable and researchers are forced to use a proxy that measures ME with an error ( $\eta$ ). Moreover, the variable PART might not be the sole, if any, causal determinant of earnings management. Therefore, a correctly specified model should include all variables that are relevant to the measurement of the researcher's proxy for ME. Symbolically,

$$MEP = \alpha + \beta PART + \sum_{k=1}^{k} \gamma X + \eta + \varepsilon$$
<sup>(2)</sup>

Where,

MEP : managed earnings proxy

 $X_k$  : (for K=1, ..., K) other relevant variables influencing ME

But because the researcher cannot readily identify other omitted relevant variables, s/he represents the effects of omitted relevant variables and the measurement error by ( $\mu$ ). Hence, the model can be summarised as,

Where,

 $\mu$  : captures the sum of the effects of, (i) the omitted relevant variables on ME and (ii) the measurement error in MEP

Eventually, the researcher excludes the relevant variable ( $\mu$ ) from the regression and estimate the model of earnings management using the method of Ordinary Least Squares (OLS). Symbolically:

$$MEP = \hat{a} + \hat{b} PART + e \tag{4}$$

Where,

- $\hat{a}$  : the sample estimate of the intercept  $\hat{a}$
- $\hat{b}$  : the sample estimate of the slope coefficient  $\hat{\beta}$
- e : an error that reflects the variation in MEP within a partition

#### **3.4.2.** The Validity of the Testing Procedure for Earnings Management:

An unbiased test of earnings management requires that the measurement error in MEP, ( $\mu$ ), to be uncorrelated with the partitioning variable, PART (McNichols, 2000). Therefore, the omission of the relevant variable ( $\mu$ ) should bias the estimated coefficient on the variable PART ( $\hat{\beta}$ ) if both variables were correlated. This would in turn lead to erroneous inferences about the existence of earnings management as the model will be misspecified.

Statistically, if the omitted variable  $(X_k)$  is correlated with the included variable  $(X_i)$ , the slope coefficient  $(\hat{\beta}_i)$  of the included variable will be a biased estimator of the population's

coefficient ( $\beta_i$ ). Therefore, the expected value of ( $\hat{\beta}_i$ ) would equal ( $\beta_i$ ) plus the bias (Gujarati, 2003). Symbolically,

$$E(\hat{\beta}_i) = \beta_i + (\beta_k * b_{ki})$$
<sup>(5)</sup>

Clearly, the magnitude and sign of this bias equals multiplying ( $\beta_k$ ) by ( $b_{ki}$ )

Where,

- $\beta_k$  : the slope coefficient in the regression of the dependent variable (Y) on the excluded variable (X<sub>k</sub>), and
- $b_{ki}$  : the slope coefficient in the regression of the excluded variable  $(X_k)$  on the included variable  $(X_i)$ .

In the earnings management context, Dechow et al. (1995, p.196) consider this statistical issue in their analysis as they identify two problems for statistical inference that arise from being  $(\hat{b})$  a biased estimator of  $\beta$  when the correlation between PART and  $\mu$  does exist. Recall that the relevant variable ( $\mu$ ) can represent the measurement error in MEP (i.e. the unmanaged earnings that are not extracted by any model) and/or omitted relevant variables influencing ME.

#### Problem 1: Incorrectly attributing earnings management to PART

This problem manifests itself in two ways that lead to committing type I error<sup>2</sup>. First, if earnings management that is hypothesised to be caused by PART does not take place (i.e. the true coefficient on PART is zero) and the measurement error in MEP is correlated with PART, then the estimated coefficient on PART will be biased away from zero. In other words, although earnings management does not take place, the non-extracted unmanaged

<sup>&</sup>lt;sup>2</sup> Type I error signifies rejecting the null hypothesis of no earnings management when it is true.

earnings will be incorrectly considered as managed earnings caused by PART. Second, if earnings management does take place in response to other omitted relevant variables rather than PART and these omitted variables are correlated with PART, then the estimated coefficient on PART will be biased away from zero. That is, although earnings management are caused by other omitted variables, the model will correctly detect managed earnings but will incorrectly attribute them to PART.

### Problem 2: Unintentionally extracting earnings management caused by PART

This problem arises when earnings management that is hypothesised to be caused by PART does take place (i.e. the true coefficient on PART is not zero) but the correlation between PART and ( $\mu$ ) is opposite in sign to the true coefficient on PART causing the estimated coefficient on PART to be biased toward zero. In other words, although earnings management does take place in response to PART, the model used to generate MEP will incorrectly consider some or all of the managed earnings as unmanaged earnings because of the negative correlation between MEP and its measurement error. This will increase the probability of committing type II error<sup>3</sup>.

So far, the above two problems have been found to arise from the bias in the estimated coefficient on PART caused by the omission of a correlated variable. Statistically, however, even if the included and excluded variables are uncorrelated (i.e. the estimated coefficient on PART,  $(\hat{b})$ , is unbiased), the estimated variance of the coefficient on the included variable,  $var(\hat{b})$ , will remain a biased estimator of the true variance of the true coefficient  $(\hat{\beta})$ . To illustrate, recall equation No. (5), where in this case, the slope coefficient in the regression of the excluded variable (X<sub>k</sub>) on the included variable (X<sub>i</sub>), (b<sub>ki</sub>), equals zero because there is no

<sup>&</sup>lt;sup>3</sup> Type II error signifies accepting the null hypothesis of no earnings management when it is false.

correlation between the omitted and included variables. Therefore, the estimated coefficient on PART,  $(\hat{b})$ , is unbiased. Yet because the slope coefficient in the regression of the dependent variable (Y) on the omitted relevant variable (X<sub>k</sub>), ( $\beta_k$ ), does not equal zero, var( $\hat{b}$ ) will remain a biased estimator of the true variance of the true coefficient ( $\hat{\beta}$ ). That is, var( $\hat{b}$ ) will always have a positive bias that overestimates the true variance of ( $\hat{\beta}$ ) (Gujarati, 2006)<sup>4</sup>.

On this basis, Dechow et al. (1995, p.197) proceed with their analysis to cover a third statistical inference problem which is,

# *Problem 3: Low power test*<sup>5</sup>

This problem is concerned with earnings management models' ability to detect managed earnings when earnings management does take place. When the relevant variable ( $\mu$ ) is uncorrelated with the included variable PART, and is omitted from the estimated model, the variance of the coefficient on PART, var( $\hat{b}$ ), will be overestimated. Consequently, the standard error of the estimated coefficient on PART, SE( $\hat{b}$ ), will be inflated causing the confidence interval to be wider. As the confidence interval gets wider, the researcher may tend to accept the null hypothesis that the true value of the coefficient is zero more frequently than the true situation demands (i.e. increase the probability of committing type II error).

<sup>&</sup>lt;sup>4</sup> For statistical proof, consider Kmenta, J. (1986), *Elements of Econometrics*, 2<sup>nd</sup> Ed., Macmillan, New York.

<sup>&</sup>lt;sup>5</sup> Statistical power is the model's ability to reject a false null hypothesis (Gujarati, 2003). At length, since the probability of committing type II error ( $\beta$ ) is about failing to detect earnings management when it genuinely exists, the statistical power is the opposite of not detecting earnings management (1- $\beta$ ).

## **3.5. Earnings Management Measurement Methods:**

Traditionally, researchers seek to isolate the abnormal levels of earnings from those which are reported. To do so, they impose models that predict the normal levels of earnings during an estimation period where no systematic earnings management is hypothesised. Then, the residuals of subtracting the predicted from the reported earnings are considered as proxies for earnings management<sup>6</sup>.

Following the types categories, researchers use abnormal accruals and abnormal operational activities as proxies for accruals and real activities earnings management, respectively<sup>7</sup>. Accordingly, the following subsections discuss the procedures adopted by researchers to document earnings management through these proxies.

#### **3.5.1.** The Measurement of Accruals-Based Earnings Management:

In the majority of earnings management studies, accounting accruals are considered the preferable means for managements to alter earnings. Therefore, researchers have proposed three alternative approaches to evaluate the existence of accruals earnings management (Beneish, 2001). These approaches are discussed below in the following order: the approach of aggregate accruals, the approach of specific accruals, and the distributional approach.

<sup>&</sup>lt;sup>6</sup> Positive and negative residuals are used in income-increasing and income-decreasing hypotheses, respectively. Absolute values of the residuals are used in hypotheses that examine the magnitude of abnormal earning regardless of the direction. See the methodology chapter for a detailed discussion.

<sup>&</sup>lt;sup>7</sup> Studies supportive of the argument are discussed in sections (2.6.1.1), (2.6.1.2), (2.6.1.3) and (2.6.2).

#### 3.5.1.1. The Approach of Aggregate Accruals:

The main feature of this approach is that it aggregates the net effect of numerous recognition and measurement decisions into a single measure. This feature makes this approach more appealing because, in reality, managers are more likely to use several accruals rather than a single accrual to manipulate earnings (Jones, 1991). Consistent with this view, researchers have implemented this approach in a wide range of contexts and have provided cumulative evidence supportive of the existence of accruals earnings management. For example, a number of studies provide evidence that managers exercise income-increasing accruals earnings management to (i) inflate share prices around Initial Public Offerings (IPO) (e.g. Teoh et al., 1998b; DuCharme et al., 2001) and Seasoned Equity Offerings (SEO) (e.g. Teoh et al., 1998a; Shivakumar, 2000), (ii) opportunistically increase their earnings-based bonuses (e.g. Healy, 1985; Guidry et al., 1999), and (iii) avoid the violation of debt covenant (e.g. DeFond and Jiambalvo, 1994; Jaggi and Lee, 2002).

In addition, evidence that documents income-decreasing accruals earnings management does also exist in the literature, especially for regulation and tax considerations. For instance, Jones (1991) document income-decreasing practices by firms that produce protected goods to obtain import relief such as subsidies or tax relief. Other research also records that firms report understated income to minimise their tax expense (e.g. Guenther, 1994; Calegari 2000).

Several alternative models have been developed within this approach to detect earnings management by estimating the non-discretionary and discretionary accruals that arise from managements' use of discretion. Therefore, the following subsections discuss the measurement of discretionary accruals and six popular aggregate accruals models.

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#### **3.5.1.1.1.** The Measurement of Discretionary Accruals:

Based on the analysis provided by McNichols and Wilson (1988), the following discussion shows the methodological issues related to the measurement of discretionary accruals. They point out that once a managerial discretion is predicted, the researcher attempts to decompose total accruals into two components; discretionary accruals that are most likely to be managed, and non-discretionary accruals that arise from normal business transactions. The construction of total accruals is symbolically presented as follows:

$$TA = DA + NA \tag{6}$$

Where,

TA :		total	accrual	S
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DA : discretionary accruals

#### NA : non-discretionary accruals

But because discretionary accruals are unobservable, researchers are forced to use a proxy (DAP) that measures discretionary accruals with error ( $\eta$ ):

$$DAP = DA + \eta \tag{7}$$

Where  $\eta$  is assumed to be a white noise (i.e. it is expected to have zero mean if the test is well-specified). However, the specification of DAP determines the measurement error ( $\eta$ ).

It is worth noting that the unobservable nature of discretionary and non-discretionary accruals has led researchers to identify discretionary accruals based on the relationship between total accruals and hypothesised explanatory factors (McNichols, 2000). This practice usually consists of estimating the non-discretionary component of accruals using an expectations model that regresses actual total accruals on some variables on which their normal level is considered to depend (Jaime and Noguer, 2004).

Accordingly, for the purpose of computing the measurement error ( $\eta$ ), DAP can be first measured as follows:

$$DAP = TA - NAEST$$
 (8)

#### Where,

NAEST is an estimate of non-discretionary accruals.

Therefore, the error in measuring discretionary accruals ( $\eta$ ) reflects the non-discretionary accruals that are not completely extracted by the models that estimate non-discretionary accruals. Symbolically:

$$\eta = NA - NAEST$$
(9)

Apparently, the only remaining element in equation No. (6) is the observable total accruals. The literature provides two alternative approaches. First, total accruals are defined according to the Balance Sheet Approach as,

The change in non-cash working capital before income taxes payable less total depreciation expense. The change in non-cash working capital before taxes is defined as the change in current assets other than cash and short-term investments less current liabilities other than current maturities of long-term liabilities and income taxes payable (Jones, 1991, p.207)

Symbolically:

$$TA_{it}/A_{it-1} = (\Delta CA_{it} - \Delta Cash_{it} - \Delta CL_{it} + \Delta STD_{it} - Dep_{it})/A_{it-1}$$
(10)

Where,

TA<sub>it</sub> : total accruals in year t for firm i

 $A_{it-1}$  : total assets in year t – 1 for firm i

 $\Delta CA$  : change in current assets

 $\Delta CL$  : change in current liabilities

 $\Delta Cash$  : change in cash and cash equivalent

 $\Delta$ STD : change in debt included in current liabilities

Dep. : depreciation and amortization expense

- A : total assets
- t : current year
- i : firm i.

It is important here to point out that both sides of equation No. (10) are divided by lagged total assets to reduce heteroscedasticity<sup>8</sup>. In her model, Jones (1991) finds the error term from the unscaled expectations model is highly correlated with lagged total assets. This means that the error terms are widely scattered similar to the heterogeneous units in the statistical analysis, leading to different variances of error terms (Gujarati, 2003). Hence, lagged total assets represent an appropriate scale factor that helps maintaining the assumption of homoscedasticity.

The second approach in defining total accruals, which was not used in these six models, is the Statement of Cash Flow approach. According to which, total accruals are defined as the

<sup>&</sup>lt;sup>8</sup> The assumption of homoscedasticity in linear regression models states that all disturbances appearing in the population regression function have the same variance (i.e. the variance of each disturbance term is some constant equal to  $\sigma^2$ ). If this assumption is not maintained, heteroscedasticity arises. In the presence of heteroscedasticity, ordinary least squares estimators are unbiased and consistent, but no longer efficient (Gujarati, 2003). As a result, the conventional tests of significance are generally inappropriate and their use can lead to incorrect inferences (Long and Ervin, 2000).

difference between income before extraordinary items and discontinued operations and cash from operations (Ronen and Yaari, 2008).

#### 3.5.1.1.2. Aggregate Accruals Models:

Researchers have endeavoured to model for the relationship between total accruals and hypothesised explanatory variable to identify discretionary accruals. As a result, they have enriched the literature with several competing models. Beginning with the Healy (1985) model, followed by the DeAngelo (1986) model, earnings management are simply measured by using total accruals and the change in total accruals. Alternatively, the majority of aggregate accruals models impose an expectations model of the non-discretionary accruals on total accruals to decompose total accruals into the discretionary and non-discretionary components. As such, the Jones (1991) model is considered as a milestone in the field of earnings management because it is the first model that employs a regression-based expectations model to control for variations in non-discretionary accruals associated with changes in economic activities. Afterwards, modifications to the Jones model have been introduced by other authors in an attempt to produce better discretionary accruals estimates. Two models in particular have caught on in later research; the models suggested by Dechow, Sloan and Sweeny (1995) and Kothari, Leone and Wasley (2005). However, in an attempt to overcome the limitations associated with the Jones model and its subsequent modified versions, Kang and Sivaramakrishnan (1995) propose a unique model that employs a methodology that does not refine the Jones model. The following is a discussion of each of the aforementioned six models in the same order.

#### 1. The Healy Model (1985):

Healy investigates the compensation theory which is concerned with effect of earning-based bonus contracts on managers' incentives towards managing earnings upwards or downwards. He classifies bonus contracts according to earnings-based bounds as follows:

- Lower bound: in such contracts, bonuses will be awarded to managers if earnings exceed a lower bound of target earnings.
- Upper bound: bonuses will be awarded to managers if earnings exceed an upper bound of target earnings.

His usable sample comprises 94 companies with 1,527 company-year observations. He assigns each observation to one of three portfolios created according to a partitioning variable (i.e. earnings-based managerial bonus bound) where he hypothesises the direction of managerial manipulation in each portfolio as follows:

- Portfolio LOW comprises observations for which bonus contract lower bound is binding. In this portfolio, he predicts that the manager has the incentive to select income-decreasing discretionary accruals (i.e. negative total accruals), because premanaged earnings do not exceed the lower bound even if the maximum incomeincreasing choices were adopted.
- Portfolio UPP comprises observations for which bonus contract upper limit is binding.
   In this portfolio, he predicts that the manager has the incentive to select incomedecreasing discretionary accruals (i.e. negative total accruals), because the premanaged earnings have exceeded the upper bound and any income-increasing choices will not be rewarded

- Portfolio MID comprises observations where neither the upper nor lower bounds are binding. In this portfolio, he predicts that the manager has the incentive to select income-increasing discretionary accruals (i.e. positive total accruals).

Subsequently, mean total accruals, deflated by lagged total assets, is computed for each portfolio. His accrual tests compare the actual sign of mean total accruals for a particular firm-year with the predicted sign given the manager's bonus incentive. As hypothesised, positive mean total accruals is found for portfolio MID indicating income-increasing discretionary accruals, and negative mean total accruals are found for portfolios LOW and UPP indicating income-decreasing discretionary accruals.

Healy accounts for the association between accruals and bonus plan parameters through pair wise comparisons of mean total accruals. That is, he computes the difference between mean total accruals of portfolio LOW and portfolio MID, then the difference between mean total accruals of portfolio UPP and portfolio MID. As a result, Healy's model confirms the compensation theory as the results of his tests, which show significant differences between means total accruals, indicate that these results are consistent with the hypotheses.

It is highly significant here to highlight the assumptions that underlie Healy's model. Healy starts by defining total accruals (TA) as the difference between a firm's reported earnings (E) and cash flow (CF). Then, he acknowledges that total accruals include both non-discretionary and discretionary accruals. However, he states that non-discretionary accruals are unobservable and predicts that systematic earnings management occurs in every period making discretionary accruals sum to zero over the estimation period (DA <sub>estimation</sub> = 0).

For those reasons, he uses cash flow from operations to proxy for both cash flow and nondiscretionary accruals for most part of his research, and hence uses total accruals to proxy for discretionary accruals. This implicitly indicates that Healy assumes that non-discretionary accruals equal zero in the event period which, in turn, leads to that any non-zero value for total accruals is attributable to managerial manipulation ( $DA_{event} = TA_{event}$ ) (Young, 1999; Kaplan, 1985).

Two main critiques apply to Healy's model. The first critique is concerned with being total accruals proxy for discretionary accruals. Healy considers negative accruals as downward manipulation although negative total accruals could result from lower earnings or extremely high cash flow (Guirdy el al., 1999). In addition, total accruals normally contain material negative non-discretionary accruals such as depreciation expense (Kaplan, 1985). This indicates that even in the absence of earnings management, total accruals will contain major negative accruals which is non-discretionary. Therefore, a negative sign of total accruals does not necessarily signify managerial manipulation as assumed by Healy.

In terms of the second critique, Young (1999, p.836) comments "*This model represents the simplest and most naive method of estimating discretionary accruals, effectively assuming that expected non-discretionary accruals for the period are zero*". In this regard, Kaplan (1985) suggests that under this assumption, the model expects the changes in non-cash working capital accounts less depreciation to be zero in a year, whereas non-discretionary accruals are expected to fluctuate depending upon the economic circumstances of the firm.

In spite of criticism, Healy's model represents the foundation stone on which all accrualsbased models relied in evolving the method of estimating the discretionary accruals component.

#### 2. The DeAngelo Model (1986):

In her model, DeAngelo attempts to overcome the limitation underlying Healy's model by developing a non-zero benchmark for non-discretionary accruals. She starts by splitting total accruals into non-discretionary and discretionary accruals, and then assumes that the non-discretionary component of total accruals is approximately constant over time; non-discretionary accruals in the event period (t) equal those in estimation period (t-1). Which results in, the change in non-discretionary component of accruals equals zero ( $\Delta$ ND  $\approx$  0). She also assumes that earnings manipulation is absent in the estimation period (DA <sub>estimation</sub> = 0). Accordingly, for the estimation period, total accruals are all considered as non-discretionary (TA <sub>t-1</sub> = NA <sub>t-1</sub>).

That is being said, DeAngelo's model uses total accruals from the successive period to proxy for expected non-discretionary accruals. Hence, the difference between these two values is attributable to managerial discretion (the DeAngelo model estimates discretionary accruals as the change in total accruals between the two periods).

The following equations illustrate DeAngelo's approach to account for DA calculation:

$$TA = DA + NA \tag{11}$$

$$\rightarrow \Delta TA = (DA_1 - DA_0) + (NA_1 - NA_0) \tag{12}$$

So based on the assumptions mentioned above,

$$\Delta TA = (DA_1 - 0) + (0) \tag{13}$$

$$\rightarrow \Delta T A = D A_1 \tag{14}$$

After scaling non-discretionary accruals by lagged total assets, her model can be symbolically presented as follows:

$$NA_t = TA_{t-1}/A_{t-2} \tag{15}$$

$$\mathbf{D}\mathbf{A}_t = (\mathbf{T}\mathbf{A}_t / \mathbf{A}_{t-1}) - \mathbf{N}\mathbf{A}_t \tag{16}$$

Where,

- NA<sub>t</sub> : estimated non-discretionary accruals in year t
- TA<sub>t-1</sub> : total accruals in the estimation period
- $A_{t-2}$  : total assets in the year prior to the year of estimation
- DA<sub>t</sub> : discretionary accruals in the event period

Since DeAngelo's model does not incorporate the effect of growth factor on nondiscretionary accruals, the critique on Healy's model also applies here. DeAngelo attributes the change in total accruals to managerial discretion whereas this change could be due to the effect of growth on firms operations which cause non-discretionary accruals to fluctuate over time. In this case, the result of the change in non-discretionary accruals would not equal zero.

#### 3. The Jones Model (1991):

According to Jones (1991), the main feature of this model is that it relaxes the assumption in Healy's and DeAngelo's models of being nondiscretionary accruals constant over time and changes in total accruals are due merely to managerial discretion. The critiques suggest that changes in total accruals might result from changes in underlying economic conditions as well. Moreover, contrast to the Healy and DeAngelo models, Jones model attempts to isolate the non-discretionary component of accruals after controlling for changes in firms' economic environment.

To that end, Jones (1991) introduces revenues and property, plant and equipment within her regression model. Revenues are used to control for changes in working capital accruals that result from the economic circumstances, whereas property, plant and equipment are used to control for non-discretionary depreciation expense, both before managers' manipulations. Thereby, as elaborated below, she estimates the non-discretionary component and deems the residual value as discretionary accruals.

The stimulus of earnings management identified by Jones (1991) indicates that managers do not manage earnings before the period of interest (DA <sub>est.</sub> = 0). This leads to the assumption that total accruals in the estimation period are all non-discretionary. Therefore, at the first stage, the Jones expectation model regresses a long time series of firms' total accruals on non-discretionary accruals proxies as follows [Noting that the left side of equation No. (17) is the result of equation No. (10)]:

$$TA_{it}/A_{it-1} = \alpha_i \left[ 1/A_{it-1} \right] + \beta_{1i} \left[ \left( \Delta REV_{it}/A_{it-1} \right] + \beta_{2i} \left[ PPE_{it}/A_{it-1} \right] + \varepsilon_{it} \right]$$
(17)

Where,

TA <sub>it</sub>	: total accruals in year t for firm i
$A_{it-1}$	: total assets in year t – 1 for firm i
$\Delta \text{REV}_{it}$	: revenues in year t less revenues in year t-1 for firm i
PPE <sub>it</sub>	: gross property, plant, and equipment in year t for firm i
E <sub>it</sub>	: error term in year t for firm i
t	: year index for the years included in the estimation period for firm i
i	: firm index.

The regression yields the estimates  $a_i$ ,  $b_{1i}$  and  $b_{2i}$  of the parameters  $\alpha_i$ ,  $\beta_{1i}$  and  $\beta_{2i}$  respectively.

In the event period, the estimated parameters combined with the data from the event period for each firm, are plugged into equation No. (18) to compute the residual (i.e. discretionary) accruals [The prediction error (U) result from matching total accruals from equation No. (17) and the fitted phase of equation No. (18)].

$$U_{ip} = TA_{ip}/A_{ip-1} - (a_i [1/A_{ip-1}] + b_{1i} [\Delta REV_{ip}/A_{ip-1}] + b_{2i} [PPE_{ip}/A_{ip-1}])$$
(18)

Where,

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The Jones model is considered as a milestone in the field of earnings management because it is the first model that separates observed accruals into their non-discretionary and discretionary components. Since then, several alternative models have been suggested by other authors to produce better discretionary accruals estimates.

#### 4. The Modified Jones Model (1995):

Dechow, Sloan and Sweeny (1995) argue that the implicit assumption underlying Jones model that all revenues are non-discretionary causes the omission of part of the managed earnings from the discretionary accruals proxy. Therefore, the modification introduced by the modified Jones model is the adjustment of revenues by net receivables in the event period, in which the authors expect earnings to be managed through discretionary revenues.

Dechow et al. (1995) follow the first stage of the Jones model in which i) revenues are used to control for working capital non-discretionary accruals, and ii) property, plant and equipment are used to control for the depreciation non-discretionary accrual. This indicates that the modified Jones model corresponds to the Jones model regarding the assumption of no systematic earnings management in the estimation period. Symbolically, the modified Jones model can be presented as follows:

$$U_{ip} = TA_{ip}/A_{ip-1} - (a_i [1/A_{ip-1}] + b_{1i} [(\Delta REV_{ip} - \Delta REC_{ip})/A_{ip-1}] + b_{2i} [PPE_{ip}/A_{ip-1}])$$
(19)

Obviously, the only novelty added by the modified Jones model is the introduction of receivables; which aims to eliminate the conjectured tendency of the Jones model to measure discretionary accruals with error when discretion is exercised over revenues. The inclusion of net receivables in the model replaces the proxy of changes in revenues with changes in cash revenue; which means that any change in the level of credit sales is due to managerial discretion. Dechow et al. (1995) justify this modification on the basis that it is easier to exercise discretion over revenue recognition on credit sales than it on cash sales ( $\Delta REV - \Delta REC$ ). Other than that novelty, assumptions underlying both models are identical and hence, the criticisms to the Jones model also apply to the modified version.

However, there is a major drawback pertaining to the models specifications. Dechow et al. (1995) remark that the standard and the modified Jones models suffer from model misspecification as estimates of discretionary accruals are correlated with firms' performance (recall problem No. 1). This is because "*large discretionary accruals could result not only from earnings management but also from exogenous influences on firms' performance or from the effects of strategic operating decisions that are not motivated by the desire to artificially increase reported earnings"* (Beneish, 1997, p.273)

To investigate this issue, Dechow et al. (1995) design a sample to test the specification of the standard and the modified Jones models, along with other three models, when earnings management partitioning variable, PART, is correlated with firm performance. This sample consists of 1000 firm-years that are randomly selected from pools of firm-years experiencing extreme financial performance. Firm-years are selected based on two extreme performance measures: either extreme earnings performance or extreme cash from operations

performance. Consequently, a "high" and a "low" samples are formed for each performance measure resulting in a total of four samples each of which is divided into ten deciles.

Dechow et al. (1995) note that since PART is measured by randomly selected firms with extreme financial performance, PART is constructed so that it is not itself a causal determinant of earnings management. Therefore, bearing in mind that in a well-specified model one would not expect to find additional variables with explanatory power, any rejections of the true null hypothesis of no earnings management in such samples would generate type I error.

The results of Dechow et al. (1995) indicate that all models lead to misspecified tests for both extreme performance measures as follows:

- Firm-years with extreme earnings performance:

For the lowest decile of earnings performance, the models reject the null hypothesis of no earnings management in favour of the alternative that earnings are managed downwards with type I errors less than the specified test levels and many of the differences are statistically significant. In other words, the models detect significant negative discretionary accruals for firms with lower earnings.

For the highest decile of earnings performance, the models reject the null hypothesis of no earnings management in favour of the alternative that earnings are managed upwards with type I errors less than the specified test levels and many of the differences are statistically significant. In other words, the models detect significant positive discretionary accruals for firms with higher earnings.

The researchers refer this result to the positive relation between earnings and total accruals. That is, firm-years with high (low) earnings tend to have high (low) accruals. - Firm-years with extreme cash flow from operation performance:

Conversely, the models detect significant negative discretionary accruals for firm-years within the highest decile of cash flow from operations performance, and significant positive discretionary accruals for firm-years within the lowest decile of cash flow from operations performance. The researchers attribute this result to the negative correlation between cash flow from operations and total accruals evidenced by Dechow (1994). This evidence suggests that this negative correlation results from the application of the revenue recognition and matching principles. That is, under accrual accounting, revenues could be recognised through an increase in accounts receivables (i.e. accruals) regardless of the actual timing of the cash collection. Therefore, the cash disbursed at the early stage of a long-period project could easily be negative at the end of the accounting period whereas the revenues reported are positive.

#### 5. The Kothari, Leone and Wasley Model (2005):

Kothari, Leone and Wasley (2005) propose a cross-sectional regression-based model that extends the modified Jones model by several modifications. First, they include an intercept because the first term in the Jones model is the reciprocal of lagged assets and hence, the Jones model does not have an intercept<sup>9</sup>. This view is supported by Peasnell et al. (2000) who note that the standard and modified Jones models are estimated with the true constant term suppressed and hence, force the regression through the origin. Second, they criticise the approach used by Dechow et al. (1995) where the models' parameters are estimated from the first stage (i.e. pre-event period) in the Jones model then are applied to a modified sales

<sup>&</sup>lt;sup>9</sup> Kothari et al. (2005) argue that the inclusion of an intercept reduces heteroscedasticity not alleviated by using lagged total assets as the deflator.

change variable defined as ( $\Delta REV - \Delta REC$ ). They argue that Dechow et al.'s (1995) approach is likely to generate large estimated discretionary accruals whenever a firm experience growth in the event period compared to the estimation period. Therefore, they follow prior research which subtracts change in accounts receivable from revenues ( $\Delta REV \Delta REC$ ) in the estimation period prior to estimating the model (e.g. Guidry et al., 1999; Kasznik, 1999). The rationale is that in a cross-sectional setting, there is no pre-event period. Hence, they estimate the model as if all changes in accounts receivable arise from earnings management. In other words, they adjust revenues for credit sales in every period. Finally, they add rate of return on assets (ROA) as a control for firm performance similar to prior research (e.g. McNichols, 2000). This is due to the evidence in Dechow et al. (1995) which posits that the standard and the modified Jones models estimates of discretionary accruals are correlated with firm performance. Therefore, the addition of (ROA) aims to control for some variations in accruals that result from changing business conditions and the consequent change in strategy and operating decisions rather than from earnings management (Healy, 1996). To illustrate, Beneish (1997) considers the case when a firm's sales are reduced in response to a drop in its economic activities leaving it with more inventory. As a result, this firm extends customers credit terms and consequently increases the accounts receivables as well as total and discretionary accruals. He comments, such decision does not necessarily represent a means to artificially inflate earnings.

As mentioned above, this model extends the modified Jones model by the three aforementioned modifications. Apart from these modifications, the model uses the same drivers (i.e. revenues and gross property, plant and equipments) to estimate non-discretionary accruals and the consequence residuals also via two stages. In the first stage, the parameters are estimated as follows,

$$TA_{it}/A_{it-1} = \alpha_0 + \alpha_i [1/A_{it-1}] + \beta_{1i} [(\Delta REV_{it} - \Delta REC_{it})/A_{it-1}] + \beta_{2i} [PPE_{it}/A_{it-1}]$$

$$+ \beta_{3i} \operatorname{ROA}_{it(\mathrm{or}\ it-1)} + \varepsilon_{it}$$

$$\tag{20}$$

Where,

 $\alpha_0$  : Intercept

ROA : Rate of return on assets

The rest of the variables are similar to those in equations (17 and 19)

Consequently, in the second stage, the measure of discretionary accruals (i.e. the residual) is the difference between total accruals and the fitted normal accruals.

Finally, it seems clear that this model is an attempt to overcome the limitations of the standard and modified Jones models which were addressed by prior research. It has become popular because it yields stronger results than the Jones model (Ronen and Yaari, 2008). In terms of the intercept, however, a research conducted by Peasnell et al. (2005) tests an alternative remedy to forcing the modified Jones model through the origin. While the Jones and modified Jones models suppress the constant term and treat the reciprocal of lagged total assets as an explanatory variable, they replace the reciprocal of lagged total assets (i.e. the first term on the right-hand side) with a constant. In doing so, the researchers believe that replacing the reciprocal of lagged total assets with a constant term is advantageous because this specification not only avoids forcing the model through the origin but also maintains only the two explanatory variables (i.e. revenues and property, plant and equipment) as originally proposed by Jones (1991) and Dechow et al. (1995). Their findings reveal that the test results of these two alternative specifications are substantially the same. Yet in the case of Kothari et al.'s (2005) model, the addition of new intercept maintains all of the three original explanatory variables.

#### 6. The Kang and Sivaramakrishnan Model (1995):

Kang and Sivaramakrishnan (1995) argue that aggregate accruals models such that attempt to decompose total accruals into non-discretionary and discretionary accruals, such as Jones (1991), suffer from three main methodological issues; errors-in-variables, omitted variables, or simultaneity problems. Errors-in-variables problem arises because the variables used to estimate non-discretionary accruals are likely to be affected by earnings management themselves. This problem causes the measurement error to be correlated with the explanatory variables, leading to inconsistent parameter estimates and biased discretionary accruals proxy. The second problem pertains to the bias in testing earnings management if omitted variables, captured by measurement error, are correlated with PART. Thirdly, simultaneity problem arises because both the dependent and independent variables are jointly determined by constraints imposed by double-entry bookkeeping. Econometrically, in simultaneousequations system, this problem arises when variables on the left-hand side of the model and on the right-hand side of the same model influence each other at the same time (i.e. endogenous variables). In such case, ordinary least squares estimates would yield inconsistent parameter estimates with incorrect standard errors, which in turn would lead to invalid inferences.

Kang and Sivaramakrishnan (1995) also criticise other models that proxy for earnings management as the change in total accruals as a measure of discretionary accruals such as Healy (1985) and DeAngelo (1986). They argue that although the problems discussed above do not occur, such approach do not adequately control for unmanaged accruals reflecting economic conditions.

In response to these methodological problems, Kang and Sivaramakrishnan (1995) propose a model which has three key features. First, the model is implemented in both the instrumental

variable (IV) method and the generalised method of moments (GMM) procedures to control for the problems of error-in-variables and simultaneity<sup>10</sup>. Second, they include cost of goods sold and other expenses to overcome the omitted variable problem. By doing so, they introduce a separate driver for expenses instead of adopting Jones's (1991) assumption that change in current assets and current liabilities are both driven by changes in revenues. Third, the model predicts managed accruals using ending balances, rather than the change, of current assets and current liabilities.

This model takes into account the behaviour of working capital accruals by matching them to assets and liabilities from which they originate. Symbolically,

$$AB_{it}/A_{t-1} = \varphi_0 + \varphi_1 \left[ (\delta_1 \text{ REV}_t)/A_{t-1} \right] + \varphi_2 \left[ (\delta_2 \text{ EXP}_t)/A_{t-1} \right] + \varphi_3 \left[ (\delta_3 \text{ PPE}_t)/A_{t-1} \right] + \varepsilon_{it}$$
(21)

Where,

AB : unmanaged accruals balances (i.e. non-cash current assets less current liabilities and depreciation)

$$\delta_1$$
 : prior period's receivables-to-sales ratio

- $\delta_2$  : prior period's assets-to-expenses ratio
- $\delta_3$  : prior period's depreciation expense-to-gross property, plant and equipment ratio

REV : current period sales

- EXP : current period operating expenses (i.e. cost of goods sold, selling and administrative expenses before depreciation)
- PPE : gross property, plant and equipment
- $A_{t-1}$  : lagged total assets
- ε : error term

<sup>&</sup>lt;sup>10</sup> Instrumental variables method requires an inclusion of an instrumental variable that is uncorrelated with the error term and correlated with the endogenous variable (Wooldridge, 2006)
As such, this model predicts the unmanaged working capital accruals though,

- Predicting unmanaged current-period receivables ( $\delta_1 * \text{REV}_t$ )
- Predicting unmanaged current assets net of current liabilities, cash, and receivables  $(\delta_2 * \text{EXP}_t)$
- Predicting unmanaged current-period depreciation expense ( $\delta_3 PPE_t$ )

Kang and Sivaramakrishnan (1995) report results that confirm the superiority of their model to the Jones (1991); they conclude that their model is more powerful and more robust against type I error than the Jones (1991). However, the simultaneous equation approach has not caught on in later research as a method of testing for earnings management. Fields et al. (2001) remarks that this model has not been thoroughly tested or widely adopted by other researchers because of problems designing appropriate applications for the simultaneous equations approach. Moreover, Peasnell et al. (2000, p.313) point out that "*the original time-series formulation is not amenable to cross-sectional estimation techniques*".

## **3.5.1.1.3.** The Reliability of Aggregate Accruals Models:

It is evident that competing models measure discretionary accruals with some error because they suffer from certain drawbacks. This in turn gives rise to the question as to which of these models produce more reliable estimates. In response, several researchers have examined the reliability of abovementioned models in terms of specification and power of the tests (e.g. Jaime and Noguer, 2004). These researchers introduce different simulations to test models' ability to (i) accept a true null hypothesis of no earnings management when a random set of observations is compared to the remaining observations of the sample (i.e. specification), and (ii) reject a false null hypothesis of no earnings management when earnings management is introduced either artificially to a set of observations, or through a set of observations that have already been identified of including some manipulations (i.e. power).

The noticeable commonly agreed conclusion is that all six models are well-specified, especially the Kothari, Leone and Wasley model (2005) which due to the introduction of ROA. This signifies that no significant statistical difference is found between the randomly selected and rest of the sample's observations.

Although the models generate low-power test of earnings management, their ability of not committing type II error does vary. Two prominent studies that investigate this issue include Dechow et al. (1995) and Jaime and Noguer (2004). In fact, none of these studies compares the abovementioned six models at a time. Of the models investigated in each study, the following table shows *only* the models that are discussed in this thesis.

Dechow et al. (1995)	Jaime and Noguer (2004)
Modified Jones	Kothari, Leone and Wasley
Jones	Modified Jones
DeAngelo	Jones
Healy	Kang and Sivaramakrishnan

Dechow et al. (1995) report that the modified Jones model generates the most powerful test of correctly detecting earnings management. Obviously, the Kothari, Leone and Wasley model was not proposed at that time. The results of Jaime and Noguer (2004) confirm that the Kothari, Leone and Wasley model produces the highest power whereas the Kang and Sivaramakrishnan model produces the lowest power.

As a matter of fact, every model in the literature suffers from some methodological limitations. Even Kothari et al. (2005) point out that their model suffers from inflated standard error that leads to committing type II error more frequently. Nonetheless, in their

comprehensive review, Ronen and Yaari (2008) state that the Kothari, Leone and Wasley model has become quite popular because it yields stronger results than the Jones model. On this basis, along with other reasons discussed in the methodology chapter, the Kothari, Leone and Wasley model is adopted in this thesis as the appropriate estimation model of discretionary accruals.

#### **3.5.1.2.** The Approach of Specific Accruals Models:

An alternative approach to that of aggregate accruals is to estimate the relation between a single accrual and explanatory factors. McNichols (2000) identifies some advantages and disadvantages relative to the approach of aggregate accruals. The prime advantage of specific accrual approach is that it allows the understanding of the behaviour of a certain account absent earnings management based on the key factors of the generally accepted accounting principles. A crucial disadvantage arises when the aim of a researcher is to measure the magnitude of earnings management because in this case, a research would need to model for each specific accrual that is likely to be manipulated. This makes this approach less appealing because, as mentioned earlier, managers are more likely to use several accruals rather than a single accrual to manipulate earnings (Jones, 1991).

Several studies document the practice of earnings management through the specific accrual approach. For instance, Petroni (1992) provides evidence that financially weak insurance companies tend to increase their income by manipulating loss reserves downwards. Another distinct research, conducted by Beneish (1997), also documents earnings management by modelling for several specific accruals such as, receivables and inventory, separately. He confirms that GAAP violators were more likely to report positive accruals in years prior to, and including, the year of being identified as GAAP violators.

#### 3.5.1.3. The Distributional Approach:

Studies within this approach investigate earnings management around certain benchmarks by examining the density of the distribution of firms' earnings after management (McNichols, 2000). The basic assumption underlying this approach is that the distributions of unmanaged earnings or unmanaged changes in earnings are relatively smooth (Ronen and Yaari, 2008). Yet if firms have incentives to meet a certain benchmark, then the distribution of managed earnings will have fewer (more) observations than expected for earnings amounts just below (above) the threshold (McNichols, 2000). Examples of studies that adopt this approach include Burgstahler and Dichev (1997) and Degeorge et al. (1999). Both studies conclude that firms overstate their earnings to avoid reporting losses, maintain previous performance and meet analysts' forecasts. Dichev and Skinner (2002) find further evidence that firms manage their earnings upwards to avoid the violation of debt covenants.

Nevertheless, researchers raise several criticisms against this approach. Most prominently, Jacob and Jorgensen (2007) attribute the distribution with fewer observations that fall below the threshold to the fact that firms may manage earnings downwards when they realise that they will not be able to meet the benchmark.

## 3.5.2. The Measurement of Real Activities-Based Earnings Management:

Graham et al. (2005) report managers' use of real activities in preference to accruals to manage earnings. Early studies that directly document real activities earnings management have concentrated on investment activities. For instance, several researchers bear out managers reduce of spending on Research and Development Expenditure (R&D) to (i) enhance executives incentives toward the end of their tenure (e.g. Dechow and Sloan, 1991),

and (ii) finance stock repurchases (e.g. Bens et al., 2002). Other research also find evidence consistent with firms cutting sales prices to avoid losses and earnings decrease (e.g. Jackson and Wilcox, 2000), and selling assets and marketable securities to achieve target earnings (e.g. Bartov, 1993; Herrmann et al. 2003).

Following Roychowdhury (2006), a growing body of literature examines the management of operational activities to, for example, (i) meet earnings benchmarks (e.g. Gunny, 2010), and (ii) Inflate share prices around seasoned equity offerings (e.g. Cohen and Zarowin, 2010). Hence, Roychowdhury's model is discussed below because it is the most commonly used to detect the manipulation of real activities in the recent literature.

# 3.5.2.1. The Roychowdhury Model (2006):

Roychowdhury (2006) focuses on three significant operational activities through which earnings can be managed. First, managements may offer price discounts or more favourable credit terms to accelerate sales. Second, they could engage in overproduction activities to reduce cost of goods sold; as with higher levels of produced goods, fixed overhead costs per unit decreases leading to lower cost of goods sold and higher operating margins. Third, they could directly reduce discretionary expenses to increase reported earnings.

Therefore, this model uses three regressions developed by Dechow et al. (1998) where each of which is assigned to estimate the normal levels of cash flow from operations, production costs, and discretionary expenses, respectively. Consequently, the difference between the actual and expected normal levels of each operational activity represents the managed earnings.

The first regression expresses normal cash flow from operations as a function of sales and change in sales in the current period; all deflated by lagged assets, as follows,

$$CFO_t / A_{t-1} = \alpha + \beta_1 (1/A_{t-1}) + \beta_2 (S_t / A_{t-1}) + \beta_3 (\Delta S_t / A_{t-1}) + \varepsilon_t$$
(22)

Where,

CFO<sub>t</sub> : current cash flow from operation

 $S_t$  : current sales

 $\Delta S_t$  : change in current sales

 $A_{t-1}$  : lagged total assets

The second regression pertains to estimating normal levels of production costs. The second regression is based on being Production Costs (PROD) equal the Change in Inventory ( $\Delta$ INV) plus Cost of Goods Sold (COGS). Hence, the regression of normal levels of production costs is derived from the functions of change in inventory and cost of goods sold as follows,

$$COGS_t / A_{t-1} = \alpha + \beta_1 (1/A_{t-1}) + \beta_2 (S_t / A_{t-1}) + \varepsilon_t$$
(23)

And,

$$\Delta INV_t / A_{t-1} = \alpha + \beta_1 (1/A_{t-1}) + \beta_2 (\Delta S_t / A_{t-1}) + \beta_3 (\Delta S_{t-1} / A_{t-1}) + \varepsilon_t$$
(24)

As a result of combining both regressions,

$$PROD_{t} / A_{t-1} = \alpha + \beta_{1} (1/A_{t-1}) + \beta_{2} (S_{t} / A_{t-1}) + \beta_{3} (\Delta S_{t} / A_{t-1}) + \beta_{4} (\Delta S_{t-1} / A_{t-1}) + \varepsilon_{t}$$
(25)

Bearing in mind that discretionary expenses (DISEXP) comprise advertising expenses, research and development, and selling, general and administrative expenses, discretionary expenses are expressed as a function of lagged sales as follows,

DISEXP<sub>t</sub> /A<sub>t-1</sub> = 
$$\alpha + \beta_1 (1/A_{t-1}) + \beta_2 (S_{t-1}/A_{t-1}) + \varepsilon_t$$
 (26)

It is important here to highlight that the data set of Roychowdhury (2006) is based on firms that report earnings greater or equal to zero. In other words, his data includes firms that are suspect of practicing real activities manipulations to avoid losses. Hence, his hypotheses are constructed to solely investigate income-increasing real activities earnings management which in turn has lead to the use of signed residuals. Although the use of signed residuals allows examining managerial invectives to engage in earnings management in a particular direction, it does not allow for testing the general propensity to manage earnings. To do so, unsigned residuals (i.e. magnitudes) can be used to measure firms' success in managing earnings up or down as needed (Reynolds and Francis, 2000). Consequently, studies that estimate signed residuals through Roychowdhury's model to investigate relationships between corporate governance mechanisms and earnings management reveal results that indicate either income-increasing or income-decreasing effects, not the effectiveness of these mechanisms in thwarting earnings management practices. Examples of these studies include Cohen and Zarowin (2010) who confirm that SEO firms engage in income-increasing real activities manipulation and Demers and Wang (2010) who find a negative association between younger managers and real activities earnings management. This indicates that such results provide limited implications for future research. Therefore, this study uses absolutes values of managed earnings (i.e. unsigned residuals) to access the effectiveness of ownership structure mechanisms in mitigating real activities earnings management. Moreover, the Roychowdhury (2006) model suffers from a key limitation associated with the proxy of sales manipulation activities (i.e. the first regression in Roychowdhury's model). That is, boosting sales by offering price discounts and more lenient credit terms will increase current period's earnings but will also results in lower cash flows in the current period, and vice versa (Cohen and Zarowin, 2010). However, regressing cash flows on sales to generate abnormal cash flow might give rise to a potential problem in interpreting the results of the current empirical model. There are non-sales related factors that could also affect abnormal cash flow. For example, while the practice of overproduction activities has a negative effect on abnormal cash flow, the reduction of discretionary expenses has a positive effect. As a result, the net effect on abnormal cash flow could be ambiguous. Hence, implications that are reliant on this particular dependent variable should be considered cautiously.

Eventually, the contribution made by Roychowdhury has been widely acknowledged as his model has been widely used in subsequent studies. Accordingly, this model is adopted in this thesis as the appropriate estimation model of real activities earnings management.

# 3.6. Summary:

The main feature of this chapter is that it emphasises the necessity for any research to investigate both types of earnings management simultaneously in order to arrive at definitive conclusions. Therefore, the nature and consequences of accruals-based and real activities-based earnings management are discussed throughout the chapter. First, the definition section sheds the light on these two types along with the managerial intent behind, and directions of earnings management. Second, a critical review of the methodological issues associated with the measurement of managed earnings is discussed. Third, this chapter discusses the models adopted in this thesis to estimate the amounts of earnings management.

# **Chapter Four**

# **Literature Review**

# 4.1. Introduction:

At an early stage of the previous chapter, it is articulated that managerial intent lies in the essence of the various definitions of earnings management. Although earnings management bears a beneficial aspect, Jiraporn et al. (2008) suggest that scandals at Enron, WorldCom and elsewhere have drawn public attention towards managers' opportunistic utilisation of earnings management for their own private interests at the expense of the shareholders. Agency theory is concerned with the latter aspect where the separation of ownership and control in organisations might stimulate managers to adopt self-interest behaviour (Arnold and Lange, 2004). To mitigate such opportunistic behaviour, corporate governance deems ownership structure mechanisms and external audit as essential devises in monitoring, disciplining and influencing managerial opportunism (Mallin, 2007).

Accordingly, the next section builds on the previous one in terms of the theoretical framework of earnings management research. Section three reviews the literature on the relationship between accruals-based and real activities-based earnings management, and ownership structure monitoring mechanism including: ownership concentration, managerial ownership, institutional investors' ownership and foreign investors' ownership. In section four, a review of the literature is conducted in this chapter to elaborate on external auditor impact in two subsections. The first subsection reviews factors and empirical evidence concerning the association between audit quality and earnings management in both developed

and less developed markets. The second subsection discusses empirical evidence on the effect scrutiny of external audit on the substitutive relationship between accruals-based and real activities-based earnings management. Finally, section five presents a conclusion within which the research questions are addressed.

# **4.2. Theoretical Framework:**

There are two main theoretical frameworks that can be used to explain and analyse the relationship between earnings management and corporate governance; Agency theory and stewardship theory. While agency theory offers a framework corresponding to the opportunistic perspective of earnings management, stewardship theory refers to the informational (i.e. beneficial) perspective to communicate relevant information to investors.

Stewardship theory considers agents as good stewards. In details, stewardship theory assumes that directors and managers, alike, act in the best interest of the firm since not all agents seek personal gain (Nordberg, 2011). As such, managers may manage earnings to signal value relevant information about the firm's future performance and thereby improve the ability of earnings to reflect underlying economic value (Gul et al., 2003; Krishnan, 2003). Accordingly, directors may not prevent the practice of earnings management since they perceive it as beneficial to shareholders (Abdul-Rahman and Ali, 2006).

A number of studies investigate earnings management within stewardship framework where the beneficial perspective is hypothesised (i.e. informational or beneficial hypothesis). For instance, both Subramanyam (1996) and Krishnan (2003) document a significant positive relationship between discretionary accruals and, future profitability and share returns. Concerning future profitability, they find that discretionary accruals can significantly and positively explain three one-year-ahead profitability measures including operating cash flow, non-discretionary income and net income. Concerning share returns, they find that financial markets price discretionary accruals. This is consistent with either markets efficiently pricing value relevant information, or inefficient markets pricing opportunistic discretionary accruals. Another study conducted by Siregar and Utama (2008) provides evidence suggestive of family controlled firms (i.e. corporate governance characteristic) using discretionary accruals to convey inside-value-relevant information.

Nevertheless, the framework of stewardship theory cannot be used in this study for several reasons. First, it is implausible to associate real activities earnings management that entails a sacrifice in the firm's future value with beneficial purposes. Second, the findings of Subramanyam (1996) and Krishnan (2003) are based on the pricing of shares by markets that are able to "see-through" accruals which is not applicable to the inefficient market of Amman Stock Exchange. Third, the findings of Siregar and Utama (2008) do not specify whether the practice of earnings management was intentionally tolerated by directors to signal relevant information, or simply because corporate governance mechanisms were not effective in mitigating opportunistic earnings management.

As concerns agency theory, contrast to stewardship theory, it posits that managers' decisions are motivated by self-interest and hence will not always perform in the best interests of the shareholders (Arnold and Lange, 2004). A large body of literature examine earnings management using agency theoretical framework where managements are hypothesised to display opportunistic behaviour (Louis and Robinson, 2005). As such, corporate governance mechanisms are supposed to act as deterrence devices and preserve shareholders wealth. Examples of studies that document managers tendency to manipulate firms' accounts to maximise their interests at the expense of other stakeholders (i.e. the opportunism hypothesis)

include: Healy (1985), Jones (1991), Becker et al. (1998), Teoh et al. (1998), Marquardt and Wiedman (2004), Agrawal and Cooper (2007) and McNichols and Stubben (2008).

As stated earlier, although earnings management could be used beneficially, managerial opportunistic behaviour entails harmful effects that might destroy the wealth of other stakeholders. Because the research questions of the current study are concerned with the applicability and effectiveness of mechanisms that mitigate such harmful effects, this study examines those mechanisms in an agency theory setting. That is, this study follows the vast majority of previous research as it adopts the opportunistic framework of earnings management.

# **Agency Theory:**

In the context of an organisation, agency theory draws on the agency relationship where principals (i.e. shareholders) hire agents (i.e. managers) to make decisions that maximise shareholders' wealth (Arnold and Lange, 2004). Jensen and Meckling (1976) point out that this separation of ownership and control in modern diffuse ownership corporation gives rise to the general problem of agency. That is, if both parties to the relationship seek their own interest, there is a good potential for conflicts of interests to take place. It naturally follows then that, in general, managers' decisions are motivated by self-interest and hence will not always perform in the best interests of the shareholders (Arnold and Lange, 2004). Along with the problem of the potential opportunistic behaviour of the agent, the agency relationship can also impose the problem of information asymmetry. The latter problem indicates that the principal and the agent will have access to different levels of information whereby the agent will have more information (Mallin, 2007). Agency problems are associated with costs that both the principal and the agent can incur. Jensen and Meckling

(1976) define agency costs as the sum of: monitoring costs, bonding costs, and residual loss. Monitoring costs arise because agency problems put the principal at a disadvantage of being unable to control the desired actions of the agent (Mallin, 2007). The principal incurs monitoring costs by setting appropriate incentives for the agent and establishing monitoring mechanisms to limit the aberrant activities of the agent (Jensen and Meckling, 1976).

In terms of bonding costs, Arnold and Lange (2004) state that the agent can also incur bonding costs to avoid the problems of conflict of interests. There is an incentive for the agent to expend resources such as offering a bond, to ensure that s/he would not take actions that are harmful to the principal (Jensen and Meckling, 1976). Plausibly because in absence of such bonding activities, the principal would price protect heavily and hence incur monitoring costs that reduce the agent's compensation (Arnold and Lange, 2004).

The third type of agency costs is the residual loss of firm value which occurs even after incurring monitoring and bonding costs (Subramaniam, 2006). When both the principal and the agent are "utility maximisers" some divergence remains between the agent's opportunistic decisions and those decisions which would maximise the principal's welfare (Jensen and Meckling, 1976).

Davidson III et al. (2004) propose that earnings management may be a type of agency cost. They draw on the managerial opportunistic behaviour that could lead a firm to manage the impression it presents to the market through earnings management. If firms release financial reports that do not accurately reflect their actual economic performance, the ability of shareholders to make optimal financial decisions will be clouded. "*Thus, earnings management is related to agency theory because the former can create or exacerbate agency costs*" (Davidson III et al., ibid, p.268). This relation has indeed lead researchers to use agency theory as a framework in most of accounting research in earnings management

(Alexander, 2010). Examples include: Warfield et al. (1995), Lennox (1999), Yeo et al. (2002), Zhong et al. (2007) and Katz (2009).

Although Jensen and Meckling (1976) emphasise the importance of the role of monitoring in an agency relationship, they do not examine how firms could structure their corporate governance to control the agency problem created by the separation of ownership and control (Sridharan et al., 2007). Fama and Jensen (1983) pursue this concern on the basis of "The Decision Process". They distinguish decision management (i.e. initiation and implementation of decisions) from decision control (ratification and monitoring decisions). The reason for this separation system is to control for agency problems in situations where the agents who initiate and implement important decisions are not the major residual claimants and hence do not bear a major share of the wealth effects of their decisions. Therefore, delegating decision control systems to the board of directors helps the ratification and monitoring of important decisions. The board of directors is appointed by shareholders as a corporate governance solution to control the agency problem likely to arise with senior managers (Sridharan et al., 2007). The role of the board of directors includes a duty to minimise conflicts of interests through being the link between principals and agents. Directors are supposed to act in the interest of the firm as a whole. Hence, it is an essential feature of good corporate governance that the board will be accountable to all shareholders. In addition, directors must have access to reliable information and then communicate them with the shareholders to ensure that, for example, decision-making processes are transparent (Mallin, 2007). In brief, board of directors is the highest internal corporate governance mechanism, particularly in monitoring top management (Fama and Jensen, 1983).

Many studies investigate various characteristics of boards of directors and their effect on earnings management. Beginning with independent directors, Klein (2002b) and Yang and

Krishnan (2005) provide evidence supportive of firms with independent directors on boards and on audit committees are less likely to manage their earnings. Xie et al. (2003) and Bedard et al. (2004) report that directors with corporate of financial expertise are inversely associated with earnings management. Even the size of boards and audit committees is found negatively related to earnings management Xie et al. (2003) and Yang and Krishnan (2005).

However, with the exception of board size, none of these directors-specific characteristics are investigated in this research. Instead, the effectiveness of ownership structure corporate governance mechanisms in monitoring, disciplining managerial behaviour and thereby mitigating earnings management are examined in this research. This is due to two main reasons. First, ownership structure influences the monitoring mechanisms used by the firm (Siregar and Utama, 2008). Second, data limitation - Amman Stock Exchange data base does not provide sufficient information about directors independence, audit committees and directors backgrounds.

While agency theory posits that ownership structure mechanisms align the interests of managements with those of the shareholders, it views external audit as the most important, independent and professional mechanisms in terms of control and monitoring (Nordberg, 2011). Further, according to agency theory, the role of external auditor also includes ensuring that internal controls are adequate and effective in preventing management from overriding control activities (Rezaee, 2005). For instance, Bedard and Graham (2011) provide evidence suggestive of external auditors detecting about three-fourths internal controls deficiencies through control testing. As such, external auditors are considered as trustworthy and experienced agents who will provide the principals with credible and reliable information, and hence, reduce the scope for information asymmetry and mitigate the latitude for managerial opportunistic behaviour. Consequently, an establish line of research has used the

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agency theoretical framework to address the role of external auditors in organisations (Sarens and Abdolmohammadi, 2007).

As regards earnings management, regulators and practitioners have expressed considerable concerns regarding the harmful effects of earnings management practices. For instance, Arthur Levitt, the former Chairman of the Securities and Exchange Commission has made earnings management a top priority because it distorts the quality of earnings and hence, the integrity of financial reporting (cited in Heninger, 2001, p.111).

In response, actions have been taken to reduce earnings management. The International Accounting Standards Board have eliminated options in several standards and issued more detailed guidance to limit the impact of managerial discretion (Ewert and Wagenhofer, 2005). Another action that took place in the US is the Public Company Accounting Reform and Investor Protection Act of 2002 (also known as the Sarbanes-Oxley Act). This act has imposed a requirement that senior management must certify financial reports. As such, senior executives will be held responsible should an earnings management attempt is discovered. This act has also created an independent body called Public Company Accounting Oversight Board (PCAOB) that is responsible for both the issuance of audit, ethics and independence standards, and the monitoring of audit firms. Further, the act has also enhanced public companies' internal controls such as reinforcing the requirement that each public company must have an audit committee that comprises independent directors (Ronen and Yaari, 2008).

In fact, accounting standards setters and other bodies such as the PCAOB (i.e. indirect oversight mechanisms) rely heavily on the external audit monitoring. External audit monitoring role have been widely regarded as an important means to add credibility to firms' accounts by detecting errors and frauds in financial statements. In this sense, Rezaee (2005) states that external auditors are considered as a value-added function because of their

responsibility to report any detected material misstatements regardless pressure from their clients. Therefore, scholars such as Ronen and Yaari (2008) assert that external audit is an essential corporate governance mechanism. They state that "*Because auditors attest to financial reports, auditors are probably the most important gatekeeper for blocking pernicious earnings management*" (p.263). In the end, Mallin (2007) notes that agency theory views corporate governance internal and external mechanisms as essential monitoring devices that minimise the effect of agency problems. Given these agency assumptions, promoting corporate governance mechanisms should have a mitigating effect on earnings management. Particular to the current study, ownership structure mechanisms are supposed to align the interests of managers with those of the shareholders and consequently, less opportunistic earnings management. Similarly, high audit quality is also supposed to have a mitigating effect on opportunistic earnings management.

# 4.3. The Effect of Ownership Structure on Earnings Management

Under the opportunism hypothesis, the various monitoring mechanisms are expected to have a mitigating effect on earnings management (Bowen et al., 2008). Corporate ownership structure in Jordan comprises four types of ownership: managerial ownership, ownership concentration, institutional investors' ownership and foreign investors' ownership. Although one might argue in favour of ownership structures as effective mechanisms (e.g. Siregar and Utama, 2008), the impact of ownership structures on earnings management can switch from positive to negative effect (Bertin et al., 2008). Therefore, this section reviews prior research on the effectiveness of these ownership structure mechanisms in reducing the practice of earnings management.

#### 4.3.1. Managerial Ownership:

The literature refers to two competing views concerning the effect of managerial ownership on managers' incentives: the incentive alignment effect and the entrenchment effect (e.g. Yeo et al., 2002; Dechow et al., 2010). On the one hand, the traditional agency theory argues in favour of the incentive alignment effect. It entails that shareholdings held by managers help align the interests of managers and shareholders (Jensen and Meckling, 1976). That is, greater managerial ownership enhances corporate performance and decreases opportunistic managerial behaviour (Teshima and Shuto, 2008). On the other hand, Morck et al. (1988) argue that greater managerial ownership provides managers with deeper entrenchment and hence, greater latitude for opportunistic behaviour.

A prominent study conducted by Warfield et al. (1995) investigates the relationship between managerial ownership and earnings management in the US market. They proxy for managerial ownership as the percent of equity shares held by officers, directors and principal owners who can exercise significant influence over corporate affairs. Besides, they proxy for earnings management as the absolute value of abnormal accruals estimated using DeAngelo model. The results support the incentive alignment effect. That is, the findings confirm the negative effect of managerial ownership on the magnitude of absolute abnormal accruals. This negative relationship holds up even when the researchers estimate absolute abnormal accruals using time-series Jones model.

Evidence supportive of the incentive alignment effect in the US is also submitted by Wang (2006) who examines the effect of founding family ownership on earnings quality. Founding family firms refer to firms with substantial shares held by family members or with founding family members actively involved in the management or the board of directors. He estimates the absolute value of abnormal accruals using Dechow and Dichev (2002) model. The

findings suggest that family firms report statistically significant lower abnormal accruals than nonfamily firms.

Nevertheless, findings of studies based on US data are not constantly consistent with the incentive alignment effect. For instance, Bowen et al. (2008) show no significant relationship between managerial ownership and earnings management in the US. The researchers use the percentage of shares held by top managers to proxy for managerial ownership. In terms of earnings management proxies, they measure accounting earnings management in three ways: (i) the absolute value of abnormal accruals estimated through the modified Jones model<sup>11</sup>, (ii) smoothing of earnings measured as the ratio of standard deviation of operating cash flow to standard deviation of earnings, and (iii) the frequency of reporting small positive earnings surprises. Interestingly, the results provide no evidence supportive of either incentive alignment or entrenchment effects in any of the three measures.

Moreover, at the other extreme, findings contrast to those of Warfield et al. (1995) and Wang (2006) do also exist within the US context. That is, the results of Behn et al. (2002) are in favour of the entrenchment effect. To conduct their analysis, the researchers employ the modified Jones model to estimate the proxy for earnings management (i.e. discretionary accruals. Consequently, they find a positive and significant coefficient of managerial ownership associated with the magnitude of abnormal accruals. Thus, their results are in favour of the entrenchment effect. It is crucial to note that this particular study bears another important aspect. This study also investigates the effect of managerial ownership on real activity earnings management. However, the findings show no significant effect of managerial ownership on the absolute values of the change in Research and Development (R&D) and advertising expenses.

<sup>&</sup>lt;sup>11</sup> The model controls for cash from operations as proposed by Kasznik (1999).

Rebai (2011) also investigates the effect of managerial ownership on R&D manipulations. He proxies for managerial ownership as the percentage of shares held by officers, and real activities earnings management as total R&D divided by total sales. He finds results consistent with the incentive alignment effect as the coefficient of managerial ownership is significantly negative.

In fact, Behn et al. (2002) and Rebai (2011) neither use the terminology of real activities earnings management nor they adopt the popular model of Roychowdhury. Although the study of Garven (2009) does so<sup>12</sup>, she tackles one aspect only of real manipulations which is discretionary expenditures. Despite this, she resembles Roychowdhury's (2006) research design in the use of signed residuals to identify firms being suspect of reducing discretionary expenses to avoid reporting annual losses. The final sample consists of 292 US firm-year observations divided equally into suspect versus non-suspect firms for comparison. Her research design differs from the aforementioned research in two ways: (i) the use time-series version of the Roychowdhury model which requires data from 10 preceding years for the estimation of abnormal discretionary expenses, and (ii) the measurement of managerial ownership as the value in millions of shares equity held by non-independent directors. Eventually, the results show a significant positive relationship between levels of managerial ownership and levels of income-increasing manipulations in suspect firms. This indicates that as levels of managerial ownership increases, suspects are more likely to increase their reported income by reducing discretionary expenditures.

A research that that investigates the association between managerial ownership and all three real activities earnings management is conducted by Cohen et al. (2008). Employing

<sup>&</sup>lt;sup>12</sup> A research conducted by Krishnan and Visvanathan (2008) includes managerial ownership as a control variable. However, the researchers note "we also conduct tests of real earnings management (Roychowdhury 2006) and find that only accounting financial expertise constrains real earnings management. Those results are not reported for the sake of brevity", (p.853).

Roychowdhury's model, they find that levels of managerial ownership are negatively related to abnormal cash flow from operating activities, abnormal production costs and abnormal discretionary expenses. Thus, they find evidence consistent with the incentive alignment effect. Interestingly, the probability of the inference problem to exist seems minimal. As stated in Chapter Three, the net effect of overproduction and cutting discretionary expenses on abnormal cash flows could be ambiguous, the results show that the negative effect on abnormal cash flow from overproduction is not neutralised by the positive effect of the reduction of discretionary expenses. This is apparent in persistence of the negative effect of managerial ownership on all of the three real activities manipulations.

Demers and Wang (2010) also employ Roychowdhury's model but they exclude abnormal operating cash flow. Although they find evidence supportive of the incentive alignment effect in abnormal production costs model, their results reveal no significant relationship between managerial ownership and discretionary accruals.

Obviously, the evidence concerning the nature of the relationship between managerial ownership and both accruals-based and real activities-based earnings management is somewhat mixed in the US market.

Evidence on what effect managerial ownership has on accruals earnings management outside the US is no different than the US. In the UK, a research conducted by Peasnell et al. (2005) investigates the effect of board monitoring on constraining earnings management. The researchers estimate abnormal current accruals to proxy for earnings management using the modified Jones model excluding Property, Plant and Equipment (PP&E)<sup>13</sup>. Moreover, they proxy for managerial ownership by a dummy variable taking the value of one if the

<sup>&</sup>lt;sup>13</sup> The explanatory variable, Property, Plant and Equipment (PP&E), aims mainly to control for depreciation and amortisation expenses in the original models. Therefore, it becomes obsolete for a measure of current accruals that excludes depreciation and amortisation expenses (Young, 1999).

proportion of shares held by inside directors is less than 5% (i.e. low managerial ownership) and zero otherwise. They find, opposite to the hypothesised sign, that the coefficient of managerial ownership is negative and significant which suggests that only firms with low managerial ownership prevent earnings management. Therefore, the findings are in favour of the entrenchment effect.

Bos et al. (2011) posit that all previous research on the UK might be subject to limitation regarding the presumed linear relationship between earnings management and managerial ownership. Therefore, they hypothesise a non-linear form within which abnormal accruals fall with increasing managerial ownership until a turning point after which abnormal accruals begins to increase with increasing managerial ownership. The results provide evidence supportive of a non-linear relationship in the UK context. That is, consistent with Peasnell et al. (2005), executive directors constrain earnings management at levels of managerial ownership less than 5% of share capital. Yet the magnitude of abnormal accruals increases markedly with levels of executive ownership between 5% and 10% and begins to decreases when managerial ownership exceeds 15%. Hence, this study document that both the incentive alignment and entrenchment effects exist in a non-linear relationship between managerial ownership between managerial ownership and the magnitude of abnormal accruals.

In an attempt to overcome the limitations of Jordanian data, this research follows Peasnell et al. (2005) pertaining to managerial ownership proxy. As mentioned in methodology chapter, the information sheet concerning ownership structure of listed firms does not articulate the shareholdings of each officer or director except when those individuals join the list that contains block-holdings above 5%. In other words, it is difficult to obtain the proportion of shares held by each officer or director from Amman Stock Exchange database. Accordingly, a dummy variable is developed to capture the effect of managerial ownership on accruals

earnings management in Jordan for the first time. Moreover, given the dearth of research on managerial ownership and real activities earnings management in contexts other than the US, the current research fills this gap by examining the effect of managerial ownership on real activities-based earnings management.

#### 4.3.2. Ownership Concentration:

While ownership in publicly traded firms in the UK and the US is highly dispersed, ownership in other countries such as Canada, Spain, Denmark, Singapore and Jordan is highly concentrated. Park and Shin (2004, p.432) state that "*high ownership concentration is a norm rather than an exception around the world*". In such contexts, Dechow et al. (2010) posit that agency problem exists primarily between controlling and minority shareholders. The main concern is that dominant shareholders may expropriate the interest of minority shareholders for their own private advantage (Yunos et al., 2010; Dechow et al., 2010). Yet similar to managerial ownership, the overall effect of ownership concentration on earnings management is indeterminate. On the one hand, controlling shareholders need not to be concerned about reported earnings because their interests are completely protected in such closely held firms (Klassen, 1997). On the other hand, controlling shareholders may have strong incentives for earnings manipulation to appropriate wealth from the public firms they control at the expense of minority shareholders (Park and Shin, 2004).

Motivated by the heavily concentrated shareholdings and controlling ownership in the Danish corporate ownership structure, Gabrielsen et al. (2002) test the effect of managerial ownership on absolute discretionary accruals in Denmark. Due to data limitation, they use a survey method to collect observations of 76 listed firms from 1991 - 1995. Following Warfield et al. (1995), managerial ownership is proxied by the proportion of shares held by

inside individuals who can exercise significant influence over corporate affairs. To measure the magnitude of earnings management, the researchers subtract expected normal accruals (defined as four-year firm-specific average of previous period's accruals) from current period's accruals. Afterwards, they consider the absolute residuals as absolute discretionary (i.e. abnormal) accruals. They conduct simple and multiple linear regressions and report an insignificant relationship between managerial ownership and earnings management.

In the Far East, Teshima and Shuto (2008) investigate nonlinearities in the relationship between managerial ownership and directional earnings management in the developed economy of Japan. To that end, they use quadratic and cubic forms of managerial ownership which is proxied by the fraction of shares held by all directors. Further, they employ the modified Jones model to estimate the absolute value of income increasing and decreasing discretionary accruals. Accordingly, two subsamples emerge from an original sample of 18,196 firm-year observations from 1991-2000. Interestingly, the findings document (i) the incentive alignment effect in firms with low and high levels of managerial ownership, and (ii) the entrenchment effect at intermediate levels of ownership. More specifically, the first subsample (i.e. Income-increasing absolute abnormal accruals) is (i) negatively related to managerial ownership at the levels below and above 13.6% and 38.8%, respectively, and (ii) positively related to managerial ownership is found significant. That is, the results show that managerial ownership is negatively related to income-decreasing absolute value of abnormal accruals.

In the less developed economy of Singapore, Yeo et al. (2002) investigates a hypothesised nonlinear relationship between managerial ownership and earnings management. To proxy for managerial ownership, they refer to the percentage of shares owned by all directors. They

also adopt the modified Jones model to estimate abnormal accruals that are subsequently used either in their absolute values indicating the magnitude of earnings management, or only in their original positive values indicating income-increasing measure of earnings management. The results show that both measures of earnings management are nonlinearly related to managerial ownership. That is, a negative and significant relation is documented between earnings management (either income-increasing or magnitude) and managerial ownership at levels equal or below 25%, and positive and significant for levels that exceed 25%.

Most relevantly, Al-Fayoumi et al. (2010) is the only research conducted on the Jordanian context to test the effect of ownership structure on earnings management. The useable sample comprises 195 firm-year observations covering the period between 2001 and 2005. The researchers employ the modified Jones model to estimate the magnitude of abnormal accruals. Similar to the majority of previous research, they proxy for managerial ownership as the percentage of shares held by officers or directors within the firm and their families. The results show a statistically significant positive coefficient on insider ownership supporting the entrenchment effect.

However, the proxy for insider ownership used in Al-Fayoumi et al. (2010) might not capture the essence of managerial ownership role in constraining earnings management practices in Jordan. This is attributable to data limitation in Amman Stock Exchange data base. As mentioned earlier, it is difficult to obtain the proportion of shares held by each officer or director unless theses information were collected from each firm through a survey such as that conducted by Gabrielsen et al. (2002).

Although research on the role of controlling shareholders is mainly motivated by concentrated ownership, it is evident that these studies, up to this point, seem fairly similar to

those on the role managerial ownership in terms of proxy definition – both proxies are defined as the proportion of shares equity held by inside individuals.

Ballesta and Meca (2007) affirm the importance of considering both dimensions of ownership structure to account for the complexity of interests in corporations. Hence, they study the effect of both insider ownership and ownership concentration on accruals earnings management in Spain. The researchers proxy for insider ownership (i.e. managerial ownership) as the proportion of shares held by members of the board of directors, and for ownership concentration as the proportion of shares held by the largest block holder. In addition, they adopt the modified Jones model to estimate of the magnitudes of abnormal accruals. The findings provide evidence that insider ownership is nonlinearly related to the magnitude of abnormal accruals with a cut-off point around 40% of ownership. Hence, for insider ownership below 40%, any increase in insider ownership decreases the magnitude of abnormal accruals, supporting the incentive alignment effect. And for insider ownership above the cut-off point, the higher the insider ownership, the higher the magnitude of abnormal accruals, supporting the entrenchment effect. In terms of ownership concentration, however, no significant relationship is documented in the Spanish context.

In Canada, Park and Shin (2004) note that a large number of listed Canadian firms are controlled by a large block holder. On this basis, the researchers refer to controlling shareholders by the proportion of shares held by the largest block holder (BLOCK). They estimate current accruals via the modified Jones model to examine the effect of board composition on income-increasing earnings management. The results of their analysis report no significant linear relationship between ownership concentration and abnormal accruals. To test for nonlinearity, they conduct a robustness test using a dummy variable BLOCK at 20%,

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25% and 30% cut-off points. However, they find that even the dummy approach does not lead to new results.

Also using Canadian data, Landry and Callimaci (2003) examine the effect of ownership concentration of shifting earnings through expensing versus capitalising R&D spending<sup>14</sup>. Their sample includes 312 firm-years observation selected from industries that have a ratio of R&D expenses to sales 5% or higher. They employ a logistic regression model within which the dependent variable equals one if any amount of capitalised R&D appears in the financial statements, and zero otherwise (i.e. R&D are expensed). Concerning ownership concentration, the researchers consider firms as owner-controlled if any individual shareholder or related party owns 10% or more of voting shares. As such, they use a dummy variable that equals one for ownership levels above 10%, and zero otherwise. The findings show that decisions to capitalise R&D spending are negatively associated with firms with concentrated ownership suggesting that these firms are less concerned about earning management.

One recent research is found investigating the effect of ownership concentration on abnormal production costs and abnormal discretionary expenses measured by Roychowdhury's model. Using a sample of listed Chinese firms that report losses for three consecutive years, Cheng et al. (2010) find that no significant relationship between ownership concentration and abnormal production costs and abnormal discretionary expenses, indicating that ownership concentration is ineffective in constraining real activities earnings management. Similar evidence is reported by Garven (2009).

<sup>&</sup>lt;sup>14</sup> This is not real activities earnings management because R&D expenditures are already spent. It is rather whether to recognise those expenses or to capitalise them.

Following the aforementioned research, this study uses the proportion of shares held by the largest block holder to proxy for ownership concentration, and thereby extends previous research by investigating the effect of ownership concentration on both types of earnings management, especially because of the estimation of the magnitude (i.e. absolute values) of real activities earnings management through Roychowdhury's model (2006).

### 4.3.3. Institutional Ownership:

Institutional investors are often regarded as sophisticated investors who are better able to acquire and process information than individual investors (Bartov et al., 2000). According to Mallin (2007), managements are not likely to ignore such power associated with institutional investors. Companies usually arrange meetings with their large institutional investors on a one-to-one basis to discuss issues including firms' performance and quality of managements. Taking this advantage into consideration, institutional investors can potentially monitor earnings manipulations exercised by managers (Bowen et al., 2008). Yet this is not the whole extent to institutions involvement in corporate governance. In the past, institutions would use exit strategy by simply selling their shares in mismanaged companies (Rajgopal and Venkatachlam, 1997). However, because selling large blocks of shares entails substantial discounts, most institutional investors now actively exercise a voting strategy on all issues raised at their investee companies' annual general meetings (Nordberg, 2011).

Rajgopal et al. (1999) investigate the monitoring capability of institutional investors in the US market. They employ the modified Jones model to examine the association between institutional ownership and the absolute value of discretionary accruals. They also measure institutional investors by the proportion of shareholdings owned by institutions. The results show that the percentage of institutional ownership is negatively related to the absolute value

of discretionary accruals. Hence, the results confirm the institutional investors are more sophisticated and less likely, compared to individual investors, to be misled by earnings management that is reflected in accruals.

Similar evidence is also documented by Cornett et al. (2008). The results exhibit significant negative relationship between discretionary accruals and the fraction of shares owned by institutional investors.

Chung et al. (2002) hypothesise that institutional investors will deter managers from using discretionary accruals to opportunistically manipulate earnings upwards or downwards. Therefore, they use singed discretionary accruals estimated via the modified Jones model. The findings provide evidence supportive of the view that institutional investors play an important role in monitoring managerial opportunism as it relates to accounting discretion.

Charitou et al. (2007) examine the effect of institutional ownership on earnings management of distressed US firms during the period 1986-2004. Their sample comprises 859 firms that filed for bankruptcy then matched with the same number of healthy firms on the basis of year, industry and ROA. The assumption underlying the hypothesis is that distressed firms manage earnings downwards using discretionary accruals. Therefore, a cross-sectional version of the modified Jones model is used to estimate singed discretionary accruals. Similar to previous research, they find that high levels of institutional ownership are associated with higher monitoring and lower income-decreasing earnings management.

In a less direct way, Yu (2008) include institutional investors as a control variable in their investigation of the role served by analyst coverage as an external monitor to managerial opportunism. Discretionary accruals are estimated through the modified Jones model and are used as the main proxy for earnings management. Institutional ownership is measured by the percentage of common shares owned by institutional investors. The results show a significant

negative association between institutional ownership and earnings management, which is consistent with the view that institutional investors serve as a monitoring mechanism to managerial opportunism.

It is important to note that Rajgopal et al. (1999) emphasise controlling for institutional ownership in studies that mainly investigate managerial ownership as in Peasnell et al. (2005) and Al-Fayoumi et al. (2010), and vice versa as in Rebai (2011)<sup>15</sup>. Consistent with this view, Peasnell et al. (2005) and Al-Fayoumi et al. (2010) include institutional investors in their analysis of the effect of managerial ownership on earnings management. However, the results of both studies report no significant relationship between the percentage of shares owned by institutional investors and discretionary accruals.

In fact, the institutional structure in the UK seems largely different from it in Jordan. While institutional investors in UK comprise mainly pension funds, insurance companies and unit trusts (Mallin, 2007), institutional investors in Jordan comprise mainly the institution of social security and financial firms (Al-Fayoumi et al., 2010). Therefore, although the results of Peasnell et al. (2005) and Al-Fayoumi et al. (2010) similarly differ from those in the US, the interpretations of the results should be different. Regarding the former study, Mallin (2007, p.81) posit a plausible justification for the difference between the monitoring roles of the UK and US institutional investors as she states that "the US institutional investors tend to be more proactive in corporate governance and this stance has started to influence the behaviour of both UK institutional investors and UK companies". However, the findings of the latter study should be consistent with that institutional investors have greater monitoring role only if the company's ownership structure is widely dispersed as in the UK and US (Siregar and Utama, 2008).

<sup>&</sup>lt;sup>15</sup> Those three studies have been discussed in details in section 4.3.1. Therefore, only the results of those studies are discussed in this section.

In terms of real activity earnings management, the study conducted by Rebai (2011) mainly examines the monitoring role of three different types of institutions (i.e. Pension Funds, Investment Funds and Banks) in relation to R&D expenditures. Rebai (2011) reports no significant relationship between institutional investors and R&D expenditures manipulations, except for investment funds which effectively serve as a monitoring mechanism.

To a wider extent, Roychowdhury (2006) investigates the effect of the monitoring role of institutional investors on a variety of real activities manipulations. His sample comprises US firms that are suspect of manipulating earnings to report earnings greater than or equal to zero (i.e. avoid losses). Therefore, his hypotheses are constructed to solely investigate incomeincreasing real activities earnings management. In other words, he hypothesises that earnings manipulations through real activities would result in abnormally low cash flow from operation, abnormally high production costs and abnormally low discretionary expenses. This in turn has lead to the use of signed residuals estimated through the model developed in this research. Suspect-firm is a dummy variable that is set equal to one if firm-years belong to the earnings category just above zero, and zero otherwise. To proxy for institutional ownership, he develops a dummy variable takes the value of one if institutional share ownership for the firm is higher than the cross-sectional median in the year, and zero otherwise. To examine the effect of institutional investors among suspect firms, a new variable is developed by multiplying the two variables together. The results show that suspect firm-years with high institutional ownership exhibit abnormal production costs (abnormal discretionary expenses) that are lower (higher) than other suspect firms. This is consistent with institutional ownership mitigating income-increasing manipulations through overproduction and discretionary expenses reduction. In terms of cash flow from operation manipulation, however, the results indicate no variation among suspect firms corresponding to variation in levels of institutional ownership. Unlike the case with managerial ownership, the inference

problem seems to exist in relation to the effect of institutional ownership on abnormal operating cash flow. The opposite effects of abnormal production costs and abnormal discretionary expenses might have had a neutralising effect on abnormal cash flow from operating activities. Hence, the interpretation of the effectiveness of institutional ownership in mitigating abnormal operating cash flow should be considered tentatively.

Li (2010) controls for institutional investors in examining market pricing of two types of real activities earnings management: abnormal cash flow from operation and abnormal production costs. Also, Li classifies the usable sample into two groups: firms that are likely to practice income-increasing earnings management and firms that are less likely to do so. The results show that the effect of institutional ownership on firms in both groups is the same. It is found that high levels of institutional ownership are significantly associated with low levels of abnormal cash flow from operations and high levels of abnormal production costs. Because low levels of abnormal cash flow from operations and high levels of abnormal production costs represent income-increasing earnings management, these findings indicate that institutional investors pressure managers to deliver higher earnings.

Having reviewed evidence supportive of the effectiveness of institutional investors as a corporate governance mechanism, it is worth mentioning that some researchers distinguish between the roles of transient (i.e. short-term) and long-term institutional shareholders (e.g. Bushee, 1998; Koh, 2003, Cheng and Reitenga, 2009). They find evidence that only long-term institutional investors with large shareholdings are interested in the long-term value of investee firms and hence, are likely to invest time and resources in monitoring to a greater extent than other investors. Transient institutional investors, in contrast, are myopic and are overly focused on current earnings and hence, pressure managers to meet earnings goals of these investors. For instance, the findings of Bushee (1998) reveal that the presence of high

levels of transient institutional shareholders encourages managers to cut R&D expenses to reserve an earnings decline and vice versa.

Nevertheless, Ronen and Yaari (2008) assert in their comprehensive survey of the literature, that the empirical evidence is in favour of institutional ownership as a corporate governance mechanism that prevents earnings management. They also emphasise that this negative relationship is explained by a sampling design that aggregates both types of institutional ownership, which is attributable to the dominance of long-term institutional shareholders of samples when both types are examined together.

Therefore, consistent with the empirical evidence demonstrated above and following the view proposed by Ronen and Yaari (2008), institutional ownership in the sampling design of this research is measured by the percentage of aggregate institutional share ownership. Furthermore, bearing in mind the overwhelming body of literature on the role of institutional investors and accruals earnings management, it seems there is still a lack of research that explores the relationship between institutional investors and the various types of real activities earnings management. Even prior research such as Roychowdhury (2006), show that real activities earnings management is prevalent in poorly performing firms. Hence, this research contributes to the knowledge by investigating the effect of institutional investors on both types of earnings management using a population of firms that are relatively stable.

### 4.3.4. Foreign Ownership:

Foreign investment involves the transfer of financial capital and a set of skills including managerial and accounting. Foreign investment beneficially influences economies in which there is high unemployment and capital shortage – as is typically the case in developing countries (Moosa, 2002). Yet, there are firm-specific motivations for foreign investors.

Several researchers assert that foreign investors seek to invest in firms with good corporate governance (e.g. Aggarwal et al., 2005; Li, 2005). Foreign investors are well equipped for choosing a firm with good corporate governance as they are often more sophisticated than domestic investors in terms of their investment criteria and its finances (Lieberman and Kirkness, 1998). Given these characteristics, Dahlquist and Robertson (2001) consider foreign ownership as an effective mechanism that could complement current governance structure because its role resembles that of institutional investors. Further, Leuz et al. (2009) find that foreign investors prefer to invest in good governed firms, which indicate that firms seeking additional financing will enhance their corporate governance to attract the desired investment for foreigners.

Consistent with this view, Ali et al. (2008) examine the association between foreign ownership and earnings management in Malaysian listed firms. They estimate current discretionary accruals through the modified Jones model as a measure for earnings management. Ownership by foreign investor is measured as the proportion of shares owned by foreign investors to all outstanding shares. However, foreign investors are found ineffective in mitigating the practice of earnings management.

Similar evidence is found by Sarkar et al. (2006) who investigates the effect of foreign ownership on earnings management employing Indian data. They measure foreign ownership as the percentage of common shares held by foreign institutional investors. Further, they use absolute value of discretionary accruals, estimated via the modified Jones model, as a proxy for earnings management. The results also show no significant relationship between foreign investors' ownership and discretionary accruals.

The investigation of the association between foreign ownership and earnings management seems less straightforward in China than it in countries such as the aforementioned. While foreign ownership is considered as a monitoring mechanism in the above research, foreign investment could be seen as a motivation for earnings management practices in China. An elaboration is proposed by Haw et al. (2005). They note that earnings management behaviour might be different in China that it in western countries. In China, where the state owns significant portions of listed firms, managers rarely receive compensation based on firm performance and they are frequently appointed by the state. Further, Chinese firms are usually unable to raise capital by issuing corporate bonds or offer seasoned shares due to regulatory constraints. Hence, rights issue and initial public offerings (IPO) constitute the primary source of capital to Chinese firms. Accordingly, Haw et al. (2005) argue that managers might be motivated by these events to engage in earnings management practices.

Within this context, Aharony et al. (2000) examines whether ownership by foreign investors would provide firms with strong incentive to manage their earnings around IPOs of Chinese state-owned enterprises (SOEs). In particular, they investigate whether Chinese SOEs manage their earnings prior to the issuance of B-Shares and H-Shares that are restricted to foreign investors on Chinese domestic stock exchange and Hong Kong exchange, respectively. They use earnings performance, measured as Return on Assets (ROA), surrounding the IPO year as a proxy for earnings management. The results show a significant post-issue earnings decline which is consistent with Chinese SOEs practicing earnings management to report high profits in the IPO year. This evidence is supportive of being foreign ownership a motivation for earnings management in China.

Up to date, surprisingly little research on foreign investor and earnings management has surfaced in the literature. This highlights the importance of further examination of the role that foreign investor play in either constraining or motivating the practice of earnings management. In Jordan, foreign investors are provided with an attractive climate and incentive package. The country adopts an open economic policy where both Arab and Non-Arab foreign investors are openly permitted to invest in most companies listed on Amman Stock Exchange (ASE) (Naser et al., 2007). Both Foreign Direct Investment (FDI) and Portfolio Investment (PI) constitute a dynamic source of capital in the Jordanian market<sup>16</sup>. For example, total foreign investment amounted to 20 percent of total trading volume of shares in March 2002, divided almost equally between Arab and Non-Arab investors (ASE annual report, 2002). This makes Jordan a suitable case for further investigation of the subject matter, especially by examining the effect of foreign investors on accruals-based and real activities-based earnings management.

### 4.3.5. Summary:

The literature has long recognised the importance of role that corporate ownership structures play in mitigating the practice of earnings management. According to agency assumptions, ownership structure mechanisms align the interests of managers with those of the shareholders. As such, high levels of managerial ownership, ownership concentration, institutional ownership and foreign ownership are expected to negatively affect earnings management. In this chapter, the findings of prior research have been reviewed. It shows that evidence concerning ownership structures and earnings management vary and may therefore be regarded as inconclusive. Moreover, it highlights the dearth of research relating ownership structures and real activities earnings management. Accordingly, the purpose of this research is to further examine relationships between those mechanisms and both accruals-based and real activities-based earnings management.

<sup>&</sup>lt;sup>16</sup> The United Nations 1999 *World Investment Report* defines FDI as "an investment involving a long-term relationship and reflecting a lasting interest and control of a resident entity in one economy other than that of the foreign direct investor" (Cited in Moosa, 2002, p.1). Moosa comments that the term "control" represents the most important feature that distinguishes FDI from PI.
## 4.4. The Effect of External Audit on Earnings Management

Given the information asymmetry and conflicts of interests between managers and outside users of financial statements, the audit of financial reports can enhance the quality of financial information reported by managements (Johnson et al., 2002). However, although the effective scrutiny of external auditors may reduce accruals earnings management, it may also tempt managers to substitute the reduction of accrual earnings management with real activity earnings management that is typically beyond the control of external auditors.

## **4.4.1** Audit quality and Accruals-Based Earnings Management:

Despite the importance of audit monitoring role, audit is imperfect and audit failures such as Enron and WorldCom do occur due to low audit quality (Healy and Wahlen, 1999; Francis, 2004). This highlights differences in audit quality offered by different auditors. Audit quality refers to "the probability financial statements contain no material omissions or misstatements" (Palmrose, 1988, p.56). Hence "audit quality is inversely related to audit failures: the higher the failure rate, the lower the quality of auditing" (Francis, 2004, p.346). This implies that audit quality is inherently unobservable because (i) the occurrence of outright audit failure cases is infrequent, and (ii) it is difficult to assess audit quality ex ante since the majority of audit reports are standard clean opinions (Francis, 2004).

Because auditor quality is inherently unobservable, there seems no single auditor characteristic that can be used to proxy for it (Balsam et al. 2003). Consequently, a variety of auditor characteristics has been used as proxies for audit quality including, auditor industry

expertise, auditor litigation, auditor tenure, audit fee and auditor size (i.e. brand name)<sup>17</sup>. The following is a review of prior studies that use these auditor characteristics to examine the association between audit quality and earnings management.

Heninger (2001) argues that auditors are likely to confront the risk of litigation by stakeholders when the latter perceive a failure in financial reporting. To address this concern, he examines the relationship between auditor litigation and positive discretionary accruals. Hence, a dummy variable is used to proxy for litigation and is set equal to one if the client firm's auditor is named in a lawsuit and zero otherwise. The results reveal that the probability that the auditor will be sued increases with more income-increasing abnormal accruals.

Balsam et al. (2003) propose that industry specialists produce higher quality audits than nonindustry specialists. Therefore, they investigate the association between auditor industry specialisation and absolute discretionary accruals. Because industry specialisation is unobservable, they create five variables to proxy for it; LEADER refers to auditors who are the largest, second- and third-largest supplier of audit services in each industry. DOMINANCE refers to auditors who are the largest suppliers with a market share of at least 10 percent greater than that of the second-largest. SHARE is measured in clients' sales. MOSTCL refers to auditors with the most clients in the industry. SHARECL is the market share measured in the number of clients. The results show a statistically negative relationship between the absolute value of discretionary accruals and all of the five variables. This is consistent with specialist auditors mitigating earnings management.

In response to various calls for mandatory audit firm rotation to enhance audit quality, Johnson et al. (2002) examine whether audit-firm tenure, measured by the length of the

<sup>&</sup>lt;sup>17</sup> Currently, there are 4 big audit firms. However, it is common to find articles investigating big 8, 6, or 5 audit firms that existed until 1989, 1998, and 2002, respectively (Ronen and Yaari, 2008).

relationship between a firm and its auditor, is associated with the absolute value of discretionary accruals. To do so, they create two dummy variables; SHORT (LONG) equals one if when the length of the auditor-client relationship is two or three years (nine years or longer), and zero otherwise. The findings reveal that long audit tenure is not associated with audit quality. Yet at the early years of auditor-client relationship, they find that firms report high levels of absolute discretionary accruals indicating a low audit quality.

Gul et al. (2003) argue that auditors require high fees when their clients' accounts report high accruals. This is because accruals that are considered unlikely to be realised can be expected to increase inherent risk, which in turn would result in additional audit work and associated audit fees. Therefore, they predict a positive relation between audit fees and discretionary accruals. The results confirm their hypothesis which is consistent with requiring high audit quality (measured by high audit fees) due to the inherent uncertainty of discretionary accruals realisation.

However, none of the aforementioned audit quality proxies are applicable to the case of Jordan. As for auditor industry expertise, the number of firms per industry can be quite small (i.e. as little as 2 and 3 firms in more than five industries), which does not allow for variance measurement. In terms of audit tenure, although the Company Law (2003) forces listed companies to appoint external auditors for one year renewable, the law does not determine if the one year period is renewable once or more and for how long. As a result, Jordanian companies rarely change their auditors which also does not allow for variance measurement. Finally, data concerning auditor litigation and audit fee are not available on ASE database. Hence, the remaining auditor characteristic (i.e. auditor size) is chosen in this study as a proxy for audit quality not only because the inapplicability of other auditor characteristics in the Jordanian environment, but also because of its proven validity as demonstrated below.

#### 4.4.1.1. Auditor Size and Accruals Earnings Management in Developed Economies:

Several researchers state that most previous research has mainly used auditor size as a proxy for audit quality (e.g. Balsam et al., 2003; Francis, 2004; Ronen and Yaari, 2008). This auditor-differentiation is based on the argument of DeAngelo (1981) who proposes that audit firm size is an appropriate proxy for audit quality because no single client is important to large auditors as they have greater reputation to lose should they behave opportunistically. This positive relation between auditor size and audit quality certainly affects the credibility of financial report. Markets perception of high audit quality provided by big four auditors plays an important factor in companies financing decisions. Using this reasoning, Chang et al. (2009) investigate whether clients of big 6 receive favourable market conditions as opposed to clients of non-big 6. They find that clients of big 6 auditors are likely to make equity issuances instead of debt and in larger volumes than clients of non-big 6 auditors. These results are consistent with equity markets attaching high audit quality to big-size audit firms.

A vast body of literature concerning earnings management and auditor size supports a wellknown convention that big 4 auditors constrain earnings management practices more than non-big 4 auditors. A prominent study conducted by Becker et al. (1998) examines the relation between audit quality and earnings management. In particular, they measure the effect of auditor size on income-increasing discretionary accruals. Employing US data, they use a dichotomous proxy for audit quality that takes the value of one if a firm is being audited by big 6 auditors and zero otherwise. They conclude that clients of non-big 6 auditors do report higher income-increasing discretionary accruals than those reported by clients of big 6 auditors.

Interestingly, Becker et al. (1998) mention a caveat that audit quality is better tested when it is based on pre-audited accounting data to determine the proportion of abnormal accruals actually detected and prevented by each group of auditors. In pursuit of this issue, Hsieh and Tsai (2004) carried out a research investigating the associations between auditor size and preaudited accruals. Their findings pose that big-4 adjust larger amount of errors than those adjusted by non-big-4.

Another leading research that employs US data is conducted by Francis et al. (1999). It explores whether firms with propensity to generate accruals are ever increasingly prone to hire one of the big six auditors so that such firms can provide assurance concerning the credibility of their reported earnings. Hence, this research investigates whether the choice of a big 6 auditor serves as a monitor and thus reduces the uncertainty about reported earnings for these firms. Further, they investigate the ability of big 6 auditors to mitigate earnings management behaviour by constraining aggressive and potentially opportunistic reporting of discretionary accruals. As predicted, the results are found robust concerning the increasing likelihood of hiring a big 6 auditor in firms with endogenous propensity to generate accruals. Moreover, even though clients of big 6 auditors have higher levels of total accruals, it is found that they have lower amounts of discretionary accruals.

Krishnan (2003) investigates how US capital markets recognise the role of auditing in pricing of accounting information communicated through accruals. The underlying assumption is that big 6 auditors are likely to detect and prevent questionable discretionary accruals. Therefore, they hypothesise that the association between discretionary accruals and stock returns is greater for firms audited by big 6 auditors than for firms audited by non-big 6 auditors. The results confirm the hypothesis which indicates that capital markets perceive financial reports audited by big 6 auditors as credible and hence, attach greater weight to discretionary accruals reported by their clients than those reported by clients of non-big 6 auditors.

Behn et al. (2008) hypothesise that analyst forecast accuracy of future earnings is positively related to the financial reports audited by big 5 auditors. That is, reported accruals of clients of big 5 auditors are more likely to be realisable in the future that those of clients of non-big 5, and accordingly, analysts can make more accurate forecasts of future earnings. The results are supportive of the hypothesis as they document higher analysts' earnings forecast accuracy for big 5 auditees that it for non-big 5 auditees.

In fact, even in the studies discussed in section (4.4.1) where auditor size is not the primary focus (i.e. Heninger, 2001; Balsam et al., 2003; Johnson et al., 2002; Gul et al., 2003), auditor size was included as an additional proxy for audit quality. They all provide confirmatory evidence that big auditors provide higher audit quality, by mitigating earnings management, than non-big auditors.

Similar evidence is also found in UK setting by Gore et al. (2001). They investigate whether auditors' fee for non-audit services will impair audit quality provided by big 5 and non-big 5 auditors. The findings show that big 5 auditors constrain the practice of earnings management through accruals more than non-big 5 auditors when high levels of auditors' fee for non-audit services is received.

Nevertheless, studies that undermine the inclusiveness of the positive relation involving audit quality (i.e. the ability to constrain earnings management) and auditor size does also exist in the literature. For example, Kim et al. (2003) contend that although the consensus of big 6 auditors constraining income-increasing accruals is supported by their results, non-big-6 auditors are found more effective than big-6 auditors when both managers and auditors have incentives to adopt income-decreasing accruals choice.

More important, although the majority of empirical evidence based on US and UK firms seems supportive of the notion that big auditing firms are more likely to constrain accruals earnings management than small auditing firms, Maijoor and Vanstraelen (2006) find contrasting evidence in other developed markets. They investigate the effect of audit quality, proxied by auditor size, on the magnitude of abnormal accruals in three European countries. They chose UK, France and Germany because they are the originating countries of three distinct legal traditions of French code law, German code law and English common law, respectively. Their results indicate that only in the UK clients of big 4 auditors significantly constrain earnings management. However, unlike the UK, audit quality in France and Germany does not vary among big-4 and non-big-4 auditors.

In a more comprehensive study, Francis and Wang (2008) document that big 4 audit quality is greater only in common law countries where investor protection is strong. They find that earnings of clients of big 4 auditors are of higher quality relative to those of clients of non-big 4 auditors as legal regimes become stronger. However, the results show no significant differences in the quality of clients' earnings of big 4 and non-big 4 auditors in weak legal regimes.

Francis (2004) posits another plausible justification for the influence of context on audit quality. He notes that the market share of big 4 auditors now exceed 90% of publicly listed companies in the US which means there is low power in research designs of studies comparing big versus non-big auditors. This is mainly because there is low variance in the experimental variable.

It is now apparent that most of empirical evidence in the US and UK markets is supportive of big auditors being more likely to prevent earnings management and thereby, are of higher audit quality than non-big auditors. Yet this notion does not necessarily hold outside these markets (e.g. France and Germany), which prompts for investigation of this notion in Jordan especially because the market is still developing, the corporate legal framework has its origins in French civil law, and the demand for high audit quality might be different than it in developing countries.

#### 4.4.1.2. Auditor Size and Accruals Earnings Management in Developing Economies:

Even though Maijoor and Vanstraelen (2006) note that the majority of studies are conducted within Anglo-Saxon countries, a considerable number of studies investigate the effect audit quality by different auditor size on accruals earnings management in developing markets. To begin to Singapore, Chia et al. (2007) argue that listed service firms in Singapore engage in income-decreasing earnings management during the Asian crisis period. Accordingly, they investigate whether big 6 auditors would be more effective than non-big 6 auditors in constraining income-decreasing earnings management. The results confirm the income-decreasing behaviour and they find evidence supportive of big 6 auditors preventing their client from reporting income-decreasing abnormal accruals.

Similar evidence is found by Gerayli et al. (2011) using a sample of Iranian listed firms. That is, they find negative association between auditor size and abnormal accruals.

However, using Malaysian data, both Abdulla and Nasir (2004) and Abdul-Rahman and Ali (2006) include auditor size as a control variable to proxy for audit quality. They both find no significant relationship between auditor size and abnormal accruals. That is, they conclude that there is no difference between audit qualities provided by big versus non-big auditors in Malaysia.

Kabir et al. (2011) also report that audit quality does not vary among big and non-big 4 in Bangladesh. They attribute their findings to the small size of Bangladesh market and to poor demand for high audit quality.

Due to the inconclusive results in less developed countries, it is reasonable to question whether big size audit quality holds in Jordan where big 4 auditors do not audit the majority of listed firms. However, although a number of big international audit firms have entered the Jordanian audit market either on their own or as an affiliation to local audit firms (Naser et al., 2007), those big international auditors do not occupy a great share of manufacturing companies listed on ASE. For example, PricewaterhouseCoopers and KPMG (i.e. two of the big four audit firms) have one client each in the manufacturing sector during the period of this research. This could be a cause for concern as an opposite effect to that in Anglo-Saxon countries might exist (i.e. most observations are audited by non-big 4). To overcome this issue, the current study follows the classification of Faraj (2005) and Balhaj (2006)<sup>18</sup> who conclude that big 5 auditors in Jordan include Ernst and Young, Deloitte and Touche, Grant Thornton, Ibrahim Al-Abbasi, and Talal Abu Ghazalah. By doing so, this study contribute to the literature by examining the real effect of auditor size on accruals earnings management in Jordan. Such research bears particular importance as the results will contribute to the process of improving audit profession in Jordan and thereby, increase the competitive among audit firms and consequently audit quality.

# 4.4.2. Audit Quality and the Substitutive Relation between Accruals and Real Activities Earnings Management:

Having emphasised the role of external audit in deterring earnings management, it is of crucial importance to highlight that real activity earnings management is typically beyond auditors' control (Gunny, 2010). In other words, external audit cannot challenge real

<sup>&</sup>lt;sup>18</sup> Both studies evaluate auditor quality based on (i) auditees' compliance with financial disclosures requirements in Jordan, and (ii) the presence of international branches.

economic actions that are taken in the ordinary course of business (Graham et al., 2005). Accordingly, enhancing the scrutiny of external auditors may drive managers to substitute the reduction of accrual earnings management with real activity earnings management. Actually, the contrasting findings of Nelson et al. (2002) and Graham et al. (2005) provide empirical evidence supportive of managers increased use of real activity earnings management when the scrutiny mitigates the use of accruals earnings management. On the one hand, Nelson et al. (2002) conclude, based on surveying 253 auditors, that accruals management represent the majority of earnings management practices. On the other hand, Graham et al (2005) report, based on surveying and interviewing more than 400 executives, that the majority of managed earnings figures are achieved through managing real activities rather than managing accruals. The findings of Cohen et al. (2008) justify the contradiction between the different conclusions pertaining to which tool is more used to manage earnings. They propose that accruals-based management has declined and real activity-based management has increased subsequent to the enhanced scrutiny of auditors and regulators.

Cohen and Zarowin (2010) directly investigate the tendency for Seasoned Equity Offering (SOE) firms to use real activity earnings management as a result of the increased scrutiny of big 8 auditors over accruals earnings management. Consistent with the substitutive hypothesis, the results reveal that clients of big 8 auditors have higher tendency to use real activities earnings management around SOE than those of non-big 8 auditors.

However, the results of Cohen et al. (2008) contradict those of Cohen and Zarowin (2010). They find that big 4 auditors do prevent accruals earnings management but are not associated with levels of real activities earnings management. This contradiction might suggest that there is a high correlation between Sarbanes-Oxley act and big 4 auditors, which in turn has lead to the positive relationship between big 4 and real activities earnings management. Garven (2009) examines the effect of auditor size only on the real manipulation of discretionary expenses. She finds no significant statistical association between auditor size and firms being suspect reducing discretionary expenses to avoid reporting annual losses. She concludes that the manipulation of discretionary expenses by suspect firms is not a result of a superior scrutiny by big 4 auditors over discretionary accruals.

Zang (2012) finds evidence supportive, in one part, to the findings of Cohen and Zarowin (2010), and to the findings of Graven (2009) in another part. First, the results show a significant positive relationship between big 8 auditors and abnormal production costs. This is consistent with big auditors reducing accruals earnings management which in turn leads firms to substitute the reduction in the use of discretionary accruals with an increase in the use of the real manipulation of production costs. Second, she finds no significant relationship between auditor size and the use of discretionary expenses manipulation, which indicates that managers do not resort to discretionary expenses manipulation due to the scrutiny of big 8 auditors.

Up to date, research on the effect of external scrutiny by regulators and external audit on substitutive relationship between accruals and real activity earnings management is still young. This highlights the importance for further research, especially in countries where there are no regulatory committees such as the PCAOB in the US and the Committee on the Financial Aspects of Corporate Governance (CFACG) in UK, that function as a specialised oversight mechanism over firms compliance with corporate governance codes. In addition, none of the little existing research on this issue examines the substitutive effect using earnings management proxies in absolute terms.

In Jordan, there is no specialised oversight regulatory committee such as those in the UK and US, and as such, external audit remains the main oversight mechanism. This calls for a

concern and makes Jordan a well suited case for research as managers might increasingly use the more costly real activity earnings management should external audit reduce the use of discretionary accruals. Hence, regulatory bodies should be aware of this harmful effect and impose acts to protect the interests of other stakeholders.

Therefore, this research contributes to existing research by investigating the impact of the enhanced scrutiny of external auditors on the substitutive relationship between both types of earnings management in absolute terms in the developing market of Jordan.

### 4.4.3. Summary:

The scrutiny of external auditors is twofold. Overall, empirical evidence shows that audit quality can significantly reduce earnings management through accruals. However, auditors have no effect on uncovering real manipulations, which in turn raises a concern about the probability of managers increasing the use of, the more costly, real activities earnings management. So in brief, it is argued that the better audit quality is in constraining discretionary accruals, the higher the probability of increasing the use of real earnings manipulations. While a large body of literature documents the effect of audit quality on discretionary accruals in the Anglo-Saxon countries, the literature also acknowledges the difference in data setting between those countries and the rest of the world. As concerns real earnings manipulation, it seems that there is little evidence, even in the Anglo-Saxon countries, pertaining to the substitutive effect audit quality has on accruals and real activities earnings management.

Accordingly, this study investigates the effect of audit quality on accruals earnings management and its substitutive effect in the Jordanian environment. Finally, this study uses

auditor size as a proxy for audit quality because of the unobservable nature of audit quality. Auditor size is particularly favoured compared to other proxies such as auditor expertise, litigation, tenure and fees due to its appropriateness and applicability to the Jordanian data.

## 4.5. Conclusion:

Agency theory regards ownership structures as mechanisms that align the interests of managements with those of the shareholders. It also views external audit as the most important, independent and professional mechanism in terms of control and monitoring. As such, these corporate governance mechanisms are supposed to act as deterrence devices of the opportunistic practice of earnings management.

Accordingly, this chapter has reviewed the literature on the effect of ownership structure and external audit monitoring mechanisms on both accruals and real activities earnings management. In line with the research questions, the following discussion addresses the key findings of previous research and highlights the gaps in existing literature.

Bearing in mind that ownership is dispersed in the UK and the US, high ownership concentration is the norm around the world. Therefore, existing research on the effect ownership concentration on accruals earnings management is mainly conducted outside the UK and the US. Since the first research question relates to the effectiveness of ownership structure mechanisms on accruals earnings management, a range of relevant studies have been reviewed in this chapter.

The results of the majority of included studies reveal no relationship between ownership concentration and accruals earnings management in several contexts such as Denmark (Gabrielsen et al., 2002), Spain (Ballesta and Meca, 2007) and Canada (Park and Shin, 2004).

Other studies provide conflicting evidence: Yeo et al. (2002) find a non-linear relationship in Singapore; Landry and Callimaci (2003) report evidence supportive of the incentive alignment effect in Canada. These conflicting results give rise to the importance of investigating the effect of ownership concentration on accruals earnings management in Jordan where institutional settings greatly differ from those previously studied.

In an attempt to examine the effect of managerial ownership on accruals earnings management in Jordan, Al-Fayoumi et al. (2010) define managerial ownership as ownership concentration because data concerning shareholdings of directors and officers are not available on the database of ASE. Nevertheless, Dechow et al. (2010) emphasise that agency problem, in contexts where ownership is highly concentrated, occurs primarily between controlling shareholders and minority shareholders. Apparently, Al-Fayoumi et al.'s (2010) approach does not capture the control aspect as many block holders in Jordan are not effectively in charge of their firms' affairs. To distinguish managerial ownership from ownership concentration, a new proxy is developed in this research (i.e. controlling shareholders). That is, following Landry and Callimaci (2003) and Peasnell et al. (2005), managerial ownership takes the value of one if the largest shareholder is effectively in control of the firm (i.e. occupies the position of either the chairman of the board or chief executive officer), and zero otherwise. Therefore, this proxy allows the investigation of the effect of managerial ownership to take place in Jordan for the first time.

As regards institutional ownership, Rajgopal et al. (1999) emphasise the importance of controlling for institutional ownership in studies that mainly investigate managerial ownership. Moreover, while the results reviewed in this chapter show that institutional ownership is inversely related to accruals earnings management in the US (e.g. Rajgopal et al., 1999; Chung et al., 2002; Charitou et al., 2007; Cornett et al., 2008; Yu, 2008), no

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significant relationship is documented in the UK (e.g. Peasnell et al., 2005) and in Jordan (e.g. Al-Fayoumi et al., 2010). Therefore, institutional ownership is included in this research not only because it is important to control for it, but also because this issue is worth of further investigation using different accruals model (i.e. Kothari et al., 2005).

The final ownership structure mechanism is foreign ownership. Foreign ownership is considered as an effective mechanism that could complement current governance structure (Dahlquist and Robertson, 2001). Alternatively, firms seeking additional financing enhance their corporate governance to attract investment from foreigners (Leuz et al., 2009). After an extensive search, however, only two studies have been found examining the effect of foreign ownership on accruals earnings management: Sarkar et al. (2006) and Ali et al. (2008). This low number of studies definitely provides limited evidence concerning the effectiveness of foreign ownership as a deterrence mechanism, especially because they both find no significant relationship.

The aim of the second research question is to assess the effectiveness of the aforementioned ownership structure mechanisms in preventing real activities earnings management. As has been demonstrated in this chapter, real activities earnings management studies are still US-based. This indicates that the effect of ownership concentration has rarely been investigated in the US because of the dispersed ownership (e.g. Garven, 2009). Even in Garven (2009), the effect of ownership concentration is examined only on abnormal discretionary expenses. Outside the US, a research conducted by Cheng et al. (2010) reveals no relationship between ownership concentration and abnormal production costs and abnormal discretionary expenses in China. This shows the dearth of research on this matter up to date.

By incorporating the discussion on managerial ownership proxy in Jordan and the lack of research on the effect of managerial ownership on real activities earnings management outside the US, this research is the first to examine the incentive alignment effect reported in US-based studies (e.g. Cohen et al., 2008; Demers and Wang, 2010).

Similar to managerial ownership and ownership concentration, studies that assess the effect of institutional ownership on real activities earnings management has been US-based (e.g. Roychowdhury, 2006; Li, 2010). Moreover, the results revealed in those studies range from negative relationship to positive relationship thus providing limited implication concerning the effectiveness of the monitoring role of institutions even in the US. This also highlights the need for more studies outside the US.

As for foreign ownership, there seems to be a gap in literature as no study is found examining the effect of foreign ownership on real activities earnings management. Therefore, this study is the first to evaluate the role of foreign investors in the governance of their corporate holdings.

The third research question relates to the difference in the quality of accruals reported by clients of big 5 auditors and clients of non-big 5 auditors in Jordan. Although this relationship has been widely investigated in developed and developing economies (e.g. Becker et al., 1998; Francis et al., 1999), the results of previous studies provide limited evidence outside the US and the UK. For instance, Maijoor and Vanstraelen (2006) find that audit quality in France and Germany does not vary among big-4 and non-big-4 auditors. In another instance, Francis and Wang (2008) report no significant differences in the quality of clients' accruals of big 4 and non-big 4 in weak legal regimes. Along with the limited evidence, the number of clients of big 4 auditors in Jordan is too low which might impose the problem of low variance in the experimental variable. Therefore, big auditors in this research are the biggest five auditors in Jordan regardless of their international classification.

The final research question is conditional upon the significance of the relationship between auditor size and accruals earnings management. This is due to the indirect relationship between auditor size and real activities earnings management. That is, if the results show a significant negative relationship between big 5 auditors accruals earnings management, it is hypothesised that managers will be induced to increase the manipulation through real activities that are beyond the control of external auditors. Like other research involving real activities earnings management (e.g. Cohen et al., 2008; Cohen and Zarowin, 2010), there is little research investigating this hypothesis and it has merely been US-based. Therefore, this research extends existing research by further examining this hypothesis in the emerging market of Jordan.

## **Chapter Five**

## **Research Methodology**

## 5.1. Introduction:

This chapter aims at demonstrating the overall approach to the research process, from the research philosophy (i.e. paradigm) to the collection and analysis of the data. Due to the great influence of research paradigm over the choice of the research methodology, the next section depicts the characteristics of the main two paradigms in order to justify the choice of the suitable paradigm for this research. The selection of methods is discussed in section three. Section four shows the measurement of the dependent and independent variables and the development of research hypotheses. Afterwards, the research empirical models are symbolically presented in section five; two empirical models aim to provide causal explanations of the impact of ownership structure and external audit deterrence mechanisms on earnings management. Section six demonstrates population selection procedures and the method used to process and collect secondary data used for the estimation of earnings management proxies and to test the research hypotheses. Finally, section seven shows the statistical techniques used for secondary data analysis.

## 5.2. Research Paradigms:

The term paradigm refers to a set of basic beliefs that "defines, for its holder, the nature of the world, the individual's place in it and the range of possible relationships to that world *and its parts*" (Guba and Lincoln, 1994, p.107). Thus, a researcher's basic beliefs will be reflected in the way his/her research is designed, how data is collected and analysed and even the way in which his/her thesis is written (Collis and Hussey, 2003).

Collis and Hussey (2003) identify two main paradigms and note that it is best to regard them as the two extremes of a continuum. These two paradigms are the Positivist and Interpretivist paradigms. Guba (1990) state that the basic beliefs which define research paradigms can be characterised by the response (i.e. assumptions) of proponents of each paradigm to three basic questions. These questions are:

- Ontological: what is the nature of reality?

Positivists believe that apprehendable reality exists out there, apart from the researcher, and is driven by immutable natural laws (Guba, 1990). At the other extreme of the continuum, interpretivists consider reality socially constructed and is only understood by examining the perceptions of participant in a study (Collis and Hussey, 2003).

- Epistemological: what is the nature of the relationship between the researcher and the researched?

On the one hand, positivists are objectivists. They assume that the researcher observes the phenomenon in a dispassionate and objective manner (Mertens, 2010). In other words, the researcher and the researched are assumed to be independent entities and the researcher to be capable of studying the object without influencing it or being influenced by it (Guba and Lincoln, 1994).

Positivism is founded on the belief that social sciences can be studied in the same way as natural sciences (Collis and Hussey, 2003), because positivists assume that scientific knowledge is absolutely objective and that only scientific knowledge is valid, certain and

accurate (Crotty, 1998). Their goal is to discover general laws to describe constant relationships between variables (Mertens, 2010).

On the other hand, interpretivists are subjectivists. They argue that the distance between the researcher and what is being studied should be minimised because insights into the complex human behaviour are lost if this complexity is reduced to a series of law-like generalisations (Saunders, et al., 2009). Therefore, the interpretivist assumes that reality is subjective as observers are actually part of what is being observed (Patton, 1990).

- Methodological: how should the researcher go about finding out knowledge?

The overall approach to the research process of positivism is deductive. The positivistic approach seeks a method for studying social science that is value-free, and that explanations of a causal nature can be provided (Metrens, 2010). That is, causal laws provide the basis of explanation through establishing causal relationships between variables and linking them to a deductive or integrated theory. Hence, the positivistic paradigm tends to produce quantitative data using large samples (Collis and hussy, 2003). Positivists manipulate questions and/or hypotheses in propositional form and subject them to empirical tests to verify them (Guba and Lincoln, 1994).

As a reaction to positivism, interpretivists argue that the social world is far too complex to be theorised by definite laws in the same way as the natural sciences (Saunders et al., 2009). They stress the subjective status of individuals by focusing on the meaning rather than the measurement of social phenomena. Therefore, the overall approach to the research process of interpretivism is inductive. Interpretivists tend to use qualitative methods that are particularly oriented toward explanation, discovery and inductive logic (Patton, 1990). They tend to use small samples and produce qualitative data that are subjected to an in-depth analysis. Unlike positivism, interpretivism is concerned with generating theories from observations as the

researcher looks for patterns to make sense of the situation without imposing pre-existing expectations on the phenomenon under study (Collis and Hussy, 2003; Patton, 1990).

In the end, there is no paradigm that can be proven better than the other, they are just better at doing different things (Saunders et al., 2009). According to Ryan et al. (2002, p.35), "the assumptions which the researcher holds regarding the nature of the phenomenon's reality (ontology), will affect the way in which knowledge can be gained about that phenomenon (epistemology), and this in turn affects the process through which research can be conducted (methodology)".

For the purpose of this research, agency theory researchers assume that individuals are rational and act on their own interest (Zahirul Hoque, 2006). Positive accounting researchers perceive the agent as driven by axioms of economically rational behaviour to maximise expected utility. As such, the agent's behaviour is predictable and determined by the laws of rational choice (Ryan et al., 2002).

However, many psychologists address the positivists' failure to acknowledge the meaningful human behaviour that is not observable but still important, and question the ability of researchers to establish certain and generalisable laws as they applied to human behaviour (Mertens, 2010). Patton (2002) argues that judgement in social science is unavoidable and proving causality with certainty in explaining social phenomena is problematic. On this basis, post-positivism move from the naive realist posture to the one often termed critical-realism (Guba, 1990). Post-positivists still believe that a reality driven by natural causes exists out there, but only imperfectly apprehendable and within probability (not certainty) due to flawed human intellectual mechanisms (Guba and Lincoln, 1994; Guba, 1990). Although post-positivists also still hold beliefs concerning the objectivity and generalisability, dualism is largely abandoned as they posit that it is impossible for a human inquirer (i.e. researcher) to

step outside the pale of humanness while conducting inquiry (Mertens, 2010; Guba, 1990). Finally, the methodological approach of post-positivism is primarily quantitative although qualitative methods could be used should they fit the subject matter (Saunders et al., 2009; Mertens, 2010).

Accordingly, the post-positivism paradigm is adopted in the current research because of its relevance to the positive accounting research – The researcher manipulates questions and/or hypotheses in an objective, scientific and dispassionate manner, and subjects them to empirical tests to verify them. Moreover, and following Patton (2002), it overcomes the weaknesses of the rigidity of positivism, and it currently informs much contemporary social science research.

## **5.3. Selection of Methods:**

Two regression-based expectations models are chosen from the literature to estimate the amounts of managed earnings. The model of Kothari et al. (2005) is used to calculate abnormal accruals, and the model of Roychowdhury (2006) is used to calculate abnormal cash flow from operating activities, abnormal production costs and abnormal discretionary expenses. As such, the residuals obtained from these models represent proxies for managed earnings.

Afterwards, pooled cross-sectional regressions are constructed to test the proposed relationships between earnings management proxies (i.e. dependent variables) and ownership structure and external audit mechanisms (i.e. independent variables)<sup>19</sup>.

<sup>&</sup>lt;sup>19</sup> Further detailed discussion related to empirical models is provided in section 5.7.3.2.

It is worth mentioning that such archival research suffers from the measurement error problem discussed in Chapter Three. That is, first, all estimation models available in the literature of accruals earnings management suffer from the limitation of measurement error in the estimation of earnings management proxies. As demonstrated in Chapter Three, however, the model of Kothari et al. (2005) produces the highest power amongst accruals models. Thus, this model has become quite popular because it yields stronger results than other models. As for real activities earnings management models, the model of Roychowdhury (2006) is currently the only notable model that provides proxies for managed earnings through operating activities. As a result, this model has been widely used in subsequent studies. Second, measurement errors in explanatory variables (i.e. PART) could lead to misleading results.

Nevertheless, archival research is the typical strategy that allows for testing the predictions of a theory (Graham et al., 2005). In addition, other popular strategies such as questionnaire survey and interviews measure the opinions and beliefs of the participants thus imposing several potential limitations. According to Graham et al. (2005) and Denscombe (2007), these limitations include,

- Participants are not representative of the underlying population.
- Survey questions are misunderstood especially due to the use of academic terms.
- The truthfulness of participants' answers could not be easily checked.
- Relating to earnings management studies in particular, participants such as executives might not be willing to admit to undesirable or opportunistic behaviour.

In the end, although there are limitations associated with the regression-based models, other methods also suffer limitations that could lead to misleading inferences. Hence, it became apparent that regression-based methods are the most suitable to achieve the objectives of the current study. This is especially because regression-based methods allows for the measurement of relationship between variables using the whole population of the manufacturing sector in Jordan without resorting to a third-party perceptions nor suffering from the weaknesses of the survey strategy.

## **5.4. Hypotheses Development:**

From an agency theory perspective, ownership structure mechanisms should have a constraining effect on both types of earnings management. External audit should also have a similar effect on accruals and an ambiguous, if any, on real activity earnings management. To examine these relationships, five main hypotheses are developed for each type of manipulation which results in twenty sub-hypotheses are and formulated in correspondence with the number of dependent and independent variables. That is, the relationship between ownership concentration, managerial ownership, institutional ownership, foreign ownership and auditor size is examined with each of, abnormal accruals, abnormal cash flow from operating activities, abnormal production costs and abnormal discretionary expenses.

Accordingly, this section first starts by demonstrating the process for the estimation of earnings management proxies (i.e. dependent variables) in subsection (5.4.1.). Subsection (5.4.2) shows the development of the first sixteen sub-hypotheses which examine the relationship between ownership structure and both accruals real activities earnings management. In addition, it shows the development of the remaining four sub-hypotheses which investigate the effect of external auditor on the trade-off between the two types of earnings management.

#### 5.4.1. Measurement of Dependent Variables:

In this research, four measures in total are developed as proxies for earnings management. Typically, managed earnings are measured as the residuals from an expectation model. Afterwards, each measure of earnings management becomes a dependent variable when research hypotheses are formulated and tested. In detail, the first measure is abnormal accruals. This measure is the estimated residual from the Kothari et al. (2005) model that solely proxies for accruals earnings management. The second, third and forth measures are estimated using the Roychowdhury (2006) model to proxy for real activities earnings management. These measures are: abnormal cash flow from operating activities, abnormal production costs and abnormal discretionary expenses, respectively.

#### **5.4.1.1. Estimation of Accruals Earnings Management:**

It has been indicated in Chapter Three that aggregate accruals models have been widely implemented in previous research to decompose total accruals into two components; discretionary accruals that are most likely to be managed, and non-discretionary accruals that arise from normal business transactions. It has also been stated in Chapter Three that the Kothari et al. (2005) model is adopted in this research as the appropriate measure of discretionary accruals. This model is regarded as an extension to the widely used Modified Jones model as it maintains all of the three original explanatory variables as follows,

$$TA_{it}/A_{it-1} = \alpha_0 + \alpha_i [1/A_{it-1}] + \beta_{1i} [(\Delta REV_{it} - \Delta REC_{it})/A_{it-1}] + \beta_{2i} [PPE_{it}/A_{it-1}]$$

$$+\beta_{3i} \operatorname{ROA}_{it(\mathrm{or}\ it-1)} + \varepsilon_{it} \tag{1}$$

Where,

TA <sub>it</sub>	: total accruals in year t for firm i
$A_{it-1}$	: total assets in year $t - 1$ for firm i
$\alpha_0$	: Intercept
ΔREV	: revenues in year t less revenues in year t-1 for firm i
ΔREC	: revenues in year t less revenues in year t-1 for firm i
PPE	: net property, plant, and equipment in year t for firm i
ROA	: Rate of return on assets
ε <sub>it</sub>	: error term in year t for firm i

Apparently, a definition for total accruals is considered as a prerequisite to this regression. That is, accurate accruals data must be collected in order to accurately calculate total accruals. The literature offers two alternative approaches according to which total accruals can be defined; the Balance Sheet approach (BA) and the Statement of Cash Flow approach (CA). According to BA, total accruals are defined as the change in non-cash current assets, less the change in current liabilities (exclusive of short-term debt and taxes payable), less depreciation expense. Examples of studies employing BA include: Heninger (2001), Balsam et al. (2002) and Gul et al. (2003). Whereas according to CA total accruals are defined as the difference between income before extraordinary items and discontinued operations and cash from operations. Examples of studies employing CA include: Bedard et al. (2004), Nagy (2005) and Cahan and Zhang (2006).

Hribar and Collins (2002) argue in favour of the statement of CA despite that the majority of discretionary accruals studies use the indirect BA to calculate total accruals. They assess the measurement error introduced by both approaches using a sample of 14,558 firm-years over the period 1988 – 1997. They identify three non-operating events that cause the presumed articulation between changes in balance sheet working capital accounts and accrued revenues

and expenses on the income statement to break down when present. According to the events, they divide the sample into three subsamples plus a non-event sample; the "merger" subsample contains 2,991 observations, the "discontinued operations" subsample contains 1,277 observations, the "foreign currency translation" subsample contains 2,812 observations, and the "non-event" subsample contains 8,203 observations. The findings show that the BA yields higher measurement error than CA whenever an event is present. Consequently, they emphasise their preference for the use of CA in accruals-based research as the appropriate measure. Further, they urge for re-evaluating prior studies that use BA in light of the potential impact of mismeasured accruals.

Researchers also have two main competing perspectives as to what constitutes an appropriate measure of discretionary accruals. On the one hand, a number of researchers use current accruals (i.e. non-cash working capital accruals), instead of total accruals, as the dependent variable in an estimation model (e.g. Peasnell et al., 2000; Ashbaugh et al., 2003; Mitra and Cready, 2005). As such, long-term accruals such as depreciation and amortisation expenses are treated as non-discretionary in character. Bearing in mind that the explanatory variable "Property, Plant and Equipment (PP&E)" in the original models aims mainly to control for depreciation and amortisation expenses, it becomes obsolete for a working capital measure of accruals (Young, 1999). The rationale for the use of current accruals is the finding of Sloan (1996) which shows that most of the variation in total accruals results from the variation in current accruals. Further, according to Beneish (1998), it is less transparent and more beneficial for managers to manipulate current accruals relative to depreciation expense. On the other hand, the majority of researchers use total accruals as the dependent variable and include PP&E as an explanatory variable in estimation models (e.g. Jones, 1991; Gaver et al., 1995; Krishnan, 2003; Cheng and Warfield, 2005; Bowen et al., 2008). Jiambalvo (1996) states several common manipulation methods relating to depreciation and amortisation

expenses such as, change in useful life of fixed assets, change in estimate of residual value of fixed assets and change in policy regarding capitalising or expensing repairs. It is of crucial importance to control for such manipulations because managers may utilise them to shift earnings between periods as desired. The accounting scandal of the Toronto entertainment company "Livent" depicts an example of boosting current period's earnings through amortisation. The company was able to amortise its live-show preproduction costs by transferring them to fixed assets accounts. Because fixed assets carry much longer useful lives than preproduction costs, the company then had postponed these costs, which included soft expenditure such as wages, to future periods (Mulford and Comiskey, 2002).

Based on the discussions above, discretionary total accruals are considered the appropriate measure of accruals earnings management in this research and are defined according to AC as the difference between income before extraordinary items and discontinued operations and cash from operations.

The Kothari et al. (2005) model is adopted in this research because it has several advantages, apparent in the regression, over other models. Firstly, it relaxes the assumption of forcing the model through the origin by adding the intercept. Secondly, this model controls for firms performance by adding (ROA) as an explanatory variable. Therefore, the model predicts non-discretionary accruals and deems the regression residuals as discretionary or abnormal accruals.

Following Kothari et al. (2005), the residuals are obtained by employing cross-sectional regression to overcome estimation issues inherent in the standard and the Modified Jones time-series setting. The specification of the original time-series models requires long series of observations in order to estimate firm-specific parameter estimates prior to the event period. In essence, cross-sectional models are similar to their time-series counterparts except that the

former versions use cross-sectional data for every industry and year instead of the time-series data for each individual firm (Jaime and Noguer, 2004). Therefore, cross-sectional parameters estimates a,  $b_1$  and  $b_2$  are industry and year specific rather than firm-specific as in time-series.

Many researchers criticise the validity of the explicit and implicit time-series assumptions that have to be maintained in order to arrive at those parameter estimates. Examples of studies employing cross-sectional models of Jones, modified Jones of Dechow et al. (1995) and the Kothari et al. (2005) include DeFond and Jiambalvo (1994), Subramanyam (1996), Becker et al. (1998), Guidry et al. (1999), Tucker and Zarowin (2006) Cohen and Zarowin (2010). Below, therefore, is a discussion on the limitations of time-series assumptions and the remedies offered by the cross-sectional approach:

- The basic assumption behind the time-series setting is that the coefficients are time invariant (i.e. stationary over time). However, while the estimation of firm-specific parameters requires a long series of observations, data stationarity is at odds with survival in the long run (Ronen and Yaari, 2008; McNichols, 2000). That is, the data are more likely to be non-stationary as firms tend to change their business plans and operating strategies on the long run in order to survive<sup>20</sup>.
- In addition, the requirement of a long series of observations in the time-series setting reduces sample size due to data requirements. Hence, this assumption creates sample bias. For example, the usable sample in the study conducted by DeFond and Jiambalvo (1994) includes 94 violation firms in the cross-sectional setting against 65 violation firms in the time-series setting. Similarly, Subramanyam (1996) reports that

<sup>&</sup>lt;sup>20</sup> Econometrically, Gujarati (2003) states that if a time series data is non-stationary, the behaviour of data could be studied only for the time period under consideration. Consequently, for the purpose of forecasting, non-stationary time series may be of little practical value because it is not possible to generalise the findings to other time periods.

against 21,135 valid observations in cross-sectional setting, only 7,345 firm-years satisfy the sample selection criteria in time-series setting.

- The latter assumption also introduces a survivorship bias. That is, the reduced sample includes only firms that have successfully survived for at least 11 years. This restriction bias the sample toward larger and more successful firms (Jeter and Shivakumar, 1999). Therefore, Bartov et al. (2001) report that results obtained from the use of cross-sectional models have better implications for future research than those from time-series models.
- Finally, earnings management design in the time-series setting requires a benchmark of no systematic earnings management in the estimation period. This assumption is unlikely to hold for all firms. On the contrary, cross-sectional models make no such assumption but rather assume that the model parameters are the same across firms in the industry during the estimation sample (i.e. the homogeneity across firms in an industry that have the same operating technology, yields the same normal accruals for a given level of performance) (Jeter and Shivakumar, 1999).

Nonetheless, the cross-sectional approach has its own drawbacks as well. It raises problematic issues that do not exist in the time-series approach. As noted above, cross-sectional models assume that non-discretionary accruals are homogenous across firms in the same industry, and hence, consider the industry's level of expected non-discretionary accruals as a benchmark. This assumption poses a threefold problematic issue.

- The first issue concerns which benchmark would represent an industry's normal level of accruals (Ronen and Yaari, 2008). The literature proposes several approaches. For instance, DeFond and Jiambalvo (1994) consider normal accruals of all firms in the

same industry and year as a benchmark; Kang (1999) match firms with similar levels of normal accruals.

- The second issue concerns the reliability of the industry benchmark when an industrywide earnings management is practiced (Peasnell et al., 2000). As in the study conducted by Jones (1991), firms during the import relief investigation exercise income-decreasing earnings management to obtain support from the US government. This implies that the observations used to estimate the coefficients of nondiscretionary accruals include some managed accruals themselves. Consequently, cross-sectional models are unlikely to capture all the negative discretionary accruals exercised by the industry.
- Third, Bernard and Skinner (1996) criticise the validity of the homogenous assumption. They posit that each industry group may aggregate firms that have little in common as they vary in their operating cycles and technologies. Hence, these firms differ in their normal accruals which result in unreliable benchmark.

Eventually, it is worth noting that regardless of these potential disadvantages, cross-sectional models remain the dominant trend in current research of earnings management (Jaime and Noguer, 2004). The findings of Subramanyam (1996) and Bartov et al. (2001) justify the aforementioned claim. The former report that the parameter estimates are better specified for cross-sectional models than time-series counterparts as the standard errors of the coefficients are lower in cross-sectional versions than in time-series versions. The latter study aims primarily at evaluating the ability of cross-sectional versions of the standard and modified Jones models to detect earnings management in comparison to their time-series counterparts. The evaluation involves regressing audit opinion on discretionary accruals. Hence, an association between discretionary accruals generated by a model and an audit qualification submits evidence on the ability of the model to detect earnings management. The findings

indicate that only the cross-sectional versions are able to consistently detect earnings management as proxied by qualified opinion. Consequently, the Kothari et al. (2005) model overcomes the limitations associated with time-series settings since the residuals are obtained by employing cross-sectional regression in this research.

As indicated above, the residuals of an accrual expectation model are regarded as discretionary accruals. Some studies use signed discretionary accruals to test for income increasing or income decreasing earnings management (e.g. DeFond and Subramanyam, 1998; Teoh et al., 1998a; Kasznik, 1999; Kim et al., 2003). Such studies specify particular direction for managerial incentives for earnings management in a specific time period (Hribar and Nichols, 2007). Other studies use the absolute value (i.e. unsigned) discretionary accruals to test for the magnitude of, and general propensity to manage earnings (e.g. Klein, 2002; Becker et al., 1998; Haw et al., 2004; Doyle et al., 2007). The assumption underlying the use of unsigned discretionary accruals is that a set of firms is more likely to be managing earnings (Hribar and Nichols, 2007). The magnitude of absolute discretionary accruals measures firms' success in managing earnings up or down as needed (Reynolds and Francis, 2000).

Therefore, absolute value of discretionary accruals is used in this research as the first dependent variable for two main reasons. First, following prior research mentioned above. Second, because absolute value of discretionary accruals is the best measure of the extent to which firms use accruals to manage earnings in the absence of a particular direction (Reynolds and Francis, 2000).

#### **5.4.1.2. Estimation of Real Activities Earnings Management:**

The Roychowdhury (2006) model is used in this research to estimate the second, third and forth measures of real activities earnings management. These measures are: abnormal cash flow from operating activities, abnormal production costs and abnormal discretionary expenses. Each measure is obtained by employing a separate cross-sectional regression as follows,

$$CFO_t / A_{t-1} = \alpha_0 + \alpha_1 (1/A_{t-1}) + \beta_1 (S_t / A_{t-1}) + \beta_2 (\Delta S_t / A_{t-1}) + \varepsilon_t$$
(2)

$$PROD_{t} / A_{t-1} = \alpha_{0} + \alpha_{1} (1/A_{t-1}) + \beta_{1} (S_{t} / A_{t-1}) + \beta_{2} (\Delta S_{t} / A_{t-1}) + \beta_{3} (\Delta S_{t-1} / A_{t-1}) + \varepsilon_{t}$$
(3)

DISEXP<sub>t</sub> /A<sub>t-1</sub> = 
$$\alpha_0 + \alpha_1 (1/A_{t-1}) + \beta_1 (S_{t-1} / A_{t-1}) + \varepsilon_t$$
 (4)

Where,

CFO <sub>t</sub>	: current cash flow from operation
PROD <sub>t</sub>	: production costs
DISEXP <sub>t</sub>	: discretionary expenses
$\mathbf{S}_t$	: current sales
$\Delta S_t$	: change in current sales
S <sub><i>t</i>-1</sub>	: lagged sales
$\Delta S_{t-1}$	: change in lagged sales
$A_{t-1}$	: lagged total assets

Accordingly, each amount of managed earnings is measured as the residuals from the expectation model. It is important here to highlight that the data set of Roychowdhury (2006) is based on firms that report earnings greater or equal to zero. In other words, his data includes firms that are suspect of practicing real activities manipulations to avoid losses.

Hence, his hypotheses are constructed to solely investigate income-increasing real activities earnings management which in turn has lead to the use of signed residuals.

The first hypothesis relates to managements offering price discounts or more favourable credit terms to accelerate sales. By doing so, the cash inflow per sale, net of discounts, is lower as margins decline for these additional sales. Therefore, total earnings in the current period increase as the additional sales are booked. The net effect would be a lower CFO for the current period. Thus, the first regression predicts the normal levels of CFO and deems the regression residuals as abnormal cash flow from operating activities.

The second hypothesis relates to managing earnings upwards by producing goods more than necessary to meet expected demand. That is, managers could engage in overproduction activities to reduce cost of goods sold. As with higher levels of produced goods, fixed overhead costs spread over a large number of units. Therefore, fixed costs per unit decreases leading to lower cost of goods sold and higher operating margins. However, the incremental marginal costs incurred in producing additional goods leads to higher annual production costs relative to sales. Thus, the second regression estimates the normal levels of PROD and considers the regression residuals as abnormal production costs.

The third hypothesis pertains to simply reducing discretionary expenses such as Research and Development (R&D), advertising (ADV) and, Selling, General and Administrative (SG&A) expenses to increase reported earnings. Therefore, the third regression estimates the normal levels of DISEXP and considers the regression residuals as abnormal discretionary expenses.

The original hypotheses are not applicable to this research because no specific event is going to be investigated. That is, similar to discretionary accruals, the focus of this research is to test for the magnitude of, and general propensity to manage earnings through real activities. Therefore, the absolute values of abnormal cash flow from operating activities, abnormal production costs and abnormal discretionary expenses are used to proxy for real activities earnings management. To the best of the researcher's knowledge, absolute values of abnormal levels of operating activities have not been used before as proxies for real activities earnings management. However, there is no basis as to why firms cannot manage earnings up or down (i.e. as needed) through real activities manipulation. In fact, while Roychowdhury (2006) and Cohen and Zarowin (2010) find evidence of income-increasing real activities manipulation, the findings of Demers and Wang (2010) and Duong (2010) confirm that managers also practice real activities earnings management for income-decreasing purposes such as, career concerns and correcting the value of highly valued companies, respectively.

Therefore, absolute values of abnormal levels of operating activities are used as proxies for real activities earnings management because the data set in this research differs from it in previous studies. Moreover, these absolute values are obtained by employing cross-sectional regressions following the original model of Roychowdhury (2006) and subsequent research such as Cohen and Zarowin (2010).

#### 5.4.2. Measurement of Independent Variables:

The purpose of this subsection is to utilise the findings of previous studies in the development of the research hypotheses. While the previous subsection shows the measurement of the dependent variables, this subsection provides detailed discussion concerning the measurement of independent variables of the current study. Independent variables are classified into two categories; ownership structure variables including ownership concentration, managerial ownership, institutional ownership and foreign ownership, and external audit quality that relates to the substitutive relation between the two types of earnings management.

#### 5.4.2.1. Ownership Structure Hypotheses:

This research differs from the majority of previous research in terms of the expected effect of ownership structure mechanisms on earnings management. This is mainly due to the fact that, unlike accruals earnings management, real activities earnings management entails a reduction in a firm's value as it has a direct effect on future cash flows. Further, even within real activities earnings management, the effectiveness of ownership structure mechanisms might differ among each operating activity. Therefore, sub-hypotheses are developed in accordance with each type of manipulation.

As discussed in Chapter Four, ownership structure variables consist of managerial ownership, ownership concentration, institutional ownership and foreign ownership. Under the managerial opportunism hypothesis, ownership structure mechanisms are considered as monitoring corporate governance devices. The measurement of each independent variable pertaining to ownership structure mechanisms is discussed below.

#### **Ownership Concentration and Managerial Ownership:**

In contexts where corporate ownership structure is characterised with high concentrated ownership, the agency problem exists primarily between controlling and minority shareholders. The main concern is that dominant shareholders may expropriate the interest of minority shareholders for their own private advantage (Yunos et al., 2010; Dechow et al., 2010). To portray the effect of managerial ownership, some researchers use the percentage of shares equity held by inside individuals (i.e. officers and directors) who can influence internal corporate affairs (e.g. Gabrielsen et al., 2002; Teshima and Shuto, 2008). Other researchers are more contended with ownership concentration as a proxy for controlling shareholders for
which they use the percentage of shares equity held by the largest block holder (e.g. Park and Shin, 2004).

Bearing in mind that concentrated ownership does not necessarily denote inside ownership, the use of the largest block holder as a proxy for ownership concentration seems to examine the relationship between earnings management and ownership concentration without capturing the control (i.e. managerial) aspect of controlling shareholders. Therefore, in contexts such as the Jordanian, where it is difficult to obtain the percentage of insider ownership and the largest shareholder does not necessarily be the controlling shareholder, the need for a variable that captures the control aspects emerges. To that end, two inseparable variables are developed in this research to investigate the effect of managerial ownership on magnitudes of earnings management.

Following prior research, the first variable refers to ownership concentration and is measured by the proportion of shares equity held by the largest shareholder and his/her relatives (e.g. Park and Shin, 2004; Ballesta and Meca, 2007). In terms of the second variable, the measurement of managerial ownership is totally reliant on the first variable. That is, through utilising the dummy variable approach suggested by Peasnell et al. (2005) and Landry and Callimaci (2003), managerial ownership takes the value of one if the largest shareholder is effectively in control of the firm (i.e. occupies the position of either the chairman of the board or chief executive officer), and zero otherwise. As such, managerial ownership becomes clearly distinguishable and hence, data limitations are overcome. Accordingly, the following hypotheses start by ownership concentration then managerial ownership, each with relation to both types of earnings management.

### 1. The effect of Ownership Concentration on Earnings Management in Jordan:

Because real activities earnings management has economic consequences, the predicted effect of ownership concentration might differ among different types of earnings management. Regarding accruals earnings management, except for Landry and Callimaci (2003), prior research finds statistically insignificant relationship between ownership concentration and abnormal accruals (e.g. Park and Shin, 2004; Ballesta and Meca, 2007; Al-Fayoumi et al., 2010). This could be due to the presence of outside block holders in the proxy which measures ownership concentration as the proportion of shares held by the largest block holders. Those studies do not distinguish between inside and outside block holders based on an implicit assumption that the potential impact of large outside shareholders can have the same impact as insiders, but only to the extent that large outsiders behave in the same ways as large insiders (Black, 1992). Zhong et al. (2007) posit two competing views regarding the effect of outside block holders on earnings management. On the one hand, because selling a large block of shares decreases share prices, block holders have high incentive to monitor managers' behaviour which leads to mitigating accruals earnings management. One the other hand, block holders may create pressure on managers to engage in income-increasing accruals earnings management to report favourable financial performance.

Because both views are sound, there should be a significant association between ownership concentration and earnings management. However, no prediction for the coefficient sign of ownership concentration can be made. Consequently, following prior research, the following sub-hypothesis of this research proposes:

H1a: There is significant relationship between ownership concentration and abnormal accruals in Jordan.

In contrast to accruals earnings management, real activities earnings management entails a sacrifice in firms' value. On this basis, block holders, who usually adopt long-term strategy, are expected to have strong incentive to monitor managers to maintain their wealth. However, this does not eliminate the possibility for the largest shareholder to exercise pressure on managers to manipulate sales either upwards or downwards. This case is expected to exist in Jordan because in such small market, large shareholders are less financially sophisticated than those in the US or UK. Hence, the monitoring role of largest shareholders may be driven primarily by maintaining their wealth regardless of the consequences of sales manipulation. To illustrate, if volumes of sales were low, such shareholder would put pressure on managers to increase sales. And if bad debt expenses were high, this large shareholder may exercise pressure that leads managers to decrease sales. Consequently, the following sub-hypothesis proposes,

H2a: There is a positive relationship between levels of ownership concentration and abnormal cash flow from operations Jordan.

Regarding the second operating activity, the only research found is that of Cheng et al. (2010) who find no relationship between abnormal production costs and ownership concentration. However, the same motivation that underlies the previous sub-hypothesis leads to the expectation of being ownership concentration an effective mitigating mechanism of production manipulation. Although inventory has an intrinsic value, large shareholders are expected to avoid storing goods and finished products for too long and undertake the risk of ending up with obsolete inventory (Roychowdhury, 2006). Thus, the largest shareholder is expected to prevent managements from increasing or decreasing levels of inventory without justification of dramatic change in those levels. Consequently, the following sub-hypothesis proposes,

H3a: There is a negative relationship between levels of ownership concentration and abnormal production costs in Jordan.

Although Garven (2009) and Cheng et al. (2010) find no evidence relating ownership concentration to abnormal discretionary expenses, large shareholders are expected to be an effective corporate governance mechanism in mitigating the manipulation of discretionary expenses. At the long run, discretionary expenses such as R&D and advertising expenditures are essential for future development of industrial firms in spite of the decrease in current period's income. However, it might seem more appealing to large shareholders to mitigate such expenditures because of a suspicion that managements might be using income-decreasing practices to cover their channelling of wealth from the firm to their own benefits (Wang, 2006). Accordingly, the following sub-hypothesis states,

H4a: There is a negative relationship between levels of ownership concentration and abnormal discretionary expenses in Jordan.

#### 2. The effect of Managerial Ownership on Earnings Management in Jordan:

The focus of the above discussion does not account for the control factor of ownership concentration which when added to the largest shareholders, agency problem between controlling and minority shareholders takes place.

Although incentives, consequences and hence interpretations of earnings management practices slightly differ between the effects of management ownership and controlling shareholders, prior research proxy for both mechanisms by the percentage of shares owned by insiders. However, few exceptions are found in the literature and are discussed in Chapter Four. Peasnell et al. (2005) and Landry and Callimaci (2003) use a dummy variable approach

to proxy for managerial ownership and controlling shareholders. Their approach seems the most relevant for the current research because shareholdings of insiders are not available in Amman Stock Exchange data base. Therefore, the dummy variable in this research takes the value of one to denote the presence of managerial ownership (i.e. controlling shareholder) and zero otherwise. In other words, if the largest shareholder occupies the position of either chairman of the board or chief executive officer, s/he will be considered as the controlling shareholder.

The literature refers to two competing theories concerning the effect of managerial ownership on managers' incentives: the incentive alignment effect and the entrenchment effect (Dechow et al., 2010). In terms of accruals earnings management, evidence from research pertaining to the effect of managerial ownership on earnings management in developed economies is inconclusive. Warfield et al. (1995), Agrawal and Knoeber (1996), Donnelly and Lynch (2002) and Wang (2006) report a negative relationship between managerial ownership and discretionary accruals supporting of incentive alignment. Other research including Behn et al. (2002) and Peasnell et al. (2005) find a positive relationship suggestive of the entrenchment effect However, Gabrielsen et al. (2002) and Bowen et al. (2008) find no significant relationship.

In contexts other than the US market and occasionally the UK market, a nonlinear relationship between managerial ownership (and controlling shareholders) and earnings management seems to be the dominant trend. This nonlinear relationship is documented in the UK by Bos et al. (2011), in Japan by Teshima and Shuto (2008), in Singapore by Yeo et al. (2002) and in Spain by Ballesta and Meca (2007). Nevertheless, the limited data in Jordan that imposes the use of a dummy variable for managerial ownership prevents the inspection of possible nonlinearities.

Cohen et al. (2008) find evidence suggestive of a mitigating effect of managerial ownership on abnormal cash flow from operating activities and abnormal production costs. Similar evidence concerning abnormal production costs is revealed in Demers and Wang (2010). Apparently, evidence found on the relationship between real activity earnings management and managerial ownership focuses mainly on discretionary expenses. Similar to accruals earnings management, the evidence is inconclusive as well. While Garven (2009) provides evidence that managerial ownership is positively related to discretionary expenses which is in favour of the incentive alignment effect, Rebai (2011) documents an opposite relationship suggestive of the entrenchment effect. However, Behn et al. (2002) and Demers and Wang (2010) find no significant relationship between R&D expenditures and levels of managerial ownership.

Due to the inconclusiveness of evidence and data limitation, the predicted relationship between the controlling shareholder (i.e. managerial ownership) and earnings management in Jordan will be drawn from the theoretical perspective of the agency theory and the from empirical evidence that support the incentive alignment effect. Therefore, the following subhypotheses posit,

H1b: There is a negative relationship between managerial ownership and abnormal accruals in Jordan.

H2b: There is a negative relationship between managerial ownership and abnormal cash flow from operations in Jordan.

H3b: There is a negative relationship between managerial ownership and abnormal production costs in Jordan.

H4b: There is a negative relationship between managerial ownership and abnormal discretionary expenses in Jordan.

### **Institutional Ownership:**

Institutional investors are often regarded as sophisticated investors who have the resources, power and incentives to acquire and process information better than individual investors (Bartov et al., 2000). Such characteristics promote institutional investors' ability to monitor abuse of accounting discretion and influence managerial decisions (Bowen et al., 2008).

Although some researchers find that transient institutional investors exert pressure of managers to deliver higher earnings even through the abuse of accounting discretion (e.g. Bushee, 1998; Koh, 2003), Ronen and Yaari (2008) report that the majority of empirical evidence supports the view that aggregate institutional investors perform effectively in deterring accruals earnings management.

A negative relationship between levels of institutional ownership and levels of discretionary accruals has been documented by several researchers including, Rajgopal et al. (1999), Cornett et al. (2008), Chung et al. (2002), Charitou et al. (2007) and Yu (2008). This finding bears out the view that institutional investors serve as an effective corporate governance mechanism. However, the results of Al-Fayoumi et al. (2010) reveal no relationship between levels of institutional ownership and discretionary accruals in Jordan. Because this research differs from Al-Fayoumi et al.'s (2010) in terms of the period of study and discretionary accruals estimation model, it is expected to find negative relationship between discretionary accruals and institutional investors in Jordan. Because in mind that institutional investors are

defined as the percentage of shares owned by institutions, the following sub-hypothesis states,

*H1c: There is a negative relationship between institutional ownership and abnormal accruals in Jordan.* 

The evidence on the relationship between real activities earnings management and institutional investors is modest and somewhat mixed. While Li (2010) documents that institutional investors pressure managers to meet their desired earnings even through sales manipulation (which is reflected in abnormal cash flow from operations), Roychowdhury (2006) reports no significant relationship exists. In terms of abnormal production costs, Li (2010) also documents the same myopic behaviour by institutional investors, whereas Roychowdhury (2006) provides evidence consistent with being institutional investors an effective corporate governance monitoring mechanism. The only resemblance exists in the results concerning the association between abnormal discretionary expenses and institutional investors. That is, the findings of Bushee (1998), Roychowdhury (2006) and Rebai (2011) are in favour of effectiveness of institutional investors in preventing earnings manipulations through discretionary expenses.

Unlike Roychowdhury (2006) who mainly examines suspect firms, Li (2010) finds that institutional investors in all sample firms are short-term oriented. Accordingly, the following two sub-hypotheses posit,

H2c: There is a positive relationship between institutional ownership and abnormal cash flow from operations in Jordan.

H3c: There is a positive relationship between institutional ownership and abnormal production costs in Jordan.

However, the evidence concerning abnormal discretionary accruals seems consistent as the results of Bushee (1998) and Roychowdhury (2006) portray institutional investors as an effective corporate governance mechanism. Therefore, the following sub-hypothesis proposes,

H4c: There is a negative relationship between institutional ownership and abnormal discretionary expenses in Jordan.

### **Foreign Ownership:**

Theoretically, on the one hand, a number of researchers argue in favour of being ownership by foreign investors an effective corporate structure mechanism that complements other structure mechanism in deterring earnings management (e.g. Dahlquist and Robertson, 2001; Aggarwal et al., 2005; Li, 2005). On the other hand, other researchers propose that managers are tempted to manage earnings in order to raise capital or meet regulatory benchmark (e.g. Chen and Yuan, 2004; Haw et al., 2005). Due to the lack of empirical evidence concerning the subject matter, none of these views are conclusively supported. For instance, both Sarkar et al. (2006) and Ali et al. (2008) found no significant association between earnings management and foreign ownership. Only Aharony et al. (2000) document a positive and significant relationship around Chinese state-owned enterprises' IPO. However, even if foreign investors were not able to see through the earnings figure and price the shares fairly, the results do not show whether foreign investors were active in constraining earnings management after acquiring the voting rights or not.

Because the findings of abovementioned studies provide limited indications, both views are still sound and there should be a significant association between foreign ownership and earnings management. However, no prediction for the coefficient sign of foreign investors can be made. Accordingly, the following sub-hypotheses propose,

H1d: There is a significant relationship between foreign ownership and abnormal accruals in Jordan.

H2d: There is a significant relationship between foreign ownership and abnormal cash flow from operations in Jordan.

H3d: There is a significant relationship between foreign ownership and abnormal production costs in Jordan.

H4d: There is a significant relationship between foreign ownership and abnormal discretionary expenses in Jordan.

### 5.4.2.2. External Audit Hypotheses:

As noted in Chapter Four, the effect of audit quality on earnings management is twofold; the effect on accruals earnings management and the effect on real activities earnings management and correspondingly, two main hypotheses emerge. In both hypotheses, auditor size is used to proxy for audit quality in Jordan although the literature offers other prominent proxies including auditor industry expertise, auditor litigation, audit tenure and audit fee.

There are two main reasons for this choice. First, the validity of the use of auditor size to proxy for audit quality has been proven by prior research (e.g. Becker et al., 1998; Francis et al., 1999). However, the classification of Faraj (2005) and Balhaj (2006) of the big 5 auditors in Jordan is followed instead the international big 4 audit firms. This is due to the extremely

small market share that PricewaterhouseCoopers and KPMG occupy in Jordan (i.e. they have one client each in the manufacturing sector during the period of study of this research).

Second, the Jordanian data setting limits the use of audit quality proxy except for auditor size. That is, as for auditor industry expertise, the number of observations per industry can be quite small in Jordan which does not allow for variance measurement. In terms of audit tenure, Jordanian companies rarely change their auditors which also does not allow for variance measurement. Finally, data concerning auditor litigation and audit fee are not available on ASE database.

Accordingly, regarding the first hypothesis, there is strong evidence about big audit firms providing higher audit quality than non-big audit firms (e.g. Becker et al., 1998; Francis et al., 1999; Heninger, 2001, Johnson et al., 2002; Krishnan, 2003; Balsam et al., 2003; Gul et al., 2003; Hsieh and Tsai, 2004). The findings of these studies provide confirmatory evidence supportive of big audit firms constraining discretionary accruals more than non-big audit firms. In other words, the results reveal that clients of big auditors report lower levels of discretionary accruals than those of non-big auditors. Hence, following previous research, the following sub-hypothesis states,

H1e: There is a negative relationship between abnormal accruals and the biggest 5 audit firms in Jordan.

The second sub-hypothesis relates to the effect of auditor size on the substitutive relation between accruals and real activities earnings management. Typically, real earnings manipulation is beyond auditors' responsibility (Graham et al., 2005). However, researchers such as Cohen et al. (2008) and Gunny (2010) argue that although the enhanced scrutiny by external auditors may results in a reduction of accruals earnings management, it could also tempt managers to substitute such reduction with an increase in real activities manipulation. Up to date, the literature offers little yet informative empirical evidence about this issue. For example, Cohen and Zarowin (2010) document a significant positive relationship between big 8 auditors and aggregate real earnings management which indicates that clients of big 8 auditors resort to real earnings manipulation as a result of an enhanced scrutiny over discretionary accruals. Similar evidence concerning abnormal production costs is found by Zang (2007). However, no statistically significant relationship between big 4 and abnormal discretionary expenses is found by Zang (2007) and Garven (2009). Accordingly, the following sub-hypotheses propose,

H2e: There is a positive relationship between abnormal cash flow from operation and the biggest 5 audit firms in Jordan.

H3e: There is a positive relationship between abnormal production costs and the biggest 5 audit firms in Jordan.

H4e: There is no relationship between abnormal discretionary expenses and the biggest 5 audit firms in Jordan.

#### 5.4.2.3. Control Variables:

Although the primary focus of this research is to examine how ownership structures and external audit affects earnings management, other firm characteristics can also affect the quality of financial reports. That is, firm characteristics including board size, firm size, firm growth and firm leverage can potentially drive differences in the quality of financial reports. Therefore, four variables that control for those firm characteristics are included in this research to distinguish their effects on earnings management. Below is a review of the literature on the effect and measurement of each control variable.

#### - Firm Size

Almost all studies conducted on earnings management control for firm size. Johnson et al. (2002) posit that the sophistication of the financial reporting system is likely to differ with the size of the company as larger firms are more mature and diversified than smaller firms. Bushmen et al. (2003) highlight the importance of firm size in corporate ownership structure. They suggest that the information asymmetry between managers and shareholders being higher in large firms than it in small firms due to the complexity and dispersed ownership structure of larger firms. As such, they argue that the demand for systematic corporate governance is expected to be higher in large-sized firms relative to small-sized firms.

However, the effect of firm size is somewhat controversial. On the one hand, Dechow and Dichev (2002) find a positive relation between accruals quality and firm size. This indicates that large firms report more stable accruals that are likely to be realised in the future (i.e. less discretionary accruals). Lee and Choi (2002) find consistent evidence with smaller firms have higher tendency to manage earnings to avoid reporting losses than larger firms. On the other hand, Lobo and Zhou (2006) argue that larger firms may have more opportunities to manage their earnings than smaller firms due to the difficulty for external users to detect earnings management practices in such complex financial reporting systems. Consistent with this view, Moses (1987) documents larger firms smoothing earnings more than larger firms.

Because of the importance of firm size and the likelihood of it affecting ownership structure mechanism and earnings management, this study include firm size as a control variable. Following prior studies, firm size is measured as the natural logarithm of total assets (e.g. Becker et al., 1998; Myers et al., 2003, Ashbaugh et al., 2003; Nagy, 2005; Abbott et al., 2006). Nevertheless, no prediction is made concerning the direction of the association

between firm size and earnings management because of the conflicting arguments on the subject matter.

#### - Firm Growth

The findings of several studies contend that managers engage in earnings management practices to avoid negative growth trends (e.g. Bartov, 1993; Wild, 1996). The results of Nagar (2002) confirm that managers avoid negative growth trends because their bonuses are usually conditional on achieving certain performance targets. However, Abdul Rahman and Ali (2006) and Bowen et al. (2008) suggest otherwise. Their results reveal that growth rates are negatively related to discretionary accruals. Further, Gunny (2010) finds firms with high growth rates are less inclined to manipulate earnings through real activities earnings management. Accordingly, the sign on the variable of firm growth is left unpredicted.

Following prior research, firm growth is measured as the change in total assets scaled by lagged total assets (e.g. Beatty et al., 2002; Johnson et al., 2002; Nagy, 2005, Yu, 2008; McNichols and Stubben, 2008).

### - Firm Leverage

Bartov (1993) and DeFond and Park (1994) find a positive relation between levels of firm leverage and earnings management. They report that firms in financial distress or near debt covenant violation may be more motivated to engage in earnings management practices.

In contrast, Becker et al. (1998) and Balsam et al. (2005) report a negative association between levels of firm leverage and earnings management. This indicates that firms do not wish to manipulate their earnings because of financial lenders awareness of the information content of accruals.

Hence, no prediction is made concerning the coefficient on this control variable. Following prior studies, firm leverage is measured as total liabilities scaled by total assets (e.g. Balsam et al, 2003; Nagy, 2005; Carey and Simnett, 2006; Abbott et al., 2006; Cohen and Zarowin, 2010).

### - Board Size

Unlike the other three control variables, board size can be considered as board of directorsspecific control variable (Carcello and Nagy 2004). The number of board members should be appropriately determined to ensure that there are enough members to monitor managements' actions and discharge responsibilities.

Peasnell et al. (2005) find a negative relationship between board size and discretionary accruals, which they interpret as board size serving as a measure of board effectiveness. Xie et al. (2003) report similar evidence that they favour to interpret as larger boards bring greater number of experienced directors who seem to play a role in mitigating discretionary accruals. Klein (2002b) argues that larger boards allows for more independent directors sitting in audit committees which improves monitoring and consequently, less discretionary accrual. Her results confirm this argument.

Yet the literature offers conclusions that contradict the findings of the aforementioned. Beasley (1996) documents a positive association between board size and earnings management. Similarly, Abdul Rahman and Ali (2006) conclude that the larger the board size, the less effective it becomes in monitoring because levels of discretionary accruals increase with larger boards.

In sum, while too many members of directors can lead to ineffective monitoring due to conflicting views and difficulty of coordination, too few members of directors results in fewer number of experienced and/or independent directors, and imposes the difficulty of distributing committee work and thus, less effective monitoring. Accordingly, no directional expectation between board size and earnings management is offered in this study. Moreover, based on previous research, board size in this study is measured as total number of directors on the board (Xie et al., 2003; Carcello and Nagy, 2004; Peasnell et al., 2005; Abdul Rahman and Ali, 2006; Garven, 2009).

### 5.5. Research Empirical Models:

Two models are applied in the current research to test the research hypotheses. The first model measures the effect of ownership structure mechanisms and auditor size on mitigating accruals-based earnings management<sup>21</sup>. The second model examines the mitigating effect of ownership structure mechanisms, and the substitutive effect of auditor size, on real activities-based earnings management. Yet unlike the first mode, the second model entails the use of separate three regressions. That is, the effect of ownership structure mechanisms is measured on each of, abnormal levels of cash flow from operating activities, production costs and discretionary expenses. External audit is also included in this model to investigate the trade-off between accruals and real activity earnings management following Cohen and Zarowin

<sup>&</sup>lt;sup>21</sup> It is found that the addition of external auditor variable makes no difference concerning the significance and the signs of ownership structure variables. However, the addition of external audit improves the goodness of fit of the model and hence, this model includes the auditor variable in the chapter of data analysis.

(2010). That is, managers who are prevented from managing accruals by external auditors might wish to arrive at target level of earnings through manipulating real activities that is beyond the scrutiny of external auditor. Therefore, the empirical models of research can be symbolically presented as follows,

### The first model:

$$ABAC_{i} = \alpha + \beta_{1} CONC + \beta_{2} CNRTL + \beta_{3} INST + \beta_{4} FRGN + \beta_{5} BIG5 + \beta_{6} BRDS + \beta_{7} SIZE$$
$$+ \beta_{8} GRWTH + \beta_{9} LEV + \beta_{10-12} YR$$
(5)

The second model:

$$ABCFO = \alpha + \beta_1 CONC + \beta_2 CNTL + \beta_3 INST + \beta_4 FRGN + \beta_5 BIG5 + \beta_6 BRDS + \beta_7 SIZE$$
$$+ \beta_8 GRWTH + \beta_9 LEV + \beta_{10-12} YR$$
(6)

$$ABPRD = \alpha + \beta_1 CONC + \beta_2 CNTRL + \beta_3 INST + \beta_4 FRGN + \beta_5 BIG5 + \beta_6 BRDS$$
$$+ \beta_7 SIZE + \beta_8 GRWTH + \beta_9 LEV + \beta_{10-12} YR$$
(7)

$$ABDISX = \alpha + \beta_1 CONC + \beta_2 CNTRL + \beta_3 INST + \beta_4 FRGN + \beta_5 BIG5 + \beta_6 BRDS$$

$$+\beta_7 \operatorname{SIZE} +\beta_8 \operatorname{GRWTH} +\beta_9 \operatorname{LEV} +\beta_{10-12} \operatorname{YR}$$
(8)

Where,

ABAC : absolute value of discretionary accruals estimated using the Kothari et al. (2005) model.
ABCFO : absolute value of abnormal cash flow from operating activities estimated using the Roychowdhury (2006) model.
ABPRD : absolute value of abnormal production costs estimated using the Roychowdhury (2006) model.
ABDISX : absolute value of abnormal discretionary expenses estimated using the Roychowdhury (2006) model.
CONC : ownership concentration equals the proportion of common shares held by the largest shareholder and his/her relatives.

CNTRL	: a dummy variable that take the value of 1 if the largest shareholder and his/her relatives are in control of the firm, and 0 otherwise.
INST	: institutional ownership equals the proportion of common shares held by the institutions.
FRGN	: foreign ownership equals the proportion of common shares held by the foreign investors.
BIG5	: a dummy variable that takes the value of 1 if the firm is being audited by one of the big-5 auditors in Jordan, and 0 otherwise.
BRDS	: board size equals total number of directors on the board.
SIZE	: natural logarithm of total assets.
GRWTH	: growth rate equals the change in total assets scaled by lagged total assets.
LEV	: leverage equals total liabilities scaled by total assets.
YR	: three dummy variables based on the study period which cover four years.

## **5.6.** Population Selection and Data Collection Method:

Secondary data are used for the estimation of earnings management proxies and to test the research hypotheses. To this end, this section demonstrates population selection procedures and the method used to process and collect secondary data.

### **5.6.1. Population Selection:**

The data set of the current study comprises manufacturing firms listed on Amman Stock exchange (ASE) for four consecutive years of reporting periods from 2005 to 2008. The study period is restricted to those four years in particular due to the layout of data in ASE data base. The data base comprises excel sheets, one for each listed firm, that contain all financial information from the date on which the ASE data base has been established. In

2005, however, the layout of balance sheet, income statement and statement of cash flow items has been improved (i.e. slightly changed) by the administrators of ASE. This has resulted in the production of new separate excel sheets starting from 2005. Accordingly, the period study starts from the year 2005 to avoid mistakes that might arise from collecting and matching financial data from two excel sheets with different layouts. Moreover, starting from the year 2005 makes this study viable since the effort and time are utilised in manually collecting non-financial data. At the other end of the period study, the year 2008 is chosen because the new sheets did not include the financial information concerning the year 2009 until November, 2010. Besides, the non-financial data for the year 2009 are still unavailable.

The manufacturing sector is chosen for several reasons. First, the International Financial Reporting Standards (IFRS) offer more flexibility to managements of manufacturing firms to choose among a number of treatment alternatives for the same accounting transaction (e.g. several measurement options). Second, manufacturing firms have several different accounts compared to service and financial firms, which in turn reduces the comparability between companies. Third, the manufacturing sector in Jordan is considered as a cornerstone for the local economy.

Two initial populations are drawn from the manufacturing sector corresponding to the two types of earnings management. To avoid survivorship bias, newly listed and delisted firms are included in the years they have gone public and off the market, respectively. A slight difference in the number of included firms arises due to data requirements of the type of earnings management<sup>22</sup>. Afterwards, (21) firms are excluded from each population in each year as follows, (14) firms that belong to mining industry and (7) firms with missing values. Table 5.1 summarises the selection procedures of the final populations sizes.

Description	2008	2007	2006	2005	Pooled
	2008	2007	2000	2005	TOOleu
Initial populations for:					
The first model	75	72	72	71	290
The second model	72	72	67	69	280
Excluded firms from all	(21)	(21)	(21)	(21)	(84)
populations					
Preliminary populations for:					
The first model	54	51	51	50	206
The second model	51	51	46	48	196
Outliers:					
The first model					
Accruals	2	4	2	1	9
The second model					
CFO	3	3	6	7	19
PROD	2	1	1	1	5
DISEXP	6	5	3	3	17
Final populations for:					
The first model					
Accruals	51	49	50	50	197
The second model					
CFO	48	48	40	41	177
PROD	49	50	45	47	191
DISEXP	45	46	43	45	179

Table 5.1. Selection Procedures and Sizes of Final Populations

<sup>&</sup>lt;sup>22</sup> That is, while accruals model (i.e. the first sample) requires financial data from one previous period, real activities models (i.e. the second and third samples) require financial data from two previous periods. This in turn reduces the number of firms in the second and third samples due to newly listed companies. In details, two firms have gone public in 2004 and hence have been included only in the first sample of the year 2005. Although these two firms have been excluded from the other two samples in 2005 (obviously because they did not have sufficient data for the calculation of the "change in lagged sales"), they have qualified for inclusion in the second and third samples in 2006. Moreover, five firms have gone public and four firms have been delisted in 2005. As a net effect in year 2006, the first sample shows an increase by one firm (i.e. 5 - 4), yet the second and third samples show a decrease only by two firms because of the other two firms that have gone public in 2004 (i.e. 4 - 2). With no change in 2006 the five firms have been listed in 2007 and hence they appear as an increase only in the first samples of 2008.

### **5.6.2. Data Collection Method:**

As mentioned earlier, the present study investigates the phenomenon of earnings management and its deterrence mechanisms in Jordan. Therefore, secondary data of manufacturing listed firms are manually collected from annual reports that are publically available in ASE data base. The period study covers four consecutive reporting periods from 2005 to 2008.

ASE produces two files for each listed company. The first file (i.e. excel sheet) contains financial data including balance sheets, income statements, statements of cash flow and few financial ratios. Therefore, financial data for dependent variables and three control variables are manually processed then collected from the excel sheets.

The second file (i.e. PDF) contains non-financial data that are limited to,

- Percentages of shareholdings held by each category of investors (e.g. individuals, institutions and foreign investors).
- The names of directors, Chairman and Chief Executive Officer (CEO),
- The names and percentages of block-holders who own 5% or more of firm's equity share capital, and
- The names of external auditors.

Therefore, non-financial data for the variables of ownership structure, external auditor and the remaining control variable (i.e. board size) are manually processed then collected from the PDF files.

### 5.7. Statistical Analysis of Data:

### 5.7.1. Type of Data:

According to Gujarati (2003), there are three types of data that may be available for empirical analysis: time series, cross-section and pooled. Time series data is a set of observations on the values that a variable takes at different times. Cross-section data are data on one or more variables collated at the same point in time. So far, it is clear that while time is the main focus of time series data, time differences is completely ignored in cross-sectional data. The third type of data (i.e. pooled), data include elements of both time series and cross-section data.

As previously mentioned, the data set of this study comprises manufacturing companies listed on Amman Stock Exchange over four successive years from 2005 to 2008. This indicates that the data set in this research have both time series and cross-sectional dimensions. To analyse the data, pooled cross-sectional data analysis is conducted to reflect different distributions on different time periods (Wooldridge, 2003).

#### 5.7.2. Descriptive Statistics:

Before testing the research hypotheses through inferential statistics, descriptive statistics of the data set is presented in terms of central tendency and dispersion. That is, the analysis describes the mean, median and standard deviation of each variable.

#### 5.7.3. Inferential Statistics:

This sub-section is concerned with hypotheses testing regarding the relationship between earnings management proxies and independent variables using both univariate and multiple regression statistical analyses.

#### 5.7.3.1. Univariate Analysis:

In general, methods of statistical analysis are classified into two categories: parametric and non-parametric tests. The nature and distribution of data are the main characteristics based on which the statistical method can be determined. Parametric tests are considered more powerful than non-parametric tests when the assumptions of parametric analysis are satisfied. However, non-parametric tests offer alternative statistical techniques to parametric tests should the assumptions underlying the latter be violated. That is, non-parametric tests make fewer assumptions about the data such as data distribution and level of data measurement. As per section (5.5) above, there are four continuous dependent variables, and seven (two) continuous (dichotomous) independent variables in this study. Accordingly, both parametric and non-parametric tests are conducted in this research to measure the relationship between continuous dependent variables. The rationale for using both parametric and non-parametric tests is demonstrated in the discussion below which is based on two criteria; data distribution (i.e. normality) and level of data measurement (measurement scale) as follows,

 Normality: according to this assumption, data must be drawn from normally distributed population. Although the population distribution is not accessible (Field, 2009), Central Limit Theorem (CLT) offers justification for the assumption of normally distributed samples. That is, "*If there is a large number of independent and identically distributed random variables, then, with few exceptions, the distribution of their sum tends to be a normal distribution*" (Gujarati and Porter, 2010, p.63). Due to the fact that the continuous dependent variables are taken in absolute terms (i.e. the earnings management proxies of ABAC, ABCFO, ABPROD and ABDISX), the effect of normal fluctuations is expected to be reduced in all of the four variables. Therefore, Kolmogorov-Smirnov (K-S) test of normality is performed for all of the dependent variables.

2- Interval Data: this assumption signifies that variables must be measured at least at an interval scale. The implication of this assumption entails the use of Point-Biserial Correlations (i.e. non-parametric test) in examining the relationship between earnings management proxies and two dichotomous independent variables (Field, 2009). Since the remaining independent variables are continuous variables, both Pearson Correlation (i.e. parametric test) and Kendall's tau (i.e. non-parametric test) are conducted to examine the relationship between earnings management proxies and the remaining continuous variables.

Finally, Pearson Correlation (i.e. parametric test), Kendall's tau and Point-Biserial Correlations (i.e. non-parametric tests) are performed using SPSS 17.0.

### 5.7.3.2. Multiple Regression Analysis:

A pooled cross-sectional regression is estimated to account for different distributions on different time periods. The estimation process is much like a standard cross-sectional regression. Pooled regression estimation differs only in terms of the inclusion of dummy variables for all time periods, except for one period to avoid perfect collinearity (Brooks, 2008). Examples of studies that used pooled-cross sectional regressions in the field of earnings management include, Warfield et al. (1995), Guay et al. (1996), Becker et al. (1998), Kasnik (1999), Young (1999), Yeo et al. (2002), Hribar and Nichols (2007), Osma (2008), Cohen and Zarowin (2010) and Dechow et al. (2010).

To test the research hypotheses, Ordinary Least Squares (OLS) method is used to estimate the empirical models. However, certain assumptions must be met in order to make valid statistical inferences: normally distributed errors (i.e. normality), linearity, homoscedasticity, no autocorrelation, and no multicollinearity (Gujarati, 2003).

Yet before conducting a diagnosis for the empirical models, initial multiple regressions are carried out to identify outliers. According to Gujarati (2003, p.390), an outlier "*is an observation that is much different (either very small or very large) in relation to the observations in the sample*". By definition, an outlier has a large residual in comparison with other residuals. As such, outliers can bias the model because they affect the values of the estimated regression coefficients. Moreover, outliers impose difficulties in satisfying the assumptions of normality, linearity and homoscedasticity. To detect an outlier, Field (2009) suggests that a case of standardised or studentised absolute residuals greater than 2 is a cause for concern and hence, excluded from the data.

After the exclusion of outliers, the empirical models are conducted to check whether these models satisfy the assumptions underlying the method of ordinary least squares. Below is a discussion of each assumption, how to detect a violation in an assumption, and what remedies, if any, are applicable.

1- Normally distributed errors (Normality): the residuals in the model are random and normally distributed with a zero mean. Put simply, the differences between the model and the observed data are zero or very close to zero (Fields, 2009). To check this

assumption, Kolmogorov-Smirnov (K-S) test of normality is performed. The assumption is satisfied if the null hypothesis of normal distribution is not rejected.

- 2- Linearity: this assumption necessitates that the regression model is correctly specified. The relationship should be linear and there is no specification bias or specification error (Field, 2009; Gujarati and Porter, 2010). As mentioned in Chapter Three, tests for earnings management can be fashioned in a linear framework around partitioning variable(s) (Dechow et al., 1995). To detect model misspecifications such as omitting relevant variable or the appropriateness of using a linear functional form, Regression Error Specification Test (RESET) is used. The assumption is satisfied if the null hypothesis of linearity is not rejected (Brooks, 2008).
- 3- Homoscedasticity: this assumption states that the variance of each residual should be constant. Otherwise, there would be what is called heteroscedasticity or unequal variance (Brooks, 2008). Gujarati and Porter (2010, p.281) state "In the presence of heteroscedasticity, the usual hypothesis-testing routine is not reliable, raising the possibility of drawing misleading conclusions". This is because heteroscedasticity bias the variances of OLS estimators and consequently, the estimators are no longer efficient. White's General Heteroscedasticity test is used to test the null hypothesis of homoscedasticity. Should it be rejected, White's estimators will be used to correct for heteroscedasticity.
- 4- No Autocorrelation: the residual terms should be uncorrelated (i.e. independent) for any two observations. This simply means that no systematic effect among residual should exist because otherwise, the dependent variable may depend not only on the predictors but also on other residuals terms such as lagged residuals in time series analysis. Durbin-Watson test can be used to test for autocorrelation (i.e. serial correlation). Gujarati (2003) and Field (2009) suggest the value of 2 as an indicator

for the absence of first-order autocorrelation. Field (2009) adds, values less than 1 and greater than 3 are cause for concern.

5- No Multicollinearity: there are no perfect linear relationships between explanatory variables. Put differently, explanatory variables should not correlate too highly because if so, the estimated parameter become untrustworthy and the predictors become less important (Field, 2009). Therefore, it is important to identify whether high collinearity exists among predictors. One way to do so is to scan a correlation matrix of all explanatory variables and whether they highly correlate. As a rule of a thumb, Brooks (2008) and Field (2009) state that correlation above 0.8 is a cause for concern. To that end, correlation matrix is constructed on the basis of both Pearson and Kendall's tau Correlation Coefficients. Another way to diagnose multicollinearity is the Variance Inflation Factor (VIF). Statisticians suggest that a value of VIF greater than 10 signifies the existence of multicollinearity in the model (Myers, 1990, Field, 2009).

Finally, SPSS is also is used to perform Kolmogorov-Smirnov (K-S) test of normality for standardised residuals, Durbin-Watson test of autocorrelation, correlation matrices and variance inflation factor, and because the remaining tests are not available in SPSS, EViews 6.0 statistical software package is used instead to perform RESET test of linearity and White's test of heteroscedasticity which if existed, White's heteroscedasticity-consistent estimator is performed.

### 5.8. Summary:

The methodology and research design tend to be highly structured within the post-positivist paradigm (Patton, 2000). Consistent with this view, this chapter is constructed to accurately demonstrate the process of variables measurement, hypotheses development, empirical models construction, population selection procedures and the preparation for the statistical analysis of data.

In brief, this research employs data of manufacturing firms listed on Amman Stock Exchange to investigate the relationship between earnings management and corporate governance mechanisms. This chapter describes the measurement of four proxies for earnings management (i.e. abnormal accruals, abnormal cash flow from operating activities, abnormal production costs and abnormal discretionary expenses). Afterwards, hypotheses are developed based on the predicted relationship between each type of earnings manipulation and five of corporate governance deterrence mechanisms (i.e. ownership concentration, managerial ownership, institutional ownership and foreign ownership). Accordingly, four empirical models are developed to examine these relationships and the appropriate statistical analysis techniques are introduced.

# **Chapter Six**

# **Data Analysis and Results**

### **6.1. Introduction:**

The purpose of this chapter is to test the research hypotheses concerning the effect of ownership structure and external audit corporate governance mechanisms through performing statistical tests on a population of manufacturing firms listed on Amman Stock Exchange (ASE). Due to the fact that managers may use several methods to manipulate earnings, four proxies for earnings management are measured separately so that each proxy becomes a dependent variable following previous research. As a result, the statistical analysis in this chapter comprises four empirical models corresponding to each dependent variable, which are: abnormal accruals model, abnormal cash flow from operating activities model, abnormal production costs model, and abnormal discretionary expenses model.

Two analyses are conducted based on the measurement of earnings management proxies. While earnings management proxies are considered in absolute terms in the main analysis, theses proxies are considered with their actual signs. Within each analysis, descriptive statistics are discussed and univariate analyses are conducted and discussed. Afterwards, multiple regression analyses are conducted to test the research hypotheses. The results obtained are then presented and interpretations are drawn. Finally, theoretical and practical implications for the association between earnings management practices and ownership structure and external audit mechanisms are demonstrated.

### **6.2.** Main Analysis:

#### **6.2.1. Measurement of Earnings Management Proxies:**

The current research differentiates between methods of earnings management. Each type of earnings manipulation is measured separately using models discussed in Chapter Three – The Kothari et al. (2005) for abnormal accruals calculation, and The Roychowdhury (2006) for the calculation of abnormal cash flow from operating activities model, abnormal production costs model, and abnormal discretionary expenses model. These models predict normal earnings which are then subtracted from actual reported earnings to find out the amounts of managed earnings (i.e. residuals). Afterwards, absolute values of residuals are computed to obtain absolute values of earnings management proxies.

Chapter Five shows that, in this research, models' parameters are estimated on a crosssectional basis, which means that those parameters are industry and year specific. However, the Jordanian data impose a limitation that prevents the estimation of residuals on industry basis. That is, ASE classifies listed manufacturing firms into twelve industries. Within which, there are too few companies in more than six industries (sometimes 2, 3 or 5 companies). Apparently, this does not satisfy the regression estimation requirement of a minimum of 10 observations each. Hence, models' parameters are estimated only on a year-by-year basis<sup>23</sup>. Table 6.1 presents descriptive statistics obtained from sixteen regressions for the estimated coefficients, adjusted R<sup>2</sup>, *P*-values and regression employed for each earnings management proxy over the period 2005 and 2008.

<sup>&</sup>lt;sup>23</sup> I have consulted with Professor M. McNichols, Stanford University, about the year-by-year coefficient estimation approach. She said that this approach is "very reasonable".

Table 6.1. The Estimated Coefficients of Earnings Management Models									
	Abnorm	Abnormal Accruals Abnormal Cash Flow from		Cash Flow from	Abnormal Production Costs		Abnormal Discretionary		
			Operatii	ig Activities			Expenses		
Parameter	Mean	Median	Mean	Median	Mean	Median	Mean	Median	
α	-0.021	-0.019	0.011	0.017	-0.040	-0.019	0.038	0.034	
β1	0.016	0.000	-0.097	-0.115	0.022	0.038	0.093	0.094	
β <sub>2</sub>	0.151	0.106	0.052	0.069	0.939	0.912	0.031	0.036	
β3	0.034	0.000	-0.170	-0.174	-0.110	-0.107	-	-	
β4	0.427	0.416	-	-	0.017	0.009	-	_	
Mean Adj.	16.2%		11.5%		87.1%		12.8%		
$\mathbf{R}^2$									
Mean P-	0.045		0.043		0.000		0.038		
value									

The Kothari et al. Model (2005)

 $\overline{TA_{t}/A_{t-1}} = \alpha + \beta_1 [1/A_{it-1}] + \beta_2 [(\Delta REV_t - \Delta REC_t)/A_{t-1}] + \beta_3 [PPE_{t}/A_{t-1}] + \beta_4 ROA_{t-1} + \varepsilon_{it}$ 

Where, TA = total accruals; A = lagged total assets;  $\Delta REV$  = change in revenues; PPE = net property, plant, and equipment;  $\varepsilon$  = error term; t = year index for the years included in the estimation period.

The Roychowdhury Model (2006)

 $\overline{\text{CFO}_{t}/A_{t-1}} = \alpha + \beta_{1} (1/A_{t-1}) + \beta_{2} (S_{t}/A_{t-1}) + \beta_{3} (\Delta S_{t}/A_{t-1}) + \varepsilon_{t}$ 

 $PROD_{t} / A_{t-1} = \alpha + \beta_{1} (1/A_{t-1}) + \beta_{2} (S_{t} / A_{t-1}) + \beta_{3} (\Delta S_{t} / A_{t-1}) + \beta_{4} (\Delta S_{t-1} / A_{t-1}) + \varepsilon_{t}$ 

 $DISX_{t} / A_{t-1} = \alpha + \beta_{1} (1/A_{t-1}) + \beta_{2} (S_{t-1} / A_{t-1}) + \varepsilon_{t}$ 

Where,  $CFO_t$  = current cash flow from operation; PROD = current production costs; DISX = current discretionary expenses including: advertising, selling, general, administrative, and research and development;  $S_t$  = current sales;  $\Delta S_t$  = change in current sales; A = lagged total assets;  $\varepsilon$  = error term; t = year index for the years included in the estimation period.

As for abnormal accruals, the average estimated coefficient for cash revenues (i.e.  $\Delta \text{REV}_t - \Delta \text{REC}_t$ ) is positive (0.151) which consistent with income-increasing changes in some working capital accounts or income-decreasing changes in others (Jones, 1991). The average estimated coefficient for property, plant and equipment (PP&E) is positive (0.0340), although the typical sign on this coefficient should be negative because depreciation expense is an income-decreasing accrual<sup>24</sup>. The reason for sign difference is that Kothari et al. (2005) introduce PP&E in *net* values in their model, rather than in *gross* values (along with Kothari et al. (2005), examples of studies that use net PP&E include Guidry et al. (1999), Butler et al. (2004) and Michas (2011)). However, unlike gross PP&E, net PP&E can be affected by managed depreciation expenses (Kang, 1999). Accordingly, the direction of the correlation can be ambiguous. This limitation is difficult to avoid and net PP&E values are used in this research not only to follow Kothari et al. (2005), but also because ASE data base presents PP&E only in net values. Finally, the average estimated coefficient for Return on Assets (ROA) is positive (0.427) as expected. This indicates that part of accruals do increase (decrease) as firms performance improve (weaken).

The estimated coefficients in the regression of abnormal cash flow from operating activities are as expected. The average estimated coefficient for  $S_t / A_{t-1}$  is positive (0.052) and for  $\Delta S_t / A_{t-1}$  is negative (-0.170). This indicates that proceeds from contemporaneous (previous) sales are less (more) likely to be collected in the current period (Dechow et al., 1998; Roychowdhury, 2006).

To interpret the regression's coefficients of abnormal production costs, the coefficients should be classified into two categories according to what they represent. The first category

<sup>&</sup>lt;sup>24</sup> PP&E are originally introduced to expectation models of non-discretionary accruals to control for the depreciation expense. Because accruals decline by depreciation expense and depreciation expense increases when PP&E increases, accruals generally decline as gross PP&E increases. This inverse relationship causes the sign on the coefficient to be negative.

includes the average estimated coefficient of  $S_t /A_{t-1}$  that represents Cost of Goods Sold (COGS). The mean coefficient is positive (0.939) as expected. As such, COGS is directly determined as fraction of contemporaneous sales (Roychowdhury, 2006). The second category relates to normal inventory growth. According to Dechow et al. (1998), change in inventory is a linear function of change in sales. The reasoning is that firms usually forecast next period's sales for which they maintain target inventory. Therefore, Dechow et al. (1998) and Roychowdhury (2006) find positive coefficient for  $\Delta S_t /A_{t-1}$  and negative coefficient for  $\Delta S_{t-1} /A_{t-1}$ . However, table 6.1 shows contrasting signs to those found in the aforementioned research – the sign on the estimated coefficient's mean  $\Delta S_t /A_{t-1}$  is negative (-0.110) and on the estimated coefficient's mean  $\Delta S_{t-1} /A_{t-1}$  is positive (0.017). This indicates that, unlike the US, manufacturing firms in Jordan set their inventory targets based on prior year's change in sales<sup>25</sup>.

In terms of abnormal discretionary expenses, the mean estimated coefficient for  $S_{t-1} / A_{t-1}$  positive as expected (0.031). This indicates that, similar to COGS, discretionary expenses including advertising, selling, general, administrative, and research and development are determined as a fraction of contemporaneous sales (Roychowdhury, 2006).

Finally, the explanatory power (adjusted  $R^2$ ) of all regressions lies within a range that is similar to those produced by Jones (1991) and Roychowdhury (2006). In addition, although the significance of the models varies, the *P*-values for all regressions are less than the 0.05 significance.

<sup>&</sup>lt;sup>25</sup> I have consulted with Dr. K. Gunny, University of Colorado, about the interpretation of these results. She said that this interpretation "sounds correct".

#### **6.2.2.** Descriptive Statistics:

Table 6.2 presents descriptive statistics for all variables included in the empirical models. That is, this section explores means, medians, standard deviation, minimum, maximum, Skewness and Kurtosis for four earnings management proxies, five independent variables and a set of control variables.

Means of earnings management proxies are equal to zero indicating a good fit for a linear model because "*The best fitting regression line is the one that makes the mean residual equal to 0*" (Hayes, 2005, p.282). Zero mean earnings management is consistent with prior research. For instance, Kothari et al. (2005) report mean abnormal accruals close to zero and Gunny (2010) reports zero mean of abnormal production costs and abnormal discretionary expenses.

Median of abnormal accruals (AAC) in Jordan is -0.7% and falls between -32.9% and 40.4% of total assets. This implies that accruals earnings management is as severe in Jordan as it is in the US based on Xie et al. (2003) who find that abnormal accruals in the US fall between - 27% and 67% of total assets. Median of abnormal production costs (APROD) in Jordan is - 0.5% of total assets which is similar to that found in the US by Gunny (2010) (i.e. -0.6%). Median of abnormal discretionary expenses (ADISX) in Jordan is 1% of total assets, which is also similar to that found in the US by Cohen et al. (2008). The impact of abnormal operating cash flow in Jordan is 0.3% of total assets which is less than the 1% reported by Cohen et al. (2008) in the US.

In terms of independent variables, mean ownership concentration (CONC) implies that 34.1% of manufacturing listed firms in Jordan are owned by a large block holder. This is higher than 26.3% found in Canada by Park and Shin (2004) and lower than 53.4% found in

Spain by Ballesta and Meca (2007). Although ownership concentration could be as little as 6% and as high as 98.4%, mean ownership concentration in Jordan still lies in the middle of ownership concentration levels found in developed countries. Managerial ownership or controlling shareholder is proxied by a dummy variable (CNTRL) that equals 1 if the largest block holder is either the chairman or chief executive officer and 0 otherwise. Therefore, the mean CNTRL of 44.2% indicates that less than half of the largest block holders are also in charge of firms affairs. Institutional ownership (INST), measured by the proportion held by institutions, shows a mean and median of 44.2% and 45.1%, respectively. These figures are unexpectedly higher than 24% and 41% found in the UK by Peasnell et al. (2005) and the US by Yu (2008), respectively. Foreign ownership (FRGN) show mean, median, minimum and maximum of 18.1%, 8%, 0% and 999%. The mean indicates that just less than one fifth of listed manufacturing firms are owned by foreign investors, which is higher than 5.4% foreign investment in Malaysian firms. Yet when the low percentages of median and minimum and the high percentage of maximum are considered, the overall impression might be that foreigners invest heavily in particular firms that are of interest to them rather than low investment in a big number of firms. Auditor size (BIG\_5) is proxied by a dummy variable that is set to 1 if the firm is audited by one of the biggest 5 auditors in Jordan and 0 otherwise. Mean BIG\_5 in Jordan is 55.3% which less that the 90% found in other countries such as the US (Francis, 2004) and Singapore (Chia et al., 2007).

As regards control variables, board size (BRDS) shows a mean of 8 directors in the boards of manufacturing listed firms. It is worth noting that the Jordanian Companies Law, 2002, article No. 132 limits the minimum and maximum number of directors to 3 and 13, respectively, which is similar to the exhibited results. While average number of directors is similar to that in the UK (Peasnell et al., 2005), average number of directors appears to be larger in the US (i.e. 11 directors) as per Bhagat and Black (2002). Average firms' leverage

(LEV) is around 35% of total assets indicating that risk levels of Jordanian manufacturing firms are not as high as those in developed countries such as 49% found in Australian companies by Chen et al. (2005). Finally, mean growth (GRWTH) shows that total assets of listed manufacturing firms increase by 11% on average.

Table 6.2. Descriptive Statistics for the Full Population									
Variable	Mean	Median	Std. Deviation	Minimum	Maximum	Skewness	Kurtosis		
AAC	0.000	-0.007	0.121	-0.329	0.404	0.391	1.067		
ACFO	0.000	0.003	0.105	-0.408	0.271	-0.601	1.480		
APROD	0.000	-0.005	0.151	-0.379	0.429	-0.021	1.758		
ADISX	0.000	-0.010	0.039	-0.052	0.161	1.859	4.142		
CONC	0.341	0.297	0.216	0.060	0.984	1.040	0.592		
CNTRL	0.442	0.000	0.498	0.000	1.000	0.236	-1.963		
INST	0.447	0.451	0.256	0.000	0.999	0.299	-0.470		
FRGN	0.181	0.080	0.236	0.000	0.999	1.916	3.395		
BIG_5	0.553	1.000	0.498	0.000	1.000	-0.216	-1.972		
BRDS	8.034	8.000	2.158	3.000	13.000	0.023	-0.384		
LEV	0.356	0.315	0.252	0.015	2.465	3.183	22.909		
GRWTH	0.110	0.049	0.504	-0.416	6.521	10.254	128.624		
SIZE	7.148	7.111	0.464	6.006	8.629	0.318	0.818		
AAC = abnormal accruals; ACFO = abnormal cash flow from operating activities; APROD = abnormal production costs; ADISX = abnormal discretionary expenses; CONC = the proportion of common shares held by the largest shareholder and his/her relatives; CNTRL = a dummy variable that equals 1 if the largest									

by the largest shareholder and his/her relatives; CNTRL = a dummy variable that equals 1 if the largest shareholder and his/her relatives are in control of the firm, and 0 otherwise; INST = the proportion of common shares held by the institutions; FRGN = the proportion of common shares held by the foreign investors;  $BIG_5 = a$  dummy variable that equals 1 if the firm is being audited by one of the big-5 auditors in Jordan, and 0 otherwise; BRDS = number of directors on the board; LEV = total liabilities scaled by total assets; GRWTH = the change in total assets scaled by lagged total assets; SIZE = natural logarithm of total assets.

### 6.2.3. Research Hypotheses:

This section is merely devoted to reclassify research hypotheses according to types of earnings management (i.e. dependent variables) instead of the classification mentioned in the methodology chapter, which is based on ownership structure and external audit corporate governance deterrence mechanisms (i.e. independent variables). The reason is that, in the
methodology chapter, hypotheses development is based on the measurement and the effect of each independent variable on earnings management. Yet in this chapter, the analysis is conducted and statistical inferences are concluded based on the structure of this chapter that discusses results of relationships between each type of earnings management and these corporate governance mechanisms. Therefore, the new classification of the previously developed hypotheses is as follows,

# Abnormal Accruals Model:

H1a: There is significant relationship between ownership concentration and abnormal accruals in Jordan.

*H1b: There is a negative relationship between managerial ownership and abnormal accruals in Jordan.* 

*H1c:* There is a negative relationship between institutional ownership and abnormal accruals in Jordan.

H1d: There is a significant relationship between foreign ownership and abnormal accruals in Jordan.

H1e: There is a negative relationship between abnormal accruals and the biggest 5 audit firms in Jordan.

# Abnormal Operating Cash Flow Model:

H2a: There is a positive relationship between levels of ownership concentration and abnormal cash flow from operations Jordan.

H2b: There is a negative relationship between managerial ownership and abnormal cash flow from operations in Jordan.

H2c: There is a positive relationship between institutional ownership and abnormal cash flow from operations in Jordan.

H2d: There is a significant relationship between foreign ownership and abnormal cash flow from operations in Jordan.

H2e: There is a positive relationship between abnormal cash flow from operation and the biggest 5 audit firms in Jordan.

# Abnormal Production Costs Model:

H3a: There is a negative relationship between levels of ownership concentration and abnormal production costs in Jordan.

H3b: There is a negative relationship between managerial ownership and abnormal production costs in Jordan.

H3c: There is a positive relationship between institutional ownership and abnormal production costs in Jordan.

H3d: There is a significant relationship between foreign ownership and abnormal production costs in Jordan.

H3e: There is a positive relationship between abnormal production costs and the biggest 5 audit firms in Jordan.

## Abnormal Discretionary Expenses Model:

H4a: There is a negative relationship between levels of ownership concentration and abnormal discretionary expenses in Jordan.

H4b: There is a negative relationship between managerial ownership and abnormal discretionary expenses in Jordan.

H4c: There is a negative relationship between institutional ownership and abnormal discretionary expenses in Jordan.

H4d: There is a significant relationship between foreign ownership and abnormal discretionary expenses in Jordan.

H4e: There is no relationship between abnormal discretionary expenses and the biggest 5 audit firms in Jordan.

# **6.2.4. Data Transformation:**

Skewness and Kurtosis of dependent and independent variables show that some variables might not be normally distributed, which prompts for transforming such variables. Since regression models usually have no assumptions for the distribution of independent variables, a transformation of dependent variables is often applied to meet the assumption that the residuals be normally distributed with constant variance (Vermeylen, 2002). Consistent with this, Kolmogorov-Smirnov (K-S) test of normality is performed for dependent variables only.

Table 6.3 presents normality statistics for the dependent variables: absolute abnormal accruals (ABAC), absolute abnormal operating cash flow (ABCFO), absolute abnormal production costs (ABPROD) and abnormal discretionary expenses (ABDISX). The results are significant at 0.05 levels. This indicates that the null hypothesis of normally distributed variables is rejected (i.e. variables are not normally distributed). The table also shows that when the dependent variables violate normality, data transformations steps are undertaken. This is performed by normalising the dependent variables using square root transformation. Such transformation might also help normalise the residuals. The normality statistics for transformed dependent variables are insignificant indicating normality. Hence, from this point onwards, statistical analysis is conducted based on the transformed dependent variables.

Table 6.3. (K – S) Normality Statistic for Dependent Continuous Variables							
Untransformed Square Root Transforma							
ABAC	0.132***	0.059					
ABCFO	0.127***	0.052					
ABPROD	0.131***	0.059					
ABDISX 0.119** 0.049							
** Correlation is significant at the 0.0.	** Correlation is significant at the 0.05 level (1-tailed)						

ABCA = absolute abnormal accruals; ABCFO = absolute abnormal cash flow from operating activities; ABPROD = absolute abnormal production costs; ABDISX = absolute abnormal discretionary expenses.

#### 6.2.5. Univariate Analysis:

To test the relationships between ownership structure and auditor size corporate governance mechanisms and earnings management proxies are examined and discussed separately. Further, as mentioned in the methodology chapter, both Pearson correlation (i.e. parametric test) and Kendall's tau correlation (i.e. non-parametric test) are performed to measure the relationship between continuous dependent and independent variables, and only Point-Biserial Correlation (i.e. non-parametric test) is conducted to measure the relationship between continuous dependent variables and dichotomous independent variables. The reason for this adopting this triangulation approach is to increase robustness of results. While all dependent variables are continuous, continuous independent variables include ownership concentration (CONC), institutional ownership (INST), foreign ownership (FRGN) and a set of control variables including board size (BRDS), leverage (LEV), growth (GRWTH) and firm size (SIZE). The remaining two independent variables are dichotomous variables. These are: managerial ownership proxies by controlling shareholders (CNTRL) and auditor size proxies by big 5 audit firms in Jordan (BIG\_5). Finally, since there are four earnings management dependent variables (i.e. proxies), each type of manipulation is referred to as "model" from this point onwards.

#### 6.2.5.1. Abnormal Accruals Model:

In order to measure potential associations between the continuous independent variables of ownership structure and abnormal accruals, both Pearson correlation and Kendall's tau are conducted. Table 6.4 presents the hypothesised signs for correlations coefficients and significance of these relationships. The correlation coefficients of Pearson Correlation and Kendall's tau are the same in terms of signs according to which independent and control variables are associated with abnormal accruals. Further, both tests produce similar levels of significance for the coefficients.

The correlation coefficients for CONC are positive and statistically significant and as such, supporting *H1a*. However, the results do not support the hypotheses concerning the effect of INST and FRGN. Both parametric and non-parametric results are not statistically significant.

As for control variables, the correlation coefficients for BRDS are negative and significant at 0.01 levels. To a lesser extent, SIZE is also a negative correlation coefficient but only significant at 0.10 levels. The correlation coefficients for remaining control variables, LEV and GRWTH are not significant in either of parametric or non-parametric tests.

Table 6.4. Results of Pearson Correlation and Kendall's tau for Continuous Variables								
	Dependent Variable = $S_ABAC$							
Variable	Predicted Direction	Pearson Correlation	Kendall's tau					
CONC	?	$0.126^{**}$	$0.105^{**}$					
INST	_	-0.066	-0.022					
FRGN	?	0.023	-0.009					
BRDS		-0.193***	-0.136***					
LEV		0.046						
GRWTH		0.023						
SIZE		$-0.102^{*}$						
*** Correlation is sign	nificant at the 0.01 level (1	-tailed)						
* Correlation is sign	ificant at the 0.05 level (1-	tailed)						
Correlation is signi	ficant at the 0.10 level (1-t	ailed)						
$S_ABAC = Square r$	oot of the absolute value of	of abnormal accruals; CONC = the propo	rtion of common shares					
held by the largest shareholder and his/her relatives; INST = the proportion of common shares held by the								
institutions; FRGN = the proportion of common shares held by the foreign investors; BRDS = number of								
directors on the boar	d; LEV = total liabilities s	caled by total assets; GRWTH = the chan	ge in total assets scaled					
by lagged total assets; $SIZE =$ natural logarithm of total assets.								

As for relationships between abnormal accruals and dichotomous independent variables, table 6.5 show the results of Point-Biserial correlation that is supportive of hypothesis *H1b*. That is, CNTRL negatively affects abnormal accruals with a *P*-value below the 0.05 level of significance. Unexpectedly, BIG\_5 the correlation coefficient is positive and statistically significant. This shows that non-big 5 auditor who in fact mitigates abnormal accruals in Jordan not big 5.

Table 6.5. Results of Point-Biserial Correlation for Dichotomous Variables				
Dependent Variable = $S_ABAC$				
Predicted Direction Point-Biserial Correlation				
CNTRL	-0.120			
BIG_5 – 0.134 <sup>**</sup>				
** Correlation is significant at	the 0.05 level (1-tailed)			
S_ABAC = Square root of the absolute value of abnormal accruals; CNTRL = a dummy variable that equals 1 if				
the largest shareholder and h	nis/her relatives are in contra	col of the firm, and 0 otherwise; $BIG_5 = a$ dummy		
variable that equals 1 if the fin	m is being audited by one of	f the big-5 auditors in Jordan, and 0 otherwise.		

In summary, of the five hypotheses, only *H1a* and *H1b* are supported by the results. Although the correlation coefficient for BIG\_5 is statistically significant, the results show a contrasting sign to that predicted in *H1e*.

## 6.2.5.2. Cash Flow from Operating Activities Model:

H2a, H2c and H2d relate to the possible relationships between abnormal operating cash flow and the continuous independent variables of CONC, INST and FRGN, respectively. As per table 6.6, Pearson a Kendall's tau correlation coefficients for CONC and FRGN are positive and significant, with a slight difference in the level of significance between Pearson and Kendall's tau correlation coefficients for FRGN. Hence, the results support H2a and H2d. However, although the coefficients for INST are positive, neither Pearson correlation nor Kendall's tau coefficients are statistically significant, which means that H2c fails to account for the association between INST and abnormal operating cash flow.

The coefficients for the control variable BRDS are negative and significant with slight difference in levels of significance between parametric and non-parametric tests. Coefficients for LEV bear positive signs also with slight difference in levels of significance. The results show that both Pearson and Kendall's tau correlation coefficients for SIZE are negative but

only significant at 0.1 levels. The correlation coefficients for GRWTH are not significant in either of parametric or non-parametric tests.

Table 6.6. Results of Pearson Correlation and Kendall's tau for Continuous Variables								
Dependent Variable = $S_ABCFO$								
Predicted Direction Pearson Correlation Kendall's tau								
CONC	+	$0.204^{***}$	$0.158^{***}$					
INST	+	0.027	0.022					
FRGN	?	$0.185^{***}$	$0.085^{**}$					
BRDS		-0.181***	-0.119**					
LEV 0.153 <sup>**</sup> 0.071 <sup>*</sup>								
GRWTH	GRWTH 0.087 0.059							
SIZE		-0.099*	-0.072*					

Correlation is significant at the 0.01 level (1-tailed)

\*\* Correlation is significant at the 0.05 level (1-tailed)

\* Correlation is significant at the 0.10 level (1-tailed)

 $S_ABCFO =$  Square root of absolute value of abnormal cash flow from operating activities; CONC = the proportion of common shares held by the largest shareholder and his/her relatives; INST = the proportion of common shares held by the institutions; FRGN = the proportion of common shares held by the foreign investors; BRDS = number of directors on the board; LEV = total liabilities scaled by total assets; GRWTH = the change in total assets scaled by lagged total assets; SIZE = natural logarithm of total assets.

Table 6.7 presents results of Point-Biserial correlation between abnormal operating cash flow and the dichotomous variables CNTRL and BIG\_5. The correlation coefficients for CNRTL and BIG\_5 are not statistically significant indicating that the relationships predicted in H2b and H2e do not exist.

Table 6.7. Results of Point-Biserial Correlation for Dichotomous Variables						
Dependent Variable = $S_ABCFO$						
Predicted Direction Point-Biserial Correlation						
CNTRL	0.079					
BIG_5 + -0.082						
* Correlation is significant at the 0.10 level (1-tailed)						
S_ABCFO = Square root of absolute value of abnormal cash flow from operating activities; CNTRL = a dummy						
variable that equals 1 if	the largest shareholder and hi	s/her relatives are in control of the firm, and 0 otherwise;				
$BIG_5 = a dummy vari$	able that equals 1 if the firm is	being audited by one of the big-5 auditors in Jordan, and				

To sum up, the two hypotheses of H2a and H2d hold as the results confirm them at the conventional levels of significance. Regarding H2b, H2c and H2e, these hypotheses do not hold as the correlation coefficients for INST, CNTRL and BIG\_5 are not statistically significant.

## 6.2.5.3. Abnormal Production Costs Model:

The results exhibited in table 6.8 relate to possible relationships between abnormal production costs and three continuous ownership structure mechanisms: CONC, INST and FRGN, and four continuous control variables: BRDS, LEV, GRWTH and SIZE. The results have three main features; first, the correlation coefficients of Pearson Correlation and Kendall's tau for the independent and control variables are the same in terms of signs and levels of significance. Second, the results do not support any of the three hypotheses regarding the association between CONC, INST and FRGN, and abnormal production costs (*H3a, H3c* and *H3d*). Third, of all four control variables, only the positive correlation coefficient for GRWTH is significant at 0.01 levels.

Table 6.8. Results of Pearson Correlation and Kendall's tau for Continuous Variables								
Dependent Variable = $S_{ABPROD}$								
Predicted Direction Pearson Correlation Kendall's tau								
CONC	—	-0.022	-0.013					
INST	+	0.008	0.022					
FRGN	?	-0.059	-0.040					
BRDS		-0.069	-0.047					
LEV	LEV 0.028 0.033							
GRWTH		$0.176^{***}$	0.135***					
SIZE		-0.002	0.001					

\*\*\* Correlation is significant at the 0.01 level (1-tailed)

 $S_ABPROD =$  Square root of absolute value of abnormal production costs; CONC = the proportion of common shares held by the largest shareholder and his/her relatives; INST = the proportion of common shares held by the institutions; FRGN = the proportion of common shares held by the foreign investors; BRDS = number of directors on the board; LEV = total liabilities scaled by total assets; GRWTH = the change in total assets scaled by lagged total assets; SIZE = natural logarithm of total assets.

The Point-Biserial correlation coefficient for dichotomous independent variables show that CNRTL is, as predicted in H3b, is negative and statistically significant at 0.05 levels. On the contrary, BIG\_5 is not significantly associated with abnormal production costs indicating that the results do not support H3e.

Table 6.9. Results of Point-Biserial Correlation for Dichotomous Variables					
Dependent Variable = $S_{ABPROD}$					
Predicted Direction Point-Biserial Correlation					
CNTRL	_	-0.146**			
BIG_5 + -0.004					
** Correlation is significant at the 0.05 level (1-tailed)					
S ABPROD = Square root of absolute value of abnormal production costs; CNTRL = a dummy variable that					
equals 1 if the largest	shareholder and his/her relative	es are in control of the firm, and 0 otherwise; $BIG_5 = a$			

dummy variable that equals 1 if the firm is being audited by one of the big-5 auditors in Jordan, and 0 otherwise.

To conclude, with the exception of *H3b*, the results do not confirm *H3a*, *H3c*, *H3d* and *H3e*. As such CNRTL is the only corporate governance mechanism that is negatively associated with abnormal production costs.

## 6.2.5.4. Abnormal Discretionary Expenses Model:

According to the results exhibited in table 6.10, the association between ownership structure mechanisms and abnormal discretionary expenses model seems different from those discussed in the previous models. To begin with *H4a*, *H4c* and *H4d*, Pearson and Kendall's tau correlation coefficients for the continuous independent variables CONC and FRGN are not statistically significant. The continuous variable INST, for the first time, has a negative and statistically significant Pearson correlation coefficient at 0.01 levels and a Kendall's tau correlation coefficient only at a lower rate of significance, namely at 0.1 levels. Of all control variable, only SIZE show positive and significant correlation coefficients at 0.01 levels in both tests.

Table 6.10. Results of Pearson Correlation and Kendall's tau for Continuous Variables								
Dependent Variable = $S_{ABDISX}$								
Predicted Direction Pearson Correlation Kendall's tau								
CONC	—	0.034	0.002					
INST	-	-0.175****	$-0.082^{*}$					
FRGN	?	-0.017	0.028					
BRDS		-0.066	-0.048					
LEV	-0.065 -0.021							
GRWTH		0.078	0.045					
SIZE		0.196***	$0.142^{***}$					

\*\*\*\* Correlation is significant at the 0.01 level (1-tailed)

\* Correlation is significant at the 0.10 level (1-tailed)

 $S_ABDISX = Square root of absolute value of abnormal discretionary expenses; CONC = the proportion of common shares held by the largest shareholder and his/her relatives; INST = the proportion of common shares held by the institutions; FRGN = the proportion of common shares held by the foreign investors; BRDS = number of directors on the board; LEV = total liabilities scaled by total assets; GRWTH = the change in total assets scaled by lagged total assets; SIZE = natural logarithm of total assets.$ 

Also unlike other models, the Point-Biserial correlation test presented in table 6.11 shows that the coefficient for dichotomous variable CNTRL is positive for the first time. However, the coefficient is not statistically significant, and hence, the research hypothesis *H4b* fails to hold. Similarly, *H4e* fails to hold as the Point-Biserial correlation coefficient for the dichotomous variable BIG\_5 is not statistically significant.

Table 6.11. Results of Point-Biserial Correlation for Dichotomous Variables						
Dependent Variable = $S_{ABDISX}$						
Predicted Direction Point-Biserial Correlation						
CNTRL	- 0.077					
BIG_5 + 0.072						
$S_ABDISX = Square root of absolute value of abnormal discretionary expenses; CNTRL = a dummy variable that equals 1 if the largest shareholder and his/her relatives are in control of the firm, and 0 otherwise; BIG_5 = a dummy variable that equals 1 if the firm is being audited by one of the big-5 auditors in Jordan, and 0$						
otherwise.						

In brief, except for *H4b*, the results do not confirm *H4a*, *H4c*, *H4d*, and *H3e*. As such INST is the only corporate governance mechanism that is negatively associated with abnormal discretionary expenses.

Univariate analysis is conducted performed in this section in order to investigate associations between earnings management proxies (i.e. dependent variables) and ownership structure mechanisms, auditor size and a set of control variables. However, interpreting correlation coefficients provide no indication of causality (Yaffee, 2003). According to Field (2009), correlation cannot prove causality for two main reasons: the third-variable problem and direction of causality. The first problem relates to variable(s) affecting the causality between the correlated two variables. Hence, there is a need to control for all known variables before causation can be proven. In terms of the second problem, correlation coefficients do not establish the directionality required as a proof for causality.

Consequently, combined relationships between dependent and independent variables must be examined in order to make statistical inferences. As such, multiple regression analysis is more appropriate than univariate analysis. Therefore, multiple regressions analyses are conducted to construct causal relationships between earnings management proxies (i.e. dependent variables) and ownership structure mechanisms, auditor size and a set of control variables in section 6.2.7.

# **6.2.6.** Correlation Matrix:

The correlation coefficients for all corporate governance variables and control variables are presented in table 6.12. Pearson correlation coefficients are reported in the first line and Kendall's tau coefficients in the bottom line. The overall correlation matrix shows that no perfect linear relationship exists between independent variables (i.e. multicollinearity). Statisticians suggest that multicollinearity would be a serious problem if the correlation coefficient between two predictors is in excess of 0.8 (e.g. Gujarati, 2003; Fields, 2009). Since neither Pearson correlation coefficients nor Kendall's tau correlation coefficients

exceed 0.6 (r < 0.6), multicollinearity does not create a threat the interpretation of correlation coefficients of independent variables.

Ownership concentration (CONC) is positively correlated with controlling shareholders (CNTRL) at 0.01 levels of significance. This relationship is expected to exist because of the measurement of CNTRL that is based on whether the largest block holder is in control of the firm. CONC is also positively and significantly correlated with institutional ownership (INST). There are two plausible interpretations for the correlation between CONC and INST. First, institutional investors are likely to invest in firms where block holders prefer to invest. The second interpretation could be stemmed from the openness of cross-holding in Jordan. That is, while block holders might invest as individuals, they could also invest through institutions that are either privately-owned or controlled. As such, levels of institutional ownership exceed the 5% levels of ownership (i.e. institutional ownership becomes ownership concentration). Similar interpretations could be concluded from the positive and significant correlation between CONC and foreign ownership (FRGN). The highest correlation exists between CONC and the size of boards of directors (BRDS). The negative and significant correlation indicates that firms with high concentrated ownership tend to have small number of directors. This might be due to the largest block holders voting for themselves to set on the board of directors rather than choosing a number of representatives. Besides the significant correlation between CNTRL and CONC, CNTRL is significantly correlated only with BRDS. The negative correlation is also expected because of the measurement method of CNTRL. INST is positively and significantly correlated with FRGN and BRDS. This shows that foreign investors are more likely to invest as institutions rather than as individuals. Further, institutional investors, either they were foreigners or not, prefer to invest in companies where monitoring is practiced by large number of directors. As for the biggest 5 audit firms in Jordan (BIG\_5), the positive and significant correlation between

BIG\_5 and INST shows that institutional investors tend to invest in firms audited by big 5 auditors in Jordan, which is consistent with markets perceptions of big 5 auditors provide better audit quality. Possibly for the same reason, the correlation between BIG\_5 and BRDS is also positive and statistically significant. BIG 5 is negatively correlated with firms' levels of leverage (LEV). Bearing in mind that prior research documents big auditors requiring higher fees (Gul et al, 2003), high leveraged firms might prefer to pay less audit fees by contracting with non-big auditors. The only other consistent significance involving LEV is with firms' size (SIZE). The positive correlation between LEV and SIZE indicates that debt financing might be more accessible to big sized firms. In fact, SIZE is positively correlated with INST, BIG 5, BRDS and firms' growth (GRWTH). The positive correlation with INST shows that institutional investors invest more heavily in big firms than they do in small firms. The positive correlation between SIZE and, BRDS and BIG 5 shows that as firm's size become larger and more diversified, the number of directors on the board increases as well as the need for audit firms that acquire resources sufficient for auditing more diversified firms. Finally, while (GRWTH) is only significantly correlated with SIZE, this correlation indicates that as firms become larger, their opportunities for growth increase.

	Table 6.12. Pearson (Top) and Kendall's tau (Bottom) Correlation Coefficients for Independent Variables									
		CONC	CNTRL	INST	FRGN	BIG_5	BRDS	LEV	GRWTH	SIZE
CONC	Pearson Correlation Kendall's tau	1								
CNTRL	Pearson Correlation Kendall's tau	Pearson Correlation.374**Kendall's tau.312**								
INST	Pearson Correlation Kendall's tau	.138 <sup>*</sup> .096 <sup>*</sup>	.134 .104	1						
FRGN	Pearson Correlation Kendall's tau	ation .457 <sup>**</sup> .061 .117 <sup>*</sup> 054		$.217^{**}$ $.115^{*}$	1					
BIG_5	Pearson Correlation Kendall's tau	004 005	.032 .032	.151 <sup>*</sup> .137 <sup>*</sup>	.054 .126 <sup>*</sup>	1				
BRDS	Pearson Correlation Kendall's tau	524 <sup>**</sup> 371 <sup>**</sup>	191 <sup>**</sup> 129 <sup>*</sup>	$.198^{**} \\ .170^{**}$	306 <sup>**</sup> 077	.177 <sup>*</sup> .143 <sup>*</sup>	1			
LEV	Pearson Correlation Kendall's tau	$.074 \\ .104^{*}$	.102 .063	.180 <sup>**</sup> .012 .051 .021		155 <sup>*</sup> 116 <sup>*</sup>	081 062	1		
GRWTH	Pearson Correlation Kendall's tau	.019 .081	004 .052	067 .053	.122 .060	035 .089	.009 .043	$.085$ $.181^{**}$	1	
SIZE	Pearson Correlation Kendall's tau	015 007	.060 .058	.251 <sup>**</sup> .185 <sup>**</sup>	.101 .156 <sup>**</sup>	.380 <sup>**</sup> .307 <sup>**</sup>	.407 <sup>**</sup> .282 <sup>**</sup>	.160 <sup>*</sup> .159 <sup>**</sup>	.214 <sup>**</sup> .231 <sup>**</sup>	1

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

\* Correlation is significant at the 0.05 level (2-tailed)

CONC = the proportion of common shares held by the largest shareholder and his/her relatives; CNTRL = a dummy variable that equals 1 if the largest shareholder and his/her relatives are in control of the firm, and 0 otherwise; INST = the proportion of common shares held by the institutions; FRGN = the proportion of common shares held by the foreign investors;  $BIG_5 =$  a dummy variable that equals 1 if the firm is being audited by one of the big-5 auditors in Jordan, and 0 otherwise; BRDS = number of directors on the board; LEV = total liabilities scaled by total assets; GRWTH = the change in total assets scaled by lagged total assets; SIZE = natural logarithm of total assets.

#### 6.2.7. Multiple Regression Analysis:

In order to produce statistical inferences, multiple regressions analyses are conducted to construct causal relationships. To that end, ordinary least square method (OLS) is employed to examine possible relationships between earnings management proxies (i.e. dependent variables) and ownership structure mechanisms, auditor size and a set of control variables. For statistical inferences to be valid, however, certain assumptions underlying OLS method must be satisfied. These assumptions are: normally distributed errors (i.e. normality), linearity, homoscedasticity, no autocorrelation, and no multicollinearity. Because a violation of the homoscedasticity assumption requires a remedy that affects the significance of regressions coefficients, models' diagnostics are first presented in the following subsection. Afterwards, the results of each of the four models, which are based on four types of earnings, management are presented and discussed separately. These model are, abnormal accruals model (S\_ABAC), abnormal operating cash flow model (S\_ABCFO), abnormal production costs model (S\_ABPROD) and abnormal discretionary expenses model (S\_ABDISX).

## **6.2.7.1. Multiple Regressions Diagnostics:**

In this subsection, five tests are performed for each model to check whether the assumptions of OLS are satisfied. Table 6.13 shows the statistics and significance of four of those tests and table 6.14 shows the results of the fifth test. The tests performed concerning each assumption are as follows,

First, Kolmogorov-Smirnov (K-S) is performed to test for normality of errors distributions. If the test produces an insignificant statistic, then the null hypothesis of normally distributed error is accepted. K-S statistics presented in table 6.13 indicate normality for all models. That is, K-S statistic for errors produced from (S\_ABAC), (S\_ABCFO), (S\_ABPROD) and (S\_ABDISX) are 0.031, 0.057, 0.048 and 0.051, respectively. The significance levels for these values of test statistics are more than 0.200 and accordingly, the null hypothesis of normally distributed errors is accepted.

The second test is the White's test of heteroscedasticity. F-statistics for (S\_ABAC), (S\_ABCFO) and (S\_ABDISX) are 1.509, 1.167 and 1.238, respectively. None of these values are statistically significant indicating that OLS estimated coefficients are efficient. However, F-statistic for (S\_ABPROD) is 2.164 and is statistically significant at 0.05 levels. This indicates that the errors terms do not have the equal variances and hence, the assumption of homoscedasticity is violated. It is worth noting that in the presence of unequal variances (i.e. heteroscedasticity) the estimated coefficients are no longer efficient and their use can lead to incorrect inferences (Long and Ervin, 2000). To correct for heteroscedasticity, White's estimators are used in abnormal production costs model.

The third test relates to the assumption that the functional form of OLS model is linear. Ramsey's RESET tests for misspecification such as omitting relevant variable or nonlinearity in the functional form. As mentioned in the methodology chapter, the assumption of linearity is satisfied if the null hypothesis of linearity is not rejected. From table 6.13, Fstatistics are with values for (S\_ABAC), (S\_ABCFO), (S\_ABPROD) and (S\_ABDISX) are 0.018, 0.103, 0.077 and 0.872, respectively. The results are not statistically significant indicating that the assumption is satisfied and the models are correctly specified.

The fourth assumption of no autocorrelation is satisfied if the residual terms are uncorrelated (i.e. independent) for any two observations. Durbin-Watson test can be used to test for autocorrelation (i.e. serial correlation). Field (2009) suggests that Durbin-Watson values less than 1 and greater than 3 are cause for concern. From table 6.13, Durbin-Watson values for

all earnings management models show that autocorrelation does not exist as the values lie in the acceptable range specified by Field (2009).

Table 6.13. OLS Regression Assumptions Diagnostics							
S_ABAC S_ABCFO S_ABPROD S_ABP							
Kolmogorov-Smirnov test of Normality	0.031	0.057	0.048	0.051			
White's test of Heteroscedasticity	1.509	1.167	2.164**	1.238			
Ramsey RESET test of Linearity	0.018	0.103	0.077	0.872			
Durbin-Watson test of Autocorrelation1.9052.0062.1081.817							
**Significant at 0.05 level. S_ABAC = abnormal accruals model; S_ABCFO = abnormal cash flow from operating activities model; S_ABPROD = abnormal production costs model: S_ABDISX = abnormal discretionary expenses model.							

In terms of the assumption of no multicollinearity, the correlation matrix presented in section 6.2.6 shows that there are no perfect linear relationships between independent variables indicating that the assumption of no multicollinearity is satisfied (i.e. r < 0.8). However, statisticians recommend conducting Variance Inflation Factor (VIF) to test for multicollinearity, where a value of VIF greater than 10 signifies the existence of multicollinearity problem (e.g. Gujarati, 2003). Table 6.14 shows that VIF values in all models do not exceed 2.052, which is well below the acceptable value of 10.

	Table 6.14. Collinearity Diagnostic between Independent Variables in each Model								
	Abnormal A	ccruals Model	Abnormal Operating Cash		Abnormal Pro	Abnormal Production Costs		Abnormal Discretionary	
			Flow	Model	Model		Expenses Model		
Variable	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF	
CONC	0.499	2.004	0.533	1.875	0.504	1.985	0.518	1.931	
CNTRL	0.797	1.254	0.816	1.225	0.831	1.204	0.801	1.248	
INST	0.788	1.270	0.744	1.344	0.760	1.315	0.728	1.373	
FRGN	0.682	1.466	0.633	1.580	0.635	1.574	0.641	1.559	
BIG_5	0.789	1.268	0.811	1.233	0.794	1.259	0.801	1.248	
BRDS	0.503	1.987	0.499	2.002	0.472	2.119	0.487	2.052	
LEV	0.849	1.177	0.797	1.254	0.795	1.257	0.829	1.206	
GRWTH	0.823	1.214	0.778	1.285	0.800	1.250	0.804	1.243	
SIZE	0.576	1.735	0.553	1.809	0.530	1.888	0.560	1.787	
CONC = the	e proportion of corr	mon shares held by	the largest shareho	lder and his/her relation	tives; CNTRL = a $d^{1}$	ummy variable that	equals 1 if the largest	shareholder and	
his/her relati	ves are in control of	f the firm, and 0 othe	rwise; INST = the p	proportion of commo	n shares held by the i	institutions; FRGN =	= the proportion of con	amon shares held	
by the foreig	investors: BIG 5	s – a dummy variabl	e that equals 1 if th	e firm is being audit	ed by one of the hig.	-5 auditors in Iordar	and 0 otherwise BR	2DS - number of	

by the foreign investors;  $BIG_5 = a$  dummy variable that equals 1 if the firm is being audited by one of the big-5 auditors in Jordan, and 0 otherwise; BRDS = number of directors on the board; LEV = total liabilities scaled by total assets; GRWTH = the change in total assets scaled by lagged total assets; SIZE = natural logarithm of total assets.

#### 6.2.7.2. Abnormal Accruals Model:

Table 6.15 reports results of multiple regression analysis for abnormal accruals model where the dependent variable is the transformed absolute values of abnormal accruals measured by Kothari et al.'s model (2005). The model's F-statistic is 2.998, and is statistically significant at 0.01 levels. The adjusted  $R^2$  is 10.9% suggesting that the combination of independent variables explains 10.9% of the variation in accruals earnings management. With reference to section 6.2.3, the model tests five hypotheses relating to five independent variables.

The coefficient of ownership concentration (CONC) is not statistically significant. This is inconsistent with *H1a* that predicts a significant relationship between accruals earnings management and levels of ownership concentration. Although no direction is made in *H1a*, the sign on the coefficient is positive indicating that abnormal accruals increase as levels of ownership concentration increase in Jordan. However, the insignificant difference implies that firms with highly concentrated ownership do not report much higher abnormal accruals. This result is consistent with prior research that finds no significant relationship between ownership concentration and abnormal accruals in developed countries (e.g. Ballesta and Meca, 2007; Park and Shin, 2004). It is worth noting that this result is also consistent with the findings of Al-Fayoumi et al. (2010) who investigate the effect of ownership concentration in Jordan but proxy for it differently. Therefore, the result is neither in favour of the effective monitoring nor the opportunistic behaviour of large block holders.

The coefficient of managerial ownership (CNTRL) is negative and statistically significant at 0.01 levels. As such, *H1b* holds indicating that when the largest shareholder is also the chairman or the chief executive officer (i.e. in charge of the firm's affairs), abnormal accruals decline in Jordan. Hence, the result is supportive of the incentive alignment effect in Jordan. Although this result is consistent with prior research that finds managerial ownership an

effective corporate governance deterrence mechanism (e.g. Warfield et al., 1995; Wang, 2006), it contradicts that found by Al-Fayoumi et al. (2010). This is probably due to the difference in the measurement of managerial ownership proxies between the two studies.

Unlike the findings of previous research that documents a negative effect of levels of institutional ownership on abnormal accruals (e.g. Rajgopal et al., 1999; Cornett et al., 2008; Chung et al., 2002; Charitou et al., 2007; Yu, 2008), *H1c* fails to hold as the coefficient of institutional ownership (INST), although negative, is statistically insignificant. However, this result provides confirmatory evidence to that of Al-Fayoumi et al. (2010) that institutional investors do not serve effectively in constraining accruals earnings management in Jordan. Possible interpretations for the contradicting results might be that institutional investors in Jordan are either less sophisticated than those in developed markets or act passively in the governance of their corporate holdings.

Although foreign investors, at least in theory, are considered as deterrence corporate governance mechanism, the limited prior research fails to document such inverse relationship between levels of foreign ownership and levels of abnormal accruals (e.g. Sarkar et al., 2006; Ali et al., 2008). Similar to those findings, table 6.15 shows that the coefficient of foreign ownership (FRGN) in this study is negative but statistically insignificant. Hence, *H1d* is rejected as foreign investors are found ineffective in mitigating the practice of earnings management in Jordan.

Interestingly and unexpectedly, the significant positive coefficient of the dummy variable (BIG\_5) contrasts the well-know convention that clients of big audit firms are less likely to report high abnormal accruals than clients of small audit firms. The positive sign shows that non-big auditors who are superior in thwarting accruals earnings management in Jordan. An alternative interpretation may simply be that good companies are more likely to elect big 5

auditors and are less likely to manage earnings, and accordingly, are more likely to have higher quality earnings (Francis, 2004). Regardless of the interpretation, this finding will indeed affect the predicted sign on the coefficient of BIG\_5 included in real activities models. This is because the substitutive effect relies on the effect of BIG\_5 on accruals earnings management. Put differently, the sign on the coefficient of BIG\_5 was initially predicted to be negative in abnormal accruals model. Based on this expectation, it was initially predicted to be positive in real activities model. Since the actual sign in abnormal accruals model appeared positive, the predicted sign in real activities model must be changed to negative. As such, clients of big 5 auditors are expected not to engage in real activities earnings management because of the poor audit quality provided by big 5 auditors.

The insignificant coefficient of board size (BRDS) indicates that there is no relationship between number of directors and levels of abnormal accruals in Jordan. This is consistent with evidence found in Singapore and Malaysia by Bradbury et al. (2006).

Rates of both leverage (LEV) and growth (GRWTH) are positively related to levels of abnormal accruals which is consistent with firms that are in financial distress or experiencing poor performance (e.g. Bartov, 1993; Wild, 1996; Nagar, 2002). Although significant differences are marginal, these findings suggest that managers of financially distressed firms in Jordan engage in accruals earnings management to either avoid violating debt covenants or renegotiate lending contracts (DeAngelo et al., 1994). Moreover, managers may use abnormal accruals to avoid reporting negative growth rates that might affect their bonuses.

The coefficient of firm size (SIZE) is negative and statistically significant at 0.01 levels. This is consistent with Bushmen et al. (2003) and Xie et al. (2003) who find that the demand for systematic corporate governance is higher in large-sized firms relative to small-sized firms due to high information asymmetry between managers and shareholders in the larger firms

with complex and dispersed ownership structure. Therefore, this result implies that large firms in Jordan operate under high scrutiny and hence, are less likely to report abnormal accruals.

Table 6.15. Results of Pooled Multiple Regression Analysis for Abnormal Accruals Model					
$S\_ABAC = \alpha + \beta_1 CONC + \beta_2 CNRTL + \beta_3 INST + \beta_4 FRGN + \beta_5 BIG5 + \beta_6 BRDS + \beta_7 SIZE + \beta_8 GRWTH + \beta_9 LEV + \beta_{10-12} YR$					
	Predicted Direction	Coefficient	t-Statistic		
Constant		0.593	4.427***		
CONC	?	0.093	1.843*		
CNTRL	_	-0.055	-3.218***		
INST	_	-0.020	-0.604		
FRGN	?	-0.045	-1.122		
BIG_5	_	0.060	3.506***		
BRDS		-0.008	-1.513		
LEV		0.001	1.935*		
GRWTH		0.063	$1.707^{*}$		
SIZE		-0.044	-2.032**		
Adjusted R <sup>2</sup>	10.9%				
F-statistic	2.998****				
*** Correlation is significant at the 0.01 level					

\*\* Correlation is significant at the 0.05 level.

\* Correlation is significant at the 0.10 level.

 $S_ABAC =$ Square root of the absolute value of abnormal accruals; CONC = the proportion of common shares held by the largest shareholder and his/her relatives; CNTRL = a dummy variable that equals 1 if the largest shareholder and his/her relatives are in control of the firm, and 0 otherwise; INST = the proportion of common shares held by the institutions; FRGN = the proportion of common shares held by the foreign investors; BIG 5 = a dummy variable that equals 1 if the firm is being audited by one of the big-5 auditors in Jordan, and 0 otherwise; BRDS = number of directors on the board; LEV = total liabilities scaled by total assets; GRWTH = the change in total assets scaled by lagged total assets; SIZE = natural logarithm of total assets.

## 6.2.7.3. Abnormal Cash Flow from Operating Activities Model:

Table 6.16 reports results of multiple regression analysis for abnormal cash flow from operating activities model. The dependent variable is the transformed absolute values of abnormal cash flow from operating activities measured by Roychowdhury's model (2006). It is important here to recall that this dependent variable proxies for sales manipulation activities. That is, boosting sales by offering price discounts and more lenient credit terms

will increase current period's earnings but will also results in lower cash flows in the current period, and vice versa (Cohen and Zarowin, 2010). However, regressing cash flows on sales to generate abnormal cash flow might give rise to a potential problem in interpreting the results of the current empirical model. There are non-sales related factors that could also affect abnormal cash flow. To illustrate, while the practice of overproduction activities has a negative effect on abnormal cash flow, the reduction of discretionary expenses has a positive effect. As a result, Roychowdhury (2006) argues that the net effect on abnormal cash flow could be ambiguous. In order to conclude valid interpretations, the results of this particular empirical model must be considered along with the results produced from the empirical models of abnormal production costs and abnormal discretionary expenses. Therefore, the following statistical inferences are tentative<sup>26</sup>.

The model's F-statistic is 2.127, and is statistically significant at 0.05 levels. The adjusted  $R^2$  is 7.1% suggesting that the combination of independent variables explains 7.1% of the variation in sales earnings management. With reference to section 6.2.3, the model tests five hypotheses relating to five independent variables.

The positive and statistically significant coefficient of ownership concentration (CONC) confirms *H2a* which predicts a direct relationship between abnormal cash flow from operating activities and CONC. The positive relationship shows that largest shareholders might exert pressure on managers that leads the latter to engage in sales manipulation. A possible interpretation is that large shareholders in Jordan might be less financially sophisticated than those in the US and UK, as their main concern is the current value of their wealth regardless of the consequences of sales manipulation.

<sup>&</sup>lt;sup>26</sup> Final conclusions for independent variables in this particular model are discussed in the alternative analysis section 7.9 where the results of income-increasing and decreasing models are considered collectively.

Consistent with the findings of Cohen et al. (2008), the results confirm *H2b* as the coefficient of managerial ownership (CNTRL) is negative and statistically significant at 0.05 levels. This implies that when the largest shareholders are in the position of controlling firms' affairs, they become effective in deterring manager from practicing sales manipulation. As such, managerial ownership in Jordan can potentially align the interests of shareholders with those of minority shareholders.

The results concerning the remaining three hypotheses indicate that H2c, H2d and H2e fail to hold. First, H2c fails to hold as the coefficient of institutional ownership (INST) is neither positive nor statistically significant. Although the hypothesis is based on the findings of Li (2010) that depicts institutions as short-term oriented investors, the results in this research are rather consistent with Roychowdhury (2006). Second, the coefficient of foreign ownership is statistically insignificant indicating that H2d also fails to hold. This result might be attributable to the similarity between the monitoring roles of institutional and foreign investors (Dahlquist and Robertson, 2001). Hence, institutional and foreign investors are found ineffective in mitigating the practice of sale manipulation in Jordan. Third, the findings in abnormal accruals model show that non-big 5 auditors who actually prevent accruals earnings management, which in turn leads to predict a negative sign, instead of the originally predicted positive sign, on the coefficient of BIG\_5 in abnormal operating cash flow model. Consistent with this, the coefficient of BIG\_5 is negative. However, the coefficient is not statistically significant implying that managers do not resort to sales manipulation because of the enhanced scrutiny over abnormal accruals provided by non-big 5 in Jordan. As such, the results reject H2e, which is inconsistent with Cohen and Zarowin (2010).

As for the directors-specific control variable, the coefficient of board size (BRDS) is also insignificant. Therefore, the number of directors is not a limiting factor of abnormal cash flow from operating activities in Jordan. Similar evidence is found by Visvanathan (2008). The positive and statistically significant coefficient of leverage (LEV) is consistent with the findings of Cohen and Zarowin (2010). The interpretation of this result is not as straightforward as it might be in other models because this relationship involves operating cash flow. In general, financially distressed firms have been associated with high leverage (e.g. Beneish and Press, 1995). Accordingly, Bartov (1993) and DeFond and Park (1994) predict and find a positive relation between levels of firm leverage and abnormal accruals as firms are motivated to avoid debt covenant violations. But if firms with high leverage have low cash holdings, they become exposed to increased risk of financial distress. Based on this reasoning, sales manipulation could only be expected to increase operating cash flow indicating income-decreasing practices. Therefore, it could be concluded that firms in Jordan engage in income-decreasing sales manipulation in order to depict healthier financial position. Finally, the coefficients of the remaining control variables are not statistically significant, which indicates that firms in Jordan engage in sales earnings management regardless of their growth rates (GRWTH) or sizes (SIZE).

Table 6.16. Results of Pooled Multiple Regression Analysis for Abnormal Operating Cash Flow Model					
$S_{ABCFO} = \alpha + \beta_1 CONC + \beta_2 CNRTL + \beta_3 INST + \beta_4 FRGN + \beta_5 BIG5 + \beta_6 BRDS + \beta_7 SIZE + \beta_8 GRWTH + \beta_9 LEV + \beta_{10-12} YR$					
	Predicted Direction	t-Statistic			
Constant		0.478	3.417***		
CONC	+	0.094	$1.761^{*}$		
CNTRL	_	-0.037	-2.073**		
INST	+	-0.005	-0.133		
FRGN	?	0.069	1.486		
BIG_5	+	-0.007	-0.402		
BRDS		0.000	-0.085		
LEV		0.001	$1.974^{**}$		
GRWTH		0.053	1.335		
SIZE		-0.035	-1.534		
Adjusted R <sup>2</sup>		7.1%			
F-statistic		2.127 **			

\*\*\*\* Correlation is significant at the 0.01 level.

 $_{*}^{**}$  Correlation is significant at the 0.05 level.

Correlation is significant at the 0.10 level.

 $S\_ABCFO = Square root of absolute value of abnormal cash flow from operating activities; CONC = the proportion of common shares held by the largest shareholder and his/her relatives; CNTRL = a dummy variable that equals 1 if the largest shareholder and his/her relatives are in control of the firm, and 0 otherwise; INST = the proportion of common shares held by the institutions; FRGN = the proportion of common shares held by the foreign investors; BIG_5 = a dummy variable that equals 1 if the firm is being audited by one of the big-5 auditors in Jordan, and 0 otherwise; BRDS = number of directors on the board; LEV = total liabilities scaled by total assets; GRWTH = the change in total assets scaled by lagged total assets; SIZE = natural logarithm of total assets.$ 

# 6.2.7.4. Abnormal Production Costs Model:

Table 6.17 reports results of multiple regression analysis for abnormal production costs model. The dependent variable is the transformed absolute values of abnormal production costs measured by Roychowdhury's model (2006). Five hypotheses are tested relating to five the independent variables included in the model.

The model's F-statistic is 2.027, and is statistically significant at 0.05 levels. The adjusted  $R^2$  is 6.1% suggesting that the combination of independent variables explains 6.1% of the variation in manipulated production costs.

Although the sing is negative as predicted, the results indicate that H3a is rejected as the coefficient of ownership concentration (CONC) is not statistically significant. Consistent with Cheng et al. (2010), block holders seem ineffective in monitoring managers' manipulations of production costs.

The coefficient of controlling shareholders (CNTRL) is negative and statistically significant at 0.05 levels. The result confirms *H3b* which is consistent with Demers and Wang (2010) and Cohen et al. (2008) indicating managerial ownership helps align the interests of controlling shareholders with those of minority shareholders. As such, managerial ownership does serve as an effective deterrence mechanism of production costs manipulations in Jordan.

Both of *H3c* and *H3d* are rejected as neither the coefficient of institutional ownership (INST) nor the coefficient of foreign ownership (FRGN) is statistically significant. In terms of institutional ownership, the result is neither consistent with Li (2010) who finds institutional investors as short-term oriented nor with Roychowdhury (2006) who finds institutional investors as an effective constraining corporate governance mechanism. Similarly, the result show that levels of abnormal production costs do not differ among firms with different levels of foreign ownership. Therefore, institutional and foreign investors do not seem to have mitigating or motivating effects on levels of abnormal production costs.

Consistent with Demers and Wang (2010) and Cohen et al. (2008), the coefficient of big 5 auditors in Jordan (BIG\_5) is statistically insignificant although it holds the correct newly predicted sign. Thus, H3e is also rejected implying that managers do not manipulate production costs in response to the enhanced scrutiny over abnormal accruals provided by non-big 5 in Jordan.

The coefficient of board size (BRDS) is negative and statistically significant indicating that larger boards are more effective than smaller boards in mitigating abnormal production costs

in Jordan. As for firm characteristic variables, only the coefficient of growth (GRWTH) is statistically significant at 0.01 levels. However, the positive sign of the coefficient does not indicate that only firms with higher growth rates are likely to manipulate production costs. This is based on the findings of Li (2010) that show growth rates positively associated with inventory levels regardless of whether the firm were suspect of practicing production costs manipulation or not. Both of the remaining control variables, leverage (LEV) and firm size (SIZE) are statistically insignificant, which is consistent with prior research such as Visvanathan (2008) and Cheng et al. (2010).

Table 6.17. Results of Pooled Multiple Regression Analysis for Abnormal Production Costs   Model					
$S\_ABPROD = \alpha + \beta_1 CONC + \beta_2 CNRTL + \beta_3 INST + \beta_4 FRGN + \beta_5 BIG5 + \beta_6 BRDS + \beta_7 SIZE + \beta_8 GRWTH + \beta_9 LEV + \beta_{10-12} YR$					
	Predicted Direction	Coefficient	t-Statistic		
Constant		0.340	2.709***		
CONC	_	-0.016	-0.259		
CNTRL	_	-0.047	-2.591**		
INST	+	0.048	1.325		
FRGN	?	-0.055	-1.223		
BIG_5	+	-0.002	-0.127		
BRDS		-0.011	-2.418**		
LEV		0.000	-0.529		
GRWTH		0.108	$2.862^{***}$		
SIZE		0.005	0.227		
Adjusted R <sup>2</sup>		6.1%			
F-statistic		$2.027^{**}$			

\*\*\* Correlation is significant at the 0.01 level.

\*\* Correlation is significant at the 0.05 level.

<sup>\*</sup> Correlation is significant at the 0.10 level.

 $S_ABPROD =$  Square root of absolute value of abnormal production costs; CONC = the proportion of common shares held by the largest shareholder and his/her relatives; CNTRL = a dummy variable that equals 1 if the largest shareholder and his/her relatives are in control of the firm, and 0 otherwise; INST = the proportion of common shares held by the institutions; FRGN = the proportion of common shares held by the foreign investors; BIG\_5 = a dummy variable that equals 1 if the firm is being audited by one of the big-5 auditors in Jordan, and 0 otherwise; BRDS = number of directors on the board; LEV = total liabilities scaled by total assets; GRWTH = the change in total assets scaled by lagged total assets; SIZE = natural logarithm of total assets. Note: Heteroscedasticity is corrected through White's heteroscedasticity-consistent estimator.

#### 6.2.7.5. Abnormal Discretionary Expenses Model:

Table 6.18 reports results of pooled multiple regression analysis for the abnormal discretionary expenses model. The dependent variable is the transformed absolute values of abnormal discretionary expenses measured by Roychowdhury's model (2006). Five hypotheses are tested relating to five the independent variables included in the model.

The model's F-statistic is 2.326, and is statistically significant at 0.01 levels. The adjusted  $R^2$  is 8.2% suggesting that the combination of independent variables explains 8.2% of the variation in discretionary expenses manipulations.

Garven (2009) and Cheng et al. (2010) find that levels of ownership concentration do not affect levels of abnormal discretionary expenses. Similar to the findings of prior research, the coefficient of ownership concentration is statistically insignificant, and hence, H4a is rejected. Therefore, the result is neither in favour of the effective monitoring nor the opportunistic behaviour of large block holders.

For the first time, the coefficient of managerial ownership (CNTRL) is statistically insignificant. Accordingly, *H4b* is rejected as there no relationship between managerial ownership and abnormal discretionary expenses, which is consistent with Demers and Wang (2010). This suggests that no difference occurs in the levels of abnormal discretionary expenses whether the largest shareholder occupies the position of chairman or chief executive officer. Hence, the fact that the largest shareholder is being in charge of the firm's affairs does not create incentive alignment effect or the entrenchment effect in Jordan.

Also for the first time, the coefficient of institutional ownership (INST) is statistically significant. This result is consistent with the findings of Bushee (1998) and Roychowdhury (2006) that portray institutional investors as an effective corporate governance mechanism.

Therefore, H4c is confirmed implying that, in Jordan, levels of abnormal discretionary expenses decrease as levels of institutional ownership increase. Thus, this inverse relationship refutes that institutional investors in Jordan have a myopic behaviour.

Similar to other real activities models, the coefficients of foreign ownership (FRGN) and big 5 auditors (BIG\_5) are not statistically significant. Hence, both *H4d* and *H4e* are rejected. Consistent with prior research (e.g. Garven, 2009; Demers and Wang, 2010; Cohen et al., 2008), the insignificant coefficient of BIG\_5 implies that the enhanced scrutiny over abnormal accruals provided by non-big 5 in Jordan does not motivate managers to manipulate discretionary expenses.

The marginal significant coefficient of board size (BRDS) might be interpreted as larger boards bring greater number of experienced directors who seem to play a role in mitigating abnormal discretionary expenses. The insignificant coefficients of firms' leverage (LEV) and growth (GRWTH) indicates that LEV and GRWTH are not associated with abnormal discretionary expenses in Jordan as they are not in the US (e.g. Garven, 2009) and China (e.g. Cheng et al., 2010). Finally, the coefficient of firms' size (SIZE) is highly significant and positive consistent with Gunny (2010). This indicate the larger the firm, the higher levels of abnormal discretionary expenses.

Table 6.18. Results of Pooled Multiple Regression Analysis for Abnormal Discretionary   Expenses Model					
$S\_ABDISX = \alpha + \beta_1 CONC + \beta_2 CNRTL + \beta_3 INST + \beta_4 FRGN + \beta_5 BIG5 + \beta_6 BRDS + \beta_7 SIZE + \beta_8 GRWTH + \beta_9 LEV + \beta_{10-12} YR$					
	Predicted Direction	Coefficient	t-Statistic		
Constant		-0.104	-1.344		
CONC	_	-0.012	-0.424		
CNTRL	_	0.010	0.958		
INST	_	-0.054	-2.572**		
FRGN	?	-0.010	-0.425		
BIG_5	+	-0.003	-0.255		
BRDS		-0.005	$-1.848^{*}$		
LEV		0.000	-1.263		
GRWTH		0.002	0.111		
SIZE		0.044	3.537***		
Adjusted R <sup>2</sup>		8.2%			
F-statistic	2.326***				

\*\*\* Correlation is significant at the 0.01 level.

\*\* Correlation is significant at the 0.05 level.

\* Correlation is significant at the 0.10 level.

 $S_ABDISX =$  Square root of absolute value of abnormal discretionary expenses; CONC = the proportion of common shares held by the largest shareholder and his/her relatives; CNTRL = a dummy variable that equals 1 if the largest shareholder and his/her relatives are in control of the firm, and 0 otherwise; INST = the proportion of common shares held by the institutions; FRGN = the proportion of common shares held by the foreign investors; BIG\_5 = a dummy variable that equals 1 if the firm is being audited by one of the big-5 auditors in Jordan, and 0 otherwise; BRDS = number of directors on the board; LEV = total liabilities scaled by total assets; GRWTH = the change in total assets scaled by lagged total assets; SIZE = natural logarithm of total assets.

# 6.3. Alternative Analysis:

In this section, an alternative approach of earnings management proxies is conducted. Signed values of earnings management are used instead of the absolutes values. In addition, current accruals are estimated and used instead of total accruals. The following subsection discusses the limitations associated with the main analysis that has motivated this alternative analysis.

#### 6.3.1. Measurement of Earnings Management Proxies:

The aim of these changes is overcome some limitations that became apparent in the main analysis. These limitations are:

- At the beginning of this chapter, section 6.2.1 in particular, it is stated that property, plant and equipment are included in Kothari et al.'s (2005) model in net values rather than gross values due to data limitation. Because depreciation expense could be manipulated itself, property, plant and equipment might not accurately control for the non-discretionary portion of depreciation expense. As a remedy, current accruals are calculated where depreciation expenses is obsolete as follows,

$$CA_t/A_{t-1} = (\Delta CA_t - \Delta Cash_t - \Delta CL_t + \Delta STD_t)/A_{t-1}$$

Where, CA = current accruals; A = total assets;  $\Delta CA =$  change in current assets;  $\Delta CL =$  change in current liabilities;  $\Delta Cash =$  change in cash and cash equivalent;  $\Delta STD =$  change in debt included in current liabilities.

Afterwards, normal current accruals are estimated through the model of Kothari et al. (2005) yet excluding property, plant and equipment. The residuals of this model are considered as the measure for abnormal current accruals. The model can be expressed symbolically as follows,

$$CA_t/A_{t-1} = \alpha + \beta_1 \left[ \frac{1}{A_{it-1}} \right] + \beta_2 \left[ \frac{\Delta REV_t - \Delta REC_t}{A_{t-1}} + \beta_4 ROA_{t-1} + \varepsilon_{it} \right]$$

Where, CA = current accruals; A = total assets;  $\Delta REV$  = change in revenues;  $\varepsilon$  = error term; t = year index for the years included in the estimation period.

- In Chapter Five, section 5.4.1.1, the justification of the appropriateness of using absolute values of earnings management is discussed. The reason is that a specific

directional prediction is absent in the current research as well as most of prior research (Hribar and Nichols, 2007), and hence, the extent to which firms manage earnings is best measured by the absolute values of residuals (i.e. amounts of managed earnings). Nevertheless, the approach of absolute values of earnings management suffers from a certain limitation. Upwards earnings management become indistinguishable from downwards earnings management when residuals are taken in absolute terms. By doing so, frequencies in which each direction occurs are ignored. So if firms tend to manage earnings in a certain direction more frequently than the other direction or if a certain corporate governance mechanism act more effectively in mitigating one directional earnings management more than the other, interpretations of relationships between corporate governance mechanisms and earnings management might be clouded. Therefore, conducting an analysis using signed residuals would indeed enhance the robustness of the statistical inferences stemmed from the main analysis concerning the effectiveness of corporate governance mechanisms in mitigating all types of earnings management in Jordan.

- The preceding discussion is of a particular importance to real activities models in general and to abnormal cash flow from operating activities model in particular. The example given in this chapter, section 6.2.7.3, shows that causal relationships are better examined and understood through the use of signed residuals because of joint effect of all types of real activities earnings management on operating cash flow.

Therefore, in order to provide evidence on whether there are differential relations between independent variables and measures of earnings management conditional on whether managed earnings are income-increasing or income-decreasing, each population is partitioned into two groups based on the sign of observations residuals. Examples of studies that use this approach include Ashbaugh et al., 2003; Kim et al., 2004; Li, 2008.

#### 6.3.2. Descriptive Statistics and Univariate Analysis:

This subsection presents descriptive statistics for, and means differences between, dependent and independent variables in income-increasing and income-decreasing groups. The objective is to consider these differences in the interpretation of the results of multiple regression analyses. T-statistic (i.e. parametric test) and Mann Whitney tests (non-parametric test) are used to measure the significance of mean differences if existed.

#### 6.3.2.1. Singed Abnormal Current Accruals Model:

Table 6.19 presents mean and median income-increasing abnormal current accruals are 29% and 28.2% of total assets, respectively. This is significantly higher than 25.2% mean and 24% median income-decreasing abnormal current accruals in both parametric and non-parametric tests, namely at 0.05 levels. The interpretation is that listed manufacturing companies in Jordan engage in income-increasing accruals earnings management more than they engage in income-decreasing accruals earnings management.

The only case where mean and median of an independent variable in the income-increasing group are higher than those in the income-decreasing group relates to ownership concentration. As for controlling shareholder, institutional ownership, foreign ownership and big 5 auditors, means and medians of these independent variables are lower in the income-increasing group than those in the income-decreasing group. Nevertheless, no significant differences exist between means of all independent variables in both groups. Although the differences are statistically insignificant, the implication is vital. In the later regression analyses of the effectiveness of independent variables in constraining income-increasing and income-decreasing abnormal current accruals, causal relationships would not be a result of

differences in levels of ownership or the presence controlling shareholder and big 5 auditors. For example, if institutional ownership is found to be negatively associated with incomeincreasing abnormal current accruals but not significantly associated with income-decreasing abnormal current accruals, this would not arise because of high (low) levels of institutional ownership in income-increasing (-decreasing) group.

Table 6.19. Pooled Descriptive Statistics and Univariate Tests for Abnormal Current Accruals Model								
	Income-Increasing		Income-Decreasing			Mean Difference		
Variable			Std.			Std.		Mann
	Mean	Median	Dev.	Mean	Median	Dev.	t-stat	Whitney
S_CA	0.290	0.282	0.135	0.252	0.240	0.114	2.145**	-2.032**
CONC	0.346	0.332	0.191	0.319	0.250	0.223	0.883	-1.629
CNTRL	0.432	0.000	0.498	0.445	0.000	0.499	-0.191	-0.192
INST	0.422	0.444	0.252	0.465	0.462	0.252	-1.195	-1.278
FRGN	0.160	0.054	0.194	0.176	0.085	0.237	-0.524	-0.570
BIG_5	0.511	1.000	0.503	0.591	1.000	0.494	-1.117	-1.116
BRDS	7.841	7.000	1.844	8.345	8.000	2.324	$-1.703^{*}$	-1.660*
LEV	0.400	0.389	0.195	0.319	0.274	0.287	$2.217^{**}$	-3.604***
GRWTH	0.178	0.128	0.256	0.066	-0.009	0.644	1.541	-5.681***
SIZE	7.170	7.116	0.426	7.147	7.116	0.492	0.341	-0.102

\*\*\*\* Correlation is significant at the 0.01 level.

\*\* Correlation is significant at the 0.05 level.

<sup>\*</sup> Correlation is significant at the 0.10 level.

 $S_CA =$  Square root of abnormal current accruals; CONC = the proportion of common shares held by the largest shareholder and his/her relatives; CNTRL = a dummy variable that equals 1 if the largest shareholder and his/her relatives are in control of the firm, and 0 otherwise; INST = the proportion of common shares held by the institutions; FRGN = the proportion of common shares held by the foreign investors; BIG\_5 = a dummy variable that equals 1 if the firm is being audited by one of the big-5 auditors in Jordan, and 0 otherwise; BRDS = number of directors on the board; LEV = total liabilities scaled by total assets; GRWTH = the change in total assets scaled by lagged total assets; SIZE = natural logarithm of total assets.

# 6.3.2.2. Signed Abnormal Cash Flow from Operating Activities Model:

The results exhibited in table 6.20 presents mean and median income-increasing abnormal operating cash flow are 24.1% and 23.9% of total assets, respectively. As for income-decreasing abnormal operating cash flow, the mean and median are 26% mean and 26.2% of

total assets, respectively. Both parametric and non-parametric tests are not statistically significant indicating that the magnitude of income-increasing sales manipulation is not different from that of income-decreasing sales manipulation in Jordan.

Means differences in levels of ownership concentration and foreign ownership are statistically insignificant between the groups of income-increasing and income-decreasing abnormal operating cash flow. Similarly, means of the presence of big 5 auditors does not statistically differ between the two groups. This indicates that any possible differences in the effectiveness of these independent variables would not be dependent on differences in levels of ownership concentration, foreign ownership or the presence of big 5 auditors.

A marginal significant difference exists between means managerial ownership. Mean managerial ownership in income-increasing group, 35.4%, is lower than mean managerial ownership, 50%, in income-decreasing group. Further, there is a statistically significant difference among means of institutional ownership between the two groups. Mean institutional ownership is 42.1% in income-increasing group which is lower than the 48.6% in income-decreasing group. Bearing in mind that there is statistical means difference between reported abnormal operating cash flow, if any of these variables appear significant in one regression and insignificant in the other, then there is a possibility, not a probability, these findings result from differences in means between the two groups.
Table 6.20. Pooled Descriptive Statistics and Univariate Tests for Abnormal Operating Cash Flow Model								
	Income-Increasing			Inco	ome-Decre	Mean Difference		
Variable			Std.			Std.		Mann
	Mean	Median	Dev.	Mean	Median	Dev.	t-stat	Whitney
S_CFO	0.241	0.239	0.091	0.260	0.262	0.101	-1.275	-1.465
CONC	0.314	0.283	0.189	0.337	0.295	0.219	-0.718	-0.523
CNTRL	0.354	0.000	0.481	0.500	0.500	0.503	$-1.910^{*}$	-1.891*
INST	0.421	0.404	0.237	0.486	0.512	0.244	-1.738 <sup>*</sup>	-2.042**
FRGN	0.176	0.065	0.214	0.179	0.101	0.236	-0.093	-0.200
BIG_5	0.519	1.000	0.503	0.636	1.000	0.484	-1.533	-1.530
BRDS	7.835	7.000	1.996	8.352	8.500	2.264	-1.557	-1.363
LEV	0.398	0.347	0.305	0.296	0.267	0.194	$2.609^{**}$	-2.760****
GRWTH	0.164	0.047	0.771	0.040	0.020	0.167	1.475	-1.180
SIZE	7.152	7.125	0.486	7.168	7.116	0.484	-0.215	-0.365

\*\*\*\* Correlation is significant at the 0.01 level.

\*\* Correlation is significant at the 0.05 level.

Correlation is significant at the 0.10 level.

 $S\_CFO = Square root of abnormal cash flow from operating activities; CONC = the proportion of common shares held by the largest shareholder and his/her relatives; CNTRL = a dummy variable that equals 1 if the largest shareholder and his/her relatives are in control of the firm, and 0 otherwise; INST = the proportion of common shares held by the institutions; FRGN = the proportion of common shares held by the foreign investors; BIG_5 = a dummy variable that equals 1 if the firm is being audited by one of the big-5 auditors in Jordan, and 0 otherwise; BRDS = number of directors on the board; LEV = total liabilities scaled by total assets; GRWTH = the change in total assets scaled by lagged total assets; SIZE = natural logarithm of total assets.$ 

### 6.3.2.3. Singed Abnormal Production Costs Model:

Table 6.21 shows that the mean and median of income-increasing abnormal production costs are 22.5% and 24.3% of total assets, respectively. As for income-decreasing abnormal production costs, the mean and median are 26.5% mean and 24.5% of total assets, respectively. Although mean abnormal production costs in income-decreasing group is higher, results of parametric and non-parametric tests are not statistically significant indicating that magnitudes of abnormal production costs reported by listed manufacturing firms in Jordan do not differ between income-increasing and income-decreasing groups.

The only statistically significant difference of means among independent variables exists between means of big 5 auditors. Mean big 5 is 50% in income-increasing group which is lower than the 62.2% mean big 5 in income-decreasing group. Although the statistical difference is marginal, namely at 0.1 levels, the results indicate that while big and non-big 5 auditors have the same number of clients, big 5 auditors provide audit services to more that 62% of firms in income-decreasing group.

The results for the other four independent variables show no statistically significant differences in means. Therefore, this indicates that any possible differences in the effectiveness of these independent variables in both groups would not be dependent on differences in levels of ownership concentration, managerial ownership, institutional ownership and foreign ownership.

Table 6.21. Pooled Descriptive Statistics and Univariate Tests for Abnormal Production   Costs Model								
	Income-Increasing			Inco	ome-Decre	Mean Difference		
Variable	Std.			Std.			Mann	
	Mean	Median	Dev.	Mean	Median	Dev.	t-stat	Whitney
S_PROD	0.255	0.243	0.111	0.265	0.245	0.124	-0.578	-0.724
CONC	0.325	0.294	0.195	0.343	0.297	0.225	-0.580	-0.260
CNTRL	0.444	0.000	0.500	0.418	0.000	0.496	0.359	-0.360
INST	0.467	0.460	0.263	0.449	0.479	0.242	0.493	-0.274
FRGN	0.198	0.105	0.243	0.160	0.067	0.221	1.132	-1.264
BIG_5	0.500	0.500	0.503	0.622	1.000	0.487	-1.693*	$-1.687^{*}$
BRDS	8.022	8.000	2.072	8.061	7.500	2.219	-0.124	-0.093
LEV	0.415	0.342	0.323	0.298	0.298	0.161	3.090****	-2.541**
GRWTH	0.113	0.076	0.280	0.034	0.030	0.169	$2.307^{**}$	-1.929*
SIZE	7.150	7.104	0.492	7.119	7.116	0.442	0.452	-0.054

\*\*\*\* Correlation is significant at the 0.01 level.

\*\* Correlation is significant at the 0.05 level.

Correlation is significant at the 0.10 level.

 $S_PROD = Square root of abnormal production costs; CONC = the proportion of common shares held by the largest shareholder and his/her relatives; CNTRL = a dummy variable that equals 1 if the largest shareholder and his/her relatives are in control of the firm, and 0 otherwise; INST = the proportion of common shares held by the institutions; FRGN = the proportion of common shares held by the foreign investors; BIG_5 = a dummy variable that equals 1 if the firm is being audited by one of the big-5 auditors in Jordan, and 0 otherwise; BRDS = number of directors on the board; LEV = total liabilities scaled by total assets; GRWTH = the change in total assets scaled by lagged total assets; SIZE = natural logarithm of total assets.$ 

#### 6.3.2.4. Signed Abnormal Discretionary Expenses Model:

Like the aforementioned real activities earnings management, table 6.22 shows that mean difference between income-increasing and income-decreasing abnormal discretionary expenses are statistically insignificant, either according to parametric or non-parametric tests results. Mean and median of income-increasing abnormal discretionary expenses are 13.7% and 14.2% of total assets, respectively. As for income-decreasing abnormal discretionary expenses, the mean and median are higher than those in the other group, namely a mean of 15.7% and a median of 14% of total assets, respectively. Yet the insignificant mean difference implies that magnitudes of abnormal discretionary expenses reported by listed manufacturing firms in Jordan do not differ between income-increasing and income-decreasing groups.

Significant differences in means of institutional ownership and foreign ownership appear in table 6.22. Mean institutional ownership in income-increasing group is 48.3% and is higher the 40.6% mean institutional ownership in the other group. Mean foreign ownership in income-increasing group is 19.2% and is also higher the 10.2% mean foreign ownership in the other group. Therefore, if institutional and/or foreign ownership are found significantly associated with abnormal discretionary expenses in one group and insignificantly associated with abnormal discretionary expenses in the other, then there is a possibility that these findings result from differences in means between the two groups.

As for ownership concentration, managerial ownership, and big 5 auditors, the results show no statistically significant differences in means between the two groups. As such, any possible differences in the effectiveness of these independent variables in regression analyses would not be dependent on means differences between the two groups.

Table 6.22. Pooled Descriptive Statistics and Univariate Tests for Abnormal DiscretionaryExpenses Model									
	Income-Increasing			Inco	ome-Decre	asing	Mean Difference		
Variable			Std.			Std.		Mann	
	Mean	Median	Dev.	Mean	Median	Dev.	t-stat	Whitney	
S_DISX	0.137	0.142	0.044	0.157	0.140	0.088	-1.335	-0.813	
CONC	0.338	0.322	0.203	0.300	0.231	0.212	1.182	-1.624	
CNTRL	0.415	0.000	0.495	0.429	0.000	0.499	-0.171	-0.171	
INST	0.483	0.508	0.245	0.406	0.416	0.219	$2.057^{**}$	-2.086**	
FRGN	0.192	0.102	0.237	0.102	0.039	0.139	3.106***	-2.632***	
BIG_5	0.519	1.000	0.502	0.603	1.000	0.493	-1.067	-1.062	
BRDS	8.462	9.000	2.006	7.873	7.000	2.189	$1.785^{*}$	-1.873*	
LEV	0.369	0.350	0.216	0.320	0.288	0.189	1.492	-1.424	
GRWTH	0.095	0.049	0.246	0.046	0.018	0.201	1.361	-1.304	
SIZE	7.256	7.177	0.437	6.999	7.031	0.436	3.701***	-3.267***	

\*\*\*\* Correlation is significant at the 0.01 level.

\*\* Correlation is significant at the 0.05 level.

<sup>\*</sup> Correlation is significant at the 0.10 level.

 $S_DISX = Square root of abnormal discretionary expenses; CONC = the proportion of common shares held by the largest shareholder and his/her relatives; CNTRL = a dummy variable that equals 1 if the largest shareholder and his/her relatives are in control of the firm, and 0 otherwise; INST = the proportion of common shares held by the institutions; FRGN = the proportion of common shares held by the foreign investors; BIG_5 = a dummy variable that equals 1 if the firm is being audited by one of the big-5 auditors in Jordan, and 0 otherwise; BRDS = number of directors on the board; LEV = total liabilities scaled by total assets; GRWTH = the change in total assets scaled by lagged total assets; SIZE = natural logarithm of total assets.$ 

## 6.3.3. Multiple Regression Analysis:

## 6.3.3.1. Signed Abnormal Current Accruals Model:

Table 6.23 presents results of multiple regression analyses for income-increasing and incomedecreasing abnormal current accruals. Income increasing and income-decreasing models' Fstatistics ( $R^2$ ) are 3.501 (25.7%) and 2.557 (14.6%), respectively. Both F-statistics are statistically significant at 0.01 levels.

Similar to the results of absolute abnormal accruals model, the coefficients for ownership concentration (CONC) are statistically insignificant in income-increasing and income-decreasing groups. Also similar to the findings of absolute abnormal total accruals,

managerial ownership (CNTRL) is negatively and significantly associated with current accruals in both directions. Bearing in mind that there is no significant difference in mean CNTRL between the two groups, the result substantiates the findings of the main analysis: the largest block holders in Jordan become effective in monitoring managerial opportunistic behaviour when they play managerial roles themselves (i.e. controlling shareholders). This implies that agency theory predictions are validated partially as only managerial ownership appears to align the interests of controlling shareholders with those of minority shareholders.

As for institutional ownership (INST), the coefficients are statistically insignificant, thus substantiating the probability that institutional investors are passive shareholders as they do not actively participate in the governance of their corporate holdings in Jordan. Therefore, the results provide no evidence consistent with agency predictions that institutional investors use their superior abilities and resources in acquiring and processing information to monitor the opportunistic behaviour of managers.

The coefficient for foreign ownership (FRGN) is statistically insignificant in the incomeincreasing group and negative and statistically significant in the income-decreasing group. These results indicate that foreign investors in Jordan, who only prevent income-decreasing practices, are focused on current earnings performance but to a certain extent because if they were excessively short-term oriented, the coefficient would have appeared positive and significant in the income-increasing group.

The positive and significant coefficient of big 5 auditors (BIG\_5) validates the findings of absolute abnormal accruals that non-big 5 auditors in Jordan who actually constrain earnings management. Yet this result applies only to income-decreasing abnormal current accruals. No significant relationship is found between auditor size and income-increasing abnormal current accruals. Consistent with Ashbaugh et al. (2003), this indicates that the negative association

between non-big 5 and absolute abnormal accruals, found in the main analysis, is mainly driven by income-decreasing practices. Another possible interpretation is that the earnings management proxy in alternative analysis is current accruals not total accruals as in the main analysis. It is plausible that managers manipulate depreciation expense downwards to increase abnormal accruals. With property, plant and equipment obsolete from the estimation model of abnormal current accruals, the amounts of income-increasing abnormal current accruals might have decreased and hence making auditor size appears ineffective in mitigating accruals earnings management.

Board size (BRDS) is negatively and significantly related to income-decreasing abnormal current accruals but not significantly associated with income-increasing abnormal accruals. A possible interpretation is as boards become larger, income-decreasing accruals that affect earnings-based managers' bonus contracts decrease.

The findings in the main analysis suggest that managers of financially distressed firms in Jordan engage in accruals earnings management to either avoid violating debt covenants or renegotiate lending contracts yet the results in table 6.23 indicates otherwise. None of these motivations seems to have an effect as the coefficients of leverage (LEV) is not significantly associated with signed accruals. Even though the mean of leverage in the income-increasing group is significantly higher, the results show that leverage rates are not high enough to support firms' avoidance of violating debt covenants.

The coefficient of growth (GRWTH) is positively related to income-increasing abnormal current accruals. Not only this result is consistent with abnormal absolute accruals model, but also is reflective of mean difference found between growth rates between the two groups. Higher growth rates in the income-increasing group imply that managers might use abnormal current accruals to avoid reporting negative growth rates that might affect their bonuses.

Firm size (SIZE) is negatively associated with income-increasing abnormal current accruals. This is consistent with large firm reporting less abnormal accruals (Dechow and Dichev, 2002). However, this finding is only consistent with income-increasing group as the coefficient of SIZE is not statistically significant in the income-decreasing group.

Table 6.23. Results of Pooled Multiple Regression Analysis for Income-Increasing and Decreasing Abnormal Current Accruals Model							
$S_{ABCA} = \alpha + \beta_1 CONC + \beta_2 CNRTL + \beta_3 INST + \beta_4 FRGN + \beta_5 BIG5 + \beta_6 BRDS + \beta_7 SIZE + \beta_8 GRWTH + \beta_9 LEV + \beta_{10-12} YR$							
	Income-Inc	creasing	Income-decreasing				
	Coefficient	t-Statistic	Coefficient	t-Statistic			
Constant	0.922	3.412***	0.229	1.385			
CONC	0.089	0.884	0.050	0.802			
CNTRL	-0.065	-2.046**	-0.078	-3.536***			
INST	0.023	0.413	0.025	0.538			
FRGN	0.087	1.145	-0.112	-2.018**			
BIG_5	0.009	0.310	0.048	$2.066^{**}$			
BRDS	-0.007	-0.782	-0.027	-3.797***			
LEV	0.001	1.199	0.000	-0.378			
GRWTH	0.276	4.666***	0.015	0.876			
SIZE	-0.092	-2.258**	0.035	1.257			
Adjusted R <sup>2</sup>	25.7% 14.6%						
F-statistic	3.501*** 2.557***						

\*\*\*\* Correlation is significant at the 0.01 level.

\*\* Correlation is significant at the 0.05 level.

\* Correlation is significant at the 0.10 level.

 $S_ABCA = Square root of abnormal current accruals; CONC = the proportion of common shares held by the largest shareholder and his/her relatives; CNTRL = a dummy variable that equals 1 if the largest shareholder and his/her relatives are in control of the firm, and 0 otherwise; INST = the proportion of common shares held by the institutions; FRGN = the proportion of common shares held by the foreign investors; BIG_5 = a dummy variable that equals 1 if the firm is being audited by one of the big-5 auditors in Jordan, and 0 otherwise; BRDS = number of directors on the board; LEV = total liabilities scaled by total assets; GRWTH = the change in total assets scaled by lagged total assets; SIZE = natural logarithm of total assets.$ 

#### 6.3.3.2. Singed Abnormal Real Activities Models:

As noted earlier, the impact of real activities earnings management on cash flows could be ambiguous. Specifically, income-increasing practices such as price discounts and overproduction decrease cash flows while cutting discretionary expenses increase cash flows from operations. Therefore, the effect of ownership structure and auditor size on incomeincreasing and income-decreasing levels of real activities earnings management are discussed collectively in this section.

Table 6.24 presents results of multiple regression analyses for income-increasing and incomedecreasing abnormal operating cash flow model, abnormal production costs model and abnormal discretionary expenses. All six regressions are statistically significant at either 0.05 or 0.01 levels. Moreover, adjusted  $R^{2}$ 's for the six regressions range from 11.5% to 26.1% indicating that these regressions have reasonable explanatory power.

The coefficient of ownership concentration (CONC) in abnormal operating cash flow model is positive and highly significant. As such, the largest shareholder seems to put pressure on managers to increase sales and hence increase reported earnings. This implies that those shareholders are not financially sophisticated or adopt short-term strategies. The other significant coefficient is found in abnormal discretionary expenses model. However, the sign on the coefficient is negative indicating that large shareholders mitigate discretionary expenditures because of a suspicion that managements might be channelling wealth from the firm to their own benefits.

Coefficients of controlling shareholders (CNTRL) appear negative and significant in the income-increasing group of abnormal operating cash flow model and in the income-decreasing group of abnormal production costs model. These results provide confirmatory evidence of the effectiveness of controlling shareholders (i.e. managerial ownership) in

constraining real activities earnings management that is found in the main analysis. That is, controlling shareholders seems to prevent real manipulations because of the costly consequences of this type of manipulation whether these manipulations were income-increasing or income-decreasing and regardless of the net effect on cash flow from operations.

The coefficients of institutional ownership (INST) are statistically significant in the incomedecreasing groups of abnormal production costs and abnormal discretionary expenses models. However, these coefficients have opposite signs. The former is positive indicating that high levels of institutional ownership are directly associated with underproduction practices. It seems difficult to comprehend that institutional investors would benefit from such income-decreasing practices. Therefore, a possible interpretation of this positive association the effect on cash flow rather reported earnings as underproduction practices lead to abnormally high operating cash flow which might be desirable to institutional investors. The latter coefficient is negative leading to two possible interpretations. The first substantiates that high levels of institutional ownership are interested in high cash flows. Bearing in mind that income-decreasing abnormal discretionary expenses entail more spending which results in lower cash flows, institutional investors might exert pressure on managers to decrease discretionary expenses to increase cash flows from operations. The second interpretation is that institutional investors are simply concerned with higher reported earnings figures as they attempt to prevent discretionary expenses that decrease reported earnings. These interpretations pour into one conclusion that institutional investors in Jordan are short-term oriented as they act passively in the governance of their corporate holdings.

Foreign ownership (FRGN) is positively associated with income-decreasing abnormal operating cash flow and negatively associated with income-decreasing abnormal production

costs. A plausible interpretation is that firms with high levels of foreign ownership tend to have a healthy operating process as they prevent underproduction so as to have sufficient levels of inventory, but at the same time, those firms have more stringent credit terms so as to avoid high bad debt expenses. Similar to the effect on reported earnings, the overall effect of FRGN on cash flow seems neutral as well. That is, high levels of foreign ownership is positively associated with high abnormal operating cash flow (i.e. income-decreasing sales manipulation) and negatively associated with high abnormal operating cash flow (i.e. income-decreasing production costs manipulation).

Although the discussion above relates only to statistically significant relationships, it is important to note that coefficients of big 5 auditors in Jordan (BIG\_5) are not statistically significant in both groups and in all models. This finding supports those found in the main analyses where no substitutive effects are documented. Accordingly, the scrutiny of external audit over abnormal accruals does not lead managers to manipulate earnings through real activities whether such manipulations were income-increasing or income-decreasing.

Board size (BRDS) appears significant only in preventing income-decreasing abnormal discretionary expenses. Two indications could be stemmed from this finding. First, as number of directors increases the more effective they become in preserving shareholders wealth from managerial actions that aim to cover wealth channelling practices. Second, larger boards are not as effective as expected in mitigating sales and production costs manipulations. Leverage (LEV) seems to be associated with high levels of inventory. Because lenders consider the intrinsic value in the inventory, the coefficient of LEV is positive in the income-increasing group and negative in the income-decreasing group. As for the coefficients of growth (GRWTH), the overall results indicate that firms with high growth rate have lower cash flows (i.e. the net effect of types of manipulations) than firms with low growth rates. Finally, the

positive and statistically significant coefficients of firm size (SIZE) in both groups of abnormal discretionary expenses model indicate that large firms have superior abilities to manipulate discretionary expenses than small firms. This might be because large firms have more diversified and complex accounts than small firms.

Table 6.24. Results of Pooled Multiple Regression Analyses for Income-Increasing and Decreasing Real Activities Earnings Management Models												
	Abnormal Operating Cash Flow				Abnormal Production Costs				Abnormal Discretionary Expenses			
	Inc-In	ncreasing	Inc-De	creasing	Inc-Increasing		Inc-Decreasing		Inc-Increasing		Inc-Decreasing	
Variable	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat	Coef.	t-Stat
Constant	0.194	1.212	0.229	1.255	0.473	$2.586^{**}$	0.379	$1.704^{*}$	-0.090	-1.198	-0.459	-2.368**
CONC	0.277	3.676***	-0.054	-0.797	-0.029	-0.297	0.036	0.507	-0.065	-2.097**	-0.025	-0.427
CNTRL	-0.068	-2.884***	-0.008	-0.357	-0.031	-1.182	-0.074	-2.889***	0.002	0.164	-0.008	-0.355
INST	-0.031	-0.678	0.049	0.942	0.027	0.560	0.147	$2.286^{**}$	-0.012	-0.597	-0.105	-2.050***
FRGN	-0.053	-0.999	0.143	$2.257^{**}$	-0.036	-0.571	-0.164	-2.238***	0.020	0.822	-0.058	-0.728
BIG_5	0.022	0.969	-0.025	-1.010	-0.031	-1.229	-0.015	-0.534	-0.013	-1.415	0.009	0.396
BRDS	0.002	0.296	-0.003	-0.351	-0.011	-1.466	-0.011	-1.364	-0.001	-0.289	-0.016	-2.466**
LEV	0.000	0.996	0.001	1.492	0.001	2.111***	-0.002	-2.325***	0.000	-1.547	0.000	-0.750
GRWTH	0.017	1.260	-0.122	-1.799*	0.190	3.961***	0.125	1.625	0.032	$1.690^{*}$	0.094	$1.732^{*}$
SIZE	-0.009	-0.377	0.010	0.305	-0.023	-0.775	0.004	0.113	0.036	3.101***	0.112	3.457***
Adj. R <sup>2</sup>	15	5.60%	11.	5%	18	3.50%	12	.7%	11	.60%	26	5.1%
F-Stat.	2.	200**	1.9	40**	2.0	589***	2.1	171**	2.	145**	2.8	22***

\*\*\* Correlation is significant at the 0.01 level. \*\* Correlation is significant at the 0.05 level.

<sup>\*</sup> Correlation is significant at the 0.10 level.

CONC = the proportion of common shares held by the largest shareholder and his/her relatives; CNTRL = a dummy variable that equals 1 if the largest shareholder and his/her relatives are in control of the firm, and 0 otherwise; INST = the proportion of common shares held by the institutions; FRGN = the proportion of common shares held by the foreign investors; BIG\_5 = a dummy variable that equals 1 if the firm is being audited by one of the big-5 auditors in Jordan, and 0 otherwise; BRDS = number of directors on the board; LEV = total liabilities scaled by total assets; GRWTH = the change in total assets scaled by lagged total assets; SIZE = natural logarithm of total assets.

#### 6.3.3.3. Additional Analysis: The Substitutive Effect:

The findings in the previous analyses concerning the substitutive effect in Jordan suggest that enhanced external audit quality (i.e. auditor size) over abnormal accruals does not affect levels of real activities manipulations. In Chapter Three, however, it is articulated that costs of each type of earnings management represent an important factor that might affect managers decisions concerning the extent to which each type is used to arrive at the desired levels of earnings. Moreover, the timing of each type of manipulation is also another important factor. On the one hand, accruals earnings management takes place at the end of the fiscal year. However, if the accruals available for manipulation have been constrained by the manipulation in prior periods and/or the scrutiny of auditors, firms might run at the risk of a shortfall on meeting target earnings (Gunny, 2010). On the other hand, the manipulation of real activities must take place during a fiscal period because such manipulation would not affect reported earnings if practiced at the end of the financial period. Therefore, Zang (2012) concludes that managers use accruals and real activities manipulation strategies in a sequential order.

Based on this reasoning, Zang (2012) explores whether costs that managers bear, and constraints they face, for manipulating accruals would affect their decisions about real activities manipulations. After the estimation of abnormal levels of real activities (accruals) manipulation according to Roychowdhury's (modified Jones) model, she creates a measure (ABRM) that aggregates the abnormal levels of production costs and discretionary expenses. That is, abnormal discretionary expenses are multiplied by negative one (so that higher values indicate income-increasing practices) then added to abnormal production costs. As such, she excludes abnormal operating cash flow from the aggregate measure because of the ambiguous net effect of abnormal production costs and abnormal discretionary expenses on

abnormal operating cash flow. Afterwards, she fashions a recursive model based on costs, timing and constraints associated with both types of earnings management. Symbolically,

$$ABRM = \beta_0 + \sum \beta_{1,k} \text{ cost of } ABRM_k + \sum \beta_{2,L} \text{ cost of } ABAC_L + \sum \beta_{3,m} \text{ control variables } + \mu$$
$$ABAC = \gamma_0 + \sum \gamma_{1,k} \text{ cost of } ABAC_k + \sum \gamma_{2,L} \text{ cost of } ABRM_L + \gamma_3 \text{ Unexpected } RM$$
$$+ \sum \gamma_{4,m} \text{ control variables } + \eta$$

The recursive model aims to capture the sequential relationship between accruals and real activities earnings management. Therefore, the residual values from the first equation (Unexpected RM) are included in the second equation because the extent of accruals earnings management is determined by the unexpected amount of real activities manipulation realised along with the costs associated with earnings management activities.

Zang's (2012) model is employed in the current research with minor changes. The costs associated with real activities manipulations that are included in this research are market share (M\_SHARE) and Altman's Z-score for emerging markets (EM\_Z-score)<sup>27</sup>. The former is measured as the ratio of a firm's sales to the total sales of its industry which captures the inverse of the costs associated with real activities manipulation. The latter is a measure of a firm's financial health where higher values of Z-score indicate a healthier financial condition and a lower cost associated with real activities manipulation. The costs associated with accruals earnings management that are included in this research are net operating assets (NOA) and the length of operating cycle (CYCLE). The former measure is aimed to proxy for abnormal accruals in previous periods. As such the cost of accruals earnings management in the current period would increase if NOA was overstated at the beginning of the period.

<sup>&</sup>lt;sup>27</sup> Zang (2012) uses a Z-score developed by Altman (2000) that is based on US data. The Z-score used in this research is that developed by Altman (2005) for emerging markets which is:

EM Z-score = 3.25 + 6.56 (working capital / total assets) + 3.26 (retained earnings / total assets) + 6.72 (operating income / total assets) + 1.05 (book value of equity / total liabilities).

NOA is proxied by a dummy variable that equals one if NOA  $_{(t-1)}$  / lagged sales is above the median of the corresponding industry-year, and zero otherwise. The second measure aims to proxy for the firm's flexibility for accruals earnings management as firms with longer operating cycles have greater flexibility for accruals manipulations. CYCLE is measured as days inventory plus days receivable minus days payable at the beginning of the year.

Along with leverage (LEV), growth (GRWTH) and size (SIZE), three more control variables are included in this model. First, return on assets (ROA) is included to control for performance only in the regression of RM because ABCA has already been estimated through Kothari et al.'s model that includes ROA as a driver. Second, managerial ownership or controlling shareholders (CNTRL) is included in both models as the results obtained from previous analyses provide evidence concerning its effectiveness in constraining both types of earnings management. Finally, following Zang (2012), the predicted amount of real activities manipulation (Pred\_RM) is included only in ABCA model to control for the extent of real manipulations.

Table 6.25 exhibits the results of the recursive model to measure the trade-off between accruals and real activities earnings management in Jordan. F-statistic and adjusted  $R^2$  for ABRM regression are 4.339, which is statistically significant at 0.01 levels, and 19.9%, respectively. F-statistic and adjusted  $R^2$  for ABAC regression are 6.999, which is statistically significant at 0.01 levels, and 34.8%, respectively.

The first result is the one that directly relates to the trade-off effect. The coefficient of Unexpected RM is significant and positive. This is opposite to the negative relationship found in Zang's study which indicates that unexpectedly high (low) real activities manipulation realised is offset by lower (higher) amount of accrual earnings management, and hence supports the substitutive effect in US market. Therefore, unlike the US, the positive relationship shows that managers in Jordan use both types of earnings management simultaneously to arrive at target levels of earnings. This is consistent with the argument proposed by Fields et al. (2001). Further, the result substantiates the findings in the previous analyses where levels of real activities manipulations are found not to be affected by the enhance scrutiny of external auditors over abnormal accruals. That is, managers in Jordanian firms manipulate earnings using both types of earnings management regardless of the scrutiny from regulatory bodies and external audit.

Coefficients of Market share (M\_SHARE) are not statistically significant in both regressions implying that costs associated with real activities manipulation do not prevent firms in Jordan from engaging in the costly real earnings management, and similarly, in the less costly accruals earnings management. As for financial health condition, the coefficients of EM Zscore are positive and statistically significant at 0.01 levels. This indicates that firms in Jordan with healthy financial conditions manipulate their earnings more than other firms because costs associated with both types of earnings management are less for financially healthy firms. In terms of net operating assets, the coefficient of NOA is negative in both regressions. Yet it is insignificant in ABRM regression and significant in ABAC regression. The difference in significances validates the finding of no substitutive effect in Jordan. The fact that both types are practiced simultaneously in Jordan supports this result which suggests that real activities earnings management are not affected by prior period's abnormal accruals. But because prior period's accruals earnings management reverses in the current period, the coefficient of NOA is significant in the ABAC regression. The coefficients of CYCLE are statistically insignificant in both regressions which are suggestive of the simultaneous engagement in both types of earnings management. Further, firms with longer operating cycles do not have greater flexibility for accruals manipulations than firms with shorter operating cycles (i.e. the greater flexibility does not affect accruals manipulations).

As for control variables, the significant coefficient of return on assets (ROA) highlights the importance for controlling for performance in real activities model similar to accruals model. Managerial ownership (CNTRL) is as expected have an inverse relationship with both types of earnings management. The coefficient of the control variable (Pred RM) is statistically insignificant contrast to that in Zang's (2012). This result is also suggestive of the simultaneous effect in Jordan as levels of real activities manipulations are not affected by levels of abnormal accruals. As such, it could be concluded that both types of earnings manipulations are not determined sequentially. The coefficients of leverage (LEV) and growth (GRWTH) are positive and statistically significant and hence these results provide confirmatory evidence of the findings obtained from previous analyses. That is, managers of financially distressed firms in Jordan manipulate earnings to either avoid violating debt covenants or renegotiate lending contracts, and to avoid reporting negative growth rates that might affect their bonuses. The coefficient of firm size (SIZE) appears insignificantly associated with real activities earnings management regression which is generally consistent with previous analyses' findings. Yet unlike previous findings, the coefficient appears insignificant in abnormal accruals model. This might be due to controlling for the costs of real activities earnings management.

Table 6.25. The Substitutive Relation between Real Activities-based and Accruals-based								
Earnings Management								
Variable	ABF	RM	ABAC					
Variable	Coefficient	t-Statistic	Coefficient	t-Statistic				
Constant	-0.283	-2.195**	-0.080	0.566				
Unexpected RM	-	-	0.192	$2.268^{**}$				
Costs associated with real activities								
manipulation:								
M_SHARE	0.013	0.338	-0.015	-0.381				
EM_Z-Score	0.006	$2.878^{***}$	0.007	$2.638^{***}$				
Costs associated with accruals								
earnings management:								
NOA	-0.005	-0.375	-0.030	-2.139**				
CYCLE	0.000	-0.901	0.000	-0.775				
Control variables:								
ROA	-0.324	-4.108***	-	-				
CNTRL	-0.052	-3.607***	-0.068	-3.456***				
Pred_RM	-	-	-0.379	-1.347				
LEV	0.134	$3.748^{***}$	0.147	$2.645^{***}$				
GRWTH	0.141	$3.877^{***}$	0.317	6.930***				
SIZE	0.030	1.655	-0.006	-0.348				
Adjusted R2	19.9	0%	34.80%					
F-Statistic	4.339	9***	6.999****					

\*\*\* Correlation is significant at the 0.01 level.

\*\* Correlation is significant at the 0.05 level.

ABRM = abnormal production costs plus negative one multiplied by abnormal discretionary accruals; ABAC = abnormal accruals; Unexpected RM = the estimated residual from ABRM regression; M\_SHARE = the percentage of a firm's sales to total sales in its industry-year; EM\_Z-score = Altman's Z-score for emerging markets; NOA = dummy variable that equals one if net operating assets divided by lagged sales is above the median of the corresponding industry-year, and zero otherwise; CYCLE = receivable days plus inventory days minus payable days; ROA = rate of return of assets; CNTRL = a dummy variable that equals 1 if the largest shareholder and his/her relatives are in control of the firm, and 0 otherwise; Pred\_RM = the predicted value from ABRM regression; LEV = total liabilities scaled by total assets; GRWTH = the change in total assets scaled by lagged total assets; SIZE = natural logarithm of total assets.

# 7.4. Summary:

This chapter aims to predict and analyse potential associations between ownership structure and external audit corporate governance mechanisms, and earnings management practices in Jordan. The hypotheses variables comprise ownership structure mechanisms including ownership concentration, controlling shareholders, institutional ownership and foreign ownership, and external audit proxied by auditor size. Further, four earnings management measures are developed to proxy for manipulations through accruals, sales, production costs and discretionary expenses, where each type of manipulation represents a dependent variable. Theses earnings management proxies are measured through the popular models of Kothari et al. (2005) for abnormal accruals, and Rouchowdhury (2006) for abnormal cash flow from operating activities, abnormal production costs and abnormal discretionary expenses.

Two analyses are conducted based on the measurement of earnings management proxies. In the main analysis, earnings management proxies are considered in absolute terms in order to examine the effect of the hypotheses variables on magnitudes of earnings manipulations. The empirical findings suggest that controlling shareholders (i.e. managerial ownership) and nonbig 5 auditors in Jordan are effective in constraining accruals earnings management. As for sales and productions costs manipulations, controlling shareholders remain the main ownership structure mechanism that mitigates abnormal operating cash flow and abnormal production costs. Institutional ownership appears to negatively affect abnormal discretionary expenses. Finally, the effectiveness of non-big 5 auditors in reducing magnitudes of abnormal accruals does seem to induce managers to engage more in real activities earnings management in Jordan. Put differently, no evidence is found concerning the substitutive effect that supposedly arises from the enhanced scrutiny over abnormal accruals.

The alternative analysis differs from the main analysis in terms of earnings management proxies in several ways. First, all proxies are considered with their actual signs and according to this, populations are divided into two groups in each model: income-increasing and income-decreasing. Second, abnormal current accruals are estimated and replaced abnormal total accruals. The alternative analysis also differs in terms of explaining relationships between ownership structure mechanisms and real activities earnings management. That is, interpretations of the results are considered collectively so as to consider the net effect on cash flow. Moreover, an additional analysis is conducted to investigate the substitutive effect based on costs associated with earnings management practices rather than external monitoring. For this purpose, an aggregate measure of abnormal production costs and abnormal discretionary expenses is developed. The empirical findings are twofold. First, conclusions drawn from the alternative analysis are similar to those drawn from the main analysis with one exception; along with the effectiveness of controlling shareholders, foreign investors appear to have healthy operating process rather than acting passively in the governance of firms in which they own a portion of the shareholdings. Second, the results obtained from employing the model of Zang (2012) suggest that accruals-based and real activities-based earnings management are used simultaneously in Jordan with little regard to costs associated with each type. Although a more research is needed in order to further investigate this relationship, this finding could be considered as the first step for future research on the relationship between the two types of earnings management in emerging markets.

Overall, the findings provide little support for agency theory predictions when applied in the context of the emerging market of Jordan. Accordingly, both regulatory bodies and stakeholders in Jordan need to consider agency problems in future reforms and in the process of making contractual business decisions, respectively.

Tał	Table 6.26. Hypotheses Tests on Relationships Between Earnings Management Proxies and Both Ownership Structure and External Audit							
No.	Hypothesis	Predicted Sign	Actual Sign	Result				
H1a	Ownership concentration and abnormal accruals	?	+	NS				
H1b	Managerial ownership and abnormal accruals	-	_	Sig				
H1c	Institutional ownership and abnormal accruals	_	_	NS				
H1d	Foreign ownership and abnormal accruals	?	-	NS				
H1e	Abnormal accruals and the big 5 auditors in Jordan	-	+	Sig				
H2a	Ownership concentration and abnormal operating cash flow	+	+	Sig				
H2b	Managerial ownership and abnormal operating cash flow	_	-	Sig				
H2c	Institutional ownership and abnormal operating cash flow	+	-	NS				
H2d	Foreign ownership and abnormal operating cash flow	?	-	NS				
H2e	Abnormal operating cash flow and the big 5 auditors in Jordan	+	-	NS				
H3a	Ownership concentration and abnormal production costs	_	-	NS				
H3b	Managerial ownership and abnormal production costs	_	-	Sig				
H3c	Institutional ownership and abnormal production costs	+	+	NS				
H3d	Foreign ownership and abnormal production costs	?	-	NS				
H3e	Abnormal production costs and the big 5 auditors in Jordan	+	-	NS				
H4a	Ownership concentration and abnormal discretionary exp.	-	-	NS				
H4b	Managerial ownership and abnormal discretionary exp.	-	+	NS				
H4c	Institutional ownership and abnormal discretionary exp.	-	-	Sig				
H4d	Foreign ownership and abnormal discretionary expenses	?	_	NS				
H4e	Abnormal discretionary exp. and the big 5 auditors in Jordan	No relation	_	NS				
Sig = s	Sig = significant; NS = not significant							

Table 6.26 summarises the results of hypotheses testing found in the main analysis.

# **Chapter Seven**

# **Summary and Conclusions**

## 7.1. Overview:

This final chapter starts by providing a summary of research motivations, objectives and the overall approach in section 7.2. The key findings and conclusions of the two empirical analyses conducted in this research are summarised in section 7.3. A summary of theoretical and practical implications of the study are demonstrated in section 7.4. Contributions made in this study to existing knowledge are discussed in section 7.5. This chapter also highlights the limitations of the study in section 7.6. Finally, recommendations for future research avenues are discussed in section 7.7.

# 7.2. Summary of Research Motivations, Objectives and Approach:

The phenomenon of earnings management has an intrinsic importance affecting stakeholders such as shareholders, investors, and regulators all over the world. Against all economic difficulties and political circumstances, Amman Stock Exchange has witnessed significant increases in the number of listed companies, trading volumes and market capitalisation in recent years. Apparently, foreign ownership has contributed to that increase as Jordan became one of the favourable investment destinations in the Middle East. Given these characteristics, it is intuitive to expect the presence of earnings management in Jordan. Recent accounting scandals involved real activities earnings management at least as much as accruals earnings management although the majority of early research focuses on the latter type. Even recent research that started investigating real activities earnings management is yet to provide evidence concerning the pervasiveness on real manipulations outside the US market. Therefore, this study has investigated the constraining effect of ownership structure and external audit on accruals and real activities earnings management in the emerging market of Jordan. In addition, the extant studies have turned up conflicting evidence about the effectiveness of corporate governance monitoring mechanisms in constraining accruals earnings management. One apparent reason for the inconclusive findings is that corporate governance mechanisms seem to be largely affected by the institutional settings in different countries. In Jordan, good corporate governance is a part of Jordan's reform efforts to create a more attractive investment climate and protect investors' interests. However, the Jordanian guidance of good corporate governance has not been actually enforced. Thus, capital market may face difficulties in convincing investors that their investments are managed responsibly. With little evidence about the role of corporate governance mechanisms in monitoring managerial behaviour in Jordan, this study aims to examine the effectiveness of ownership structure mechanisms including ownership concentration, controlling shareholders, institutional ownership and foreign ownership in mitigating accruals-based earnings management.

Evidence concerning the effect of ownership structure mechanisms on real activities earnings management has yet to be presented outside the US market. Therefore, this study embarks on this issue in the developing market of Jordan. As such, this study has provided evidence that extends the literature on real activities earnings management.

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The literature has long recognised the role of external audit in mitigating levels of abnormal accruals. This study adopts the popular proxy for audit quality which is auditor size. Bearing in mind that big 4 auditors include Ernst and Young, Deloitte and Touche, PricewaterhouseCoopers and KPMG, the last two auditors are found to provide audit services to one listed manufacturing firm each in Jordan. Therefore, this study follows the classification of Faraj (2005) and Balhaj (2006) who conclude that big 5 auditors in Jordan include Ernst and Young, Deloitte and Touche, Grant Thornton, Ibrahim Al-Abbasi, and Talal Abu Ghazalah. Based on this classification, this study aims to investigate the effect of big 5 auditors in Jordan on accruals earnings management.

Finally, real activities earnings management is beyond the control of external auditors because it occurs in daily course of business. US-based scholarly evidence suggest that managers resort to real activities earnings management when the better audit quality provided by big auditors mitigate their use of accruals earnings management. This study aims to investigate the substitute effect in Jordan by including a dummy variable for big 5 auditors in Jordan in real activities three regressions.

Accordingly, four measures of earnings management are estimated through the models of Kothari et al. (2005) and Roychowdhury (2006). Abnormal accruals are the residuals obtained from the former model and abnormal cash flow from operating activities, abnormal production costs and abnormal discretionary expenses are the residuals obtained from the latter model. As a result, four empirical models are constructed in which the estimated earnings management measures represent the dependent variables. Independent variables in each empirical model are the same and are classified into three categories: first, ownership structure variables include ownership concentration, controlling shareholders, institutional ownership and foreign ownership. Ownership concentration is measured by the proportion of

shares held by the largest shareholder. Controlling shareholder is a dummy variable that equals one if the largest shareholder is also either the chairman of the board of directors or the chief executive officer. Institutional ownership is measured by the proportion of shares held by institutions. Foreign ownership is measured by the proportion of shares held by foreign investors. The second category includes external audit quality measured by auditor size. Third, a set of control variables include board size, leverage, growth and firm size.

The literature review in this study presents these arguments using the findings of prior research. The methodology chapter shows the development of research hypotheses utilising these arguments. The following section relates to statistical methods used in this study to test the research hypotheses. Further, it summarises the statistical inferences and implications obtained from the analyses.

## **7.3. Summary of the Findings and Conclusions:**

This section presents the key findings in relation to the research question structured in Chapter One of the thesis. The first and second research questions have been structured to examine potential relationships between ownership structure mechanisms including, ownership concentration, managerial ownership, institutional ownership and foreign ownership, and both accruals and real activities earnings management, respectively. With reference to section 1.3, the first two research questions are:

- 1- What is the relationship between ownership structure monitoring mechanisms and accruals earnings management in Jordan?
- 2- What is the relationship between ownership structure monitoring mechanisms and real activities earnings management in Jordan?

The main analysis reveals results that answer these two questions. The key findings of the main analysis as a whole are summarised below.

Except for a marginally positive and significant relationship between ownership concentration and abnormal cash flow from operating activities, the results show that high levels of shareholdings owned by the largest shareholders in Jordan do not inversely affect levels of abnormal accruals, abnormal production costs and abnormal discretionary expenses. This indicates that the largest shareholders not only act ineffectively in monitoring managerial manipulation of accrual, production costs and discretionary expenses but also exhibit marginal opportunistic behaviour as to sales manipulation.

Yet when the largest shareholders occupy a managerial post, controlling shareholders (i.e. managerial ownership) become effective in mitigating manipulations in accruals, sales and production costs. Despite that controlling shareholders do not have the same mitigating effect over discretionary expenses, the overall results provides evidence supportive of the incentive alignment in Jordan.

Contrary to controlling shareholders, levels of institutional ownership are inversely associated with levels of discretionary expenses, but no significant association is found with abnormal accruals, abnormal cash flow from operating activities and abnormal production costs. The overall indication is that institutional investors do not display high level of sophistication; institutional investors do not use their superior abilities and resources in acquiring and processing information in monitoring the opportunistic behaviour of managers.

Different levels of foreign ownership appear ineffective in deterring any of the four types of earnings manipulations. Therefore, the statistically insignificant coefficients of foreign ownership in all empirical models suggest that foreign investors seem to act passively in the governance of their corporate shareholdings in Jordan. The remaining two research questions relate to the effect of auditor size on both accruals and, although indirectly, real activities earnings management. The third and forth research questions are:

- 3- Has the scrutiny of auditor size been effective in constraining accruals earnings management in Jordan?
- 4- If yes, have managers in Jordan been induced to substitute the reduction in accruals earnings management with real activities earnings management?

The results pertaining to the effect of external audit on abnormal accruals interestingly reveal that non-big 5 auditors in Jordan who in fact deter accruals earnings management. That is, the unexpected positive sign is still significant. Accordingly, the expected sign of the dummy variable of big 5 auditors (BIG\_5) should be negative instead of the initially expected positive sign in the following three real activities models. The results obtained from real activities models show negative signs on the coefficients of BIG\_5 which coincides with the new expectation. However, there is no significant association between non-big 5 auditors in Jordan and all of abnormal cash flow from operating activities, abnormal production costs and abnormal discretionary accruals. This indicates that the firms in Jordan do not substitute the reduction in their use of accruals earnings management with an increased the use of more costly real activities earnings management.

An Alternative analysis has also been conducted in this thesis to answer the research questions. The alternative analysis has been conducted for two reasons. First, Kothari et al. (2005) include property, plant and equipment in net values. Because depreciation expense could be manipulated itself, property, plant and equipment might not accurately control for the non-discretionary portion of depreciation expense. To overcome this limitation, current accruals are estimated as depreciation expenses and property, plant and equipment become

obsolete. Second, signed residuals are used as proxies for the four types of earnings manipulations. Each set of observations is partitioned into income-increasing are income-decreasing groups based on the sign of residuals. Therefore, conducting this alternative analysis would indeed enhance the robustness of the statistical inferences stemmed from the main analysis concerning the effectiveness of corporate governance mechanisms in mitigating all types of earnings management in Jordan.

The key findings of the alternative analysis relating to the first two research questions are summarised below.

Similar to the results of absolute abnormal accruals model, the coefficients for ownership concentration are statistically insignificant in income-increasing and income-decreasing groups. The marginal significance appeared with absolute abnormal operating cash flow improves in income-increasing and disappears in income-decreasing groups. This explains the finding in the main analysis as the largest shareholders in Jordan pressure managers to manage earnings upwards through sales manipulations. Also similar to absolute abnormal production costs, the coefficients for ownership concentration are statistically insignificant in income-increasing and income-decreasing groups. The alternative analysis reveals the ownership concentration is negatively associated with income-increasing discretionary expenses. A possible interpretation is that large shareholders mitigate discretionary expenditures because of a suspicion that managements might be channelling wealth from the firm to their own benefits. Except for that, it could be concluded that large shareholders in Jordan either adopt short-term strategies or are not financially sophisticated.

Substantiating the findings of absolute abnormal total accruals, controlling shareholders (i.e. managerial ownership) is negatively and significantly associated with current accruals in both directions. As for real activities earnings management, controlling shareholders appear

inversely associated with abnormal operating cash flow in income-increasing group and with abnormal production costs in the income-decreasing group. These results provide confirmatory evidence of the effectiveness of controlling shareholders (i.e. managerial ownership) in constraining real activities earnings management that is found in the main analysis. That is, controlling shareholders tend to prevent real manipulations because of the costly consequences of this type of manipulation whether these manipulations were incomeincreasing or income-decreasing and regardless of the net effect on cash flow from operations.

The overall findings suggest that institutional investors in Jordan are interested in reported cash flows rather than reported earnings. The results justify this conclusion. First, because accruals earnings management has no direct effect on cash flows, institutional ownership is not significantly associated with income-increasing and income-decreasing abnormal current accruals. Second, there is positive relationship between institutional ownership and incomedecreasing abnormal production costs. Because it is difficult to comprehend that institutional investors would benefit from such income-decreasing practices, a possible interpretation of this positive association is that underproduction practices lead to abnormally high cash flows. Third, there is a negative association between institutional ownership and incomedecreasing abnormal discretionary expenses. This result does not only mean that institutional investors prevent income-decreasing practices but it also means that institutional investors prevent spending to increase cash flows. Therefore, the results support the myopic behaviour of institutional investors.

Concerning the role of foreign investors in the governance of their corporate shareholdings, the alternative analysis reveals interesting findings that differ slightly from the ineffectiveness found in the main analysis. The first difference is the negative association between foreign ownership and income-decreasing abnormal current accruals. This indicates that foreign investors in Jordan focus on current earnings performance but only to a certain extent. That is, if foreign investors were excessively short-term oriented, a positive relationship would have appeared in the income-increasing group. The second difference pertains to real activities earnings management. Foreign ownership is positively associated with income-decreasing abnormal operating cash flow and negatively associated with income-decreasing abnormal production costs. This indicates that firms with high levels of foreign ownership tend to have a healthy operating process as they prevent underproduction so as to have sufficient levels of inventory, but at the same time, those firms have more stringent credit terms so as to avoid high bad debt expenses. Moreover, the overall effect of foreign investors on cash flow seems neutral as well. That is, high levels of foreign ownership is positively associated with high abnormal operating cash flow (i.e. income-decreasing sales manipulation) and negatively associated with high abnormal operating cash flow (i.e. income-decreasing production costs manipulation).

As for research questions number three and four, the findings in the previous analyses concerning the substitutive effect in Jordan suggest that enhanced external audit quality (i.e. auditor size) over abnormal accruals does not affect levels of real activities manipulations. To examine the presence of the substitutive effect further, an additional analysis is conducted using the model of Zang (2012). She fashions a recursive model based on costs, timing and constraints associated with both types of earnings management. Next, she creates a measure that aggregates the abnormal levels of production costs and discretionary expenses. The findings obtained from the recursive model show a positive relationship between unexpected levels of real earnings manipulations and abnormal accruals. This suggests that managers in Jordan use both types of earnings management simultaneously to arrive at target levels of earnings, which is unlike the US where there is evidence consistent with the trade-off

between accruals and real activities earnings management. Further, the result substantiates the findings in the previous analyses where levels of real activities manipulations are found not to be affected by the enhance scrutiny of external auditors over abnormal accruals. That is, managers in Jordanian firms manipulate earnings using both types of earnings management regardless of the scrutiny from regulatory bodies and external audit.

# 7.4. Implications of the Study:

The novelty of the findings provides understanding and extension for agency theory literature that focuses on corporate governance mechanisms and earnings management in general and in emerging markets in particular. In addition, the findings provide practical implications for users of financial statements in Jordan. The theoretical and practical implications stemmed from the main and the alternative analyses of this study are discussed separately below.

## 7.4.1. Theoretical and Practical Implications of the Main Analysis:

The research hypotheses have been tested and relationships between earnings management proxies and corporate governance independent variables have been presented and discussed in the previous chapter. In this subsection, the results of the main analysis are considered collectively in order to derive theoretical and practical implications concerning agency theory and regulatory bodies and stakeholders in Jordan.

#### 7.4.1.1. Theoretical Implications:

Agency theory posits that managers' decisions are motivated by self-interest and hence will not always perform in the best interests of the shareholders (Arnold and Lange, 2004). Using this reasoning, this research attempts to provide valuable insights into the scope of effectiveness of ownership structures and external audit corporate governance monitoring by further examining the opportunism hypothesis in the emerging market of Jordan. In the following, the theoretical contributions that this research provides to the validity of agency theory predictions in the emerging market of Jordan are summarised.

Within the theoretical framework of agency theory, Denis et al. (1999) argue that conflicts of interests between shareholders and managers can be mitigated by monitoring managerial actions by board of directors or shareholders themselves. However, they emphasise that small shareholders have little incentive to monitor and thus, implying that block holders (i.e. ownership concentration) are more motivated to act as monitors – either themselves or through electing directors (Ronen and Yaari, 2008). Moreover, Jensen and Meckling (1976) suggest that monitoring by block holders can potentially reduce agency costs. On this basis, Zhong et al. (2007) argue that higher levels of ownership concentration can reduce earnings management practices. However, the results discussed earlier show that ownership concentration in Jordan is generally an ineffective monitoring mechanism in constraining earnings management. Thus, the results provide no evidence substantiating agency theory predictions.

Denis et al. (1999) suggest another primary way that could mitigate the divergence of interests: when managers own portions of total shareholdings themselves, their interests become aligned with those of other shareholders (i.e. inventive alignment effect). But because ownership is highly concentrated in contexts other than the US and UK, Dechow et

al. (2010) state that agency problem exists primarily between controlling and minority shareholders. The agency problem in such contexts is that controlling shareholders (i.e. managerial ownership of block shareholdings) may expropriate the interest of minority shareholders for their own private advantage (i.e. entrenchment effect). With one exception, the results indicate that controlling shareholders are effective in constraining earnings management, and validate agency theory prediction. The exception is that controlling shareholders are not significantly associated with abnormal discretionary expenses. Rather, institutional investors become effective in preventing managerial manipulations through discretionary expenses. Because the research population consists of listed manufacturing firms, some discretionary expenses, such as Research and Development (R&D) are essential for future value of these firms. This might indicate that institutional investors dedicate more resources to monitor the quality of managements. Consequently, institutional investors only successfully monitor discretionary expenses manipulations in Jordan. In terms of the other three types of earnings management, the results provide no evidence consistent with agency predictions that institutional investors use their superior abilities and resources in acquiring and processing information in monitoring the opportunistic behaviour of managers.

Dahlquist and Robertson (2001) consider foreign ownership as an effective mechanism that could complement current governance structure because its role resembles that of institutional investors. Further, Leuz et al. (2009) find that foreign investors prefer to invest in good governed firms, which indicate that firms seeking additional financing will enhance their corporate governance to attract the desired investment for foreigners. However, the results reveal that foreign investors do not reduce the practice of earnings management which is inconsistent with reducing agency problems in Jordan.

While agency theory suggests that ownership structure mechanisms better align the interests of managers with those of shareholders, agency theory also views external audit as the most important, independent and professional mechanism that reduces the scope for information asymmetry and mitigate the latitude for managerial opportunistic behaviour. As for audit quality and accruals earnings management in Jordan, the results interestingly suggest that non-big 5 auditors in Jordan who in fact are effective in preventing accruals earnings management. Although this conclusion contradicts those found in the US and UK in terms of auditor size, the result still validates agency theory predictions.

Regarding the substitutive effect, no significant relationship is found between non-big 5 auditors and any type of real activities manipulations, and thus the substitutive effect hypothesis is rejected in Jordan. The reasoning for the development of this hypothesis is the findings of Cohen and Zarowin (2010). Yet the Cohen et al. (2008), Garven (2009) and Demers and Wang (2010) reject that the enhanced scrutiny of external audit quality over accruals earnings management would tempt managers to engage in real activities earnings management. The insignificant results of the latter studies are due to their use of pre-Sarbanes-Oxley data whereas the findings of Cohen and Zarowin (2010) are significant because of the use of post-Sarbanes-Oxley data. This contradiction might suggest that there is a high correlation between Sarbanes-Oxley act and big 4 auditors. As such, the positive relationship between big 4 and real activities earnings management found in Cohen and Zarowin (2010) is a result of the Sarbanes-Oxley act as suggested by Graham et al. (2005), rather than enhanced scrutiny over accruals by big 4 auditors.

Accordingly, the novelty of the findings provides understanding and extensions for agency theory literature that focuses on corporate governance mechanisms and earnings management in general and in emerging markets in particular. First, the current research concludes that of the five corporate governance mechanisms only two mechanisms, namely managerial ownership and external audit, act effectively in deterring earnings management practices and in preserving shareholders wealth in Jordan. Further, the novelty of the proxy of controlling shareholders (i.e. managerial ownership) provide some extension for research studying earnings management in an agency setting in emerging markets. More importantly, from the literature review, foreign ownership has not gained as much attention as other corporate governance mechanisms. Therefore, its ineffectiveness found for the first time in this research might be valuable for research investigating real activities earnings management not only in emerging markets but also in general. By taking into consideration the aforementioned along with the findings on ownership concentration and institutional ownership, this research highlights challenges to applicability of agency theory in emerging markets where corporate governance mechanisms are supposed to mitigate agency problems.

#### 7.4.1.2. Practical Implications:

As mentioned in Chapter Two, Amman Stock Exchange (ASE) seems the main regulatory body for listed firms in Jordan. Evidence found in this research might be sufficient to suggest that owner-controlled firms in Jordan do indeed act efficiently and hence, do not seem to engage in earnings management practices that are harmful to minority shareholders. Other ownership structure mechanisms, however, are not as efficient as managerial ownership. Given that more than half of publically traded firms are not owner-controlled and the ineffectiveness of other ownership structure mechanisms, the findings highlight the need for additional corporate governance reforms in order to restrain the practice of earnings management and to mitigate its negative consequences. For instance, ASE could impose the Jordanian guidance of good corporate governance. By doing so, more than one third of boards of directors would include independent directors and audit committees would be actually activated. Moreover, ASE could place additional monitoring on listed firms. However, a caution must be considered in the process of promoting the scrutiny over listed firms. That is, ASE could benefit from US's experience in Sarbanes-Oxley act that has led managers to reduce accruals earnings management and engage more in the costly real activities earnings management. Therefore, for any recommended reforms and additional monitoring to be successfully implemented, both types of earnings management should be considered to restrain their harmful consequences.

As regards stakeholders, an increased awareness of practices and consequences of earnings management is required indeed. The evidence found in this research is in favour of increased awareness in order for investors and other stakeholders to see through the earnings figures and thus make rational contractual decisions, especially when such decisions involve non-owner-controlled firms. In addition, stakeholders need to recognise that audit services provided by big 5 auditors in Jordan do not necessarily indicate better quality and more important, the need to recognise that more costly real activities earnings management is beyond the monitoring responsibility of external audit.

## 7.4.2. Theoretical and Practical Implications of the Alternative Analysis:

This subsection aims merely to incorporate theoretical and practical implications that could be stemmed from the alternative analyses with those found in the main analyses. In general, there are no material differences between the implications stemmed from models where dependent variables are measured in absolute values and those found in models where signed values of earnings management are introduced as dependent variables.
#### 7.4.2.1. Theoretical Implications:

Beginning with ownership concentration, the largest shareholder remains ineffective in constraining income-increasing and income-decreasing abnormal current accruals. In terms of real activities earnings management, the new results substantiate those found in the main analyses. First, no effect of ownership concentration is found on income-increasing or income decreasing abnormal levels of production costs. Therefore, consistent with previous findings, agency prediction of ownership concentration as a deterrence mechanism is not validated. Second, the largest shareholders in Jordan seem to pressure managers to increase reported income through sales manipulation which is supportive of the entrenchment effect found in the main analyses. The only difference is that when abnormal discretionary expenses are divided into income-increasing and income-decreasing, the largest shareholders in Jordan appear effective in preventing cutting discretionary expenses that aims to increase income.

Controlling shareholders remain an effective monitoring mechanism as they persistently deter earnings management practices with no regards to direction of manipulation, type of manipulation or the net effect on cash flows. As such the results validate agency theory predictions of controlling shareholders (i.e. managerial ownership) aligns the interests of block holders with those of minority shareholders.

With no significant effect of institutional ownership on income-increasing or incomedecreasing abnormal current accruals and abnormal operating cash flow, institutional investors in Jordan can be characterised as short-term oriented because the results show that they act passively in the governance of their corporate holdings. Even though they are found to affect income-decreasing abnormal production costs and abnormal discretionary expenses, the directional effect is contrasting and hence, it could be concluded that institutional investors in Jordan seek high levels of cash flows implying less sophistication. Hence, the results provide no evidence consistent with agency predictions that institutional investors use their superior abilities and resources in acquiring and processing information in monitoring the opportunistic behaviour of managers.

The alternative analysis provides new perspectives concerning foreign investors in Jordan. Unlike the absolute measure of abnormal accruals, high levels of foreign ownership do prevent income-decreasing abnormal current accruals. In terms of business operating decisions, the collective interpretation of the effect of foreign ownership on real activities earnings management is in favour of firms with high levels foreign investors having healthy operating process as they prevent underproduction so as to have sufficient levels of inventory, but at the same time, have more stringent credit terms so as to avoid high bad debt expenses. Apparently, this healthy behaviour supports agency consideration of foreign ownership as an effective mechanism that could complement current governance structure.

As for auditor size, non-big 5 auditors in Jordan are found to prevent income-decreasing abnormal current accruals, which is consistent with previous findings. However, auditor size does not seem to have the same mitigating effect on income-increasing accruals earnings management. A possible interpretation is that the earnings management proxy in alternative analysis is current accruals not total accruals as in the main analysis. It is plausible that managers manipulate depreciation expense downwards to increase abnormal accruals. With property, plant and equipment obsolete from the estimation model of abnormal current accruals, the amounts of income-increasing abnormal current accruals might have decreased and hence making auditor size appears ineffective in mitigating accruals earnings management. In terms of the substitutive effect in Jordan, the results confirm that the scrutiny of external auditor that reduces the use of accruals earnings management does not induce managers to engage more in real activities earnings management.

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#### 7.4.2.2. Practical Implications:

In general, the findings of the alternative analysis confirm the previous practical implication concerning the need for regulatory bodies in Jordan to carry out additional corporate governance reforms in order to restrain the practice of earnings management and to mitigate its negative consequences.

Moreover, the additional results obtained from employing Zang's (2012) model also confirm the inexistence of a substitution between accruals and real activities earnings management in Jordan. Rather, the results show that managers in Jordan engage in both types of manipulations simultaneously. This finding emphasises the need for considering real activities earnings management in implementing future reforms. Specifically, managers reliant on the costly real activities manipulation does not seem to be limited by costs associated with this type of manipulation. Therefore, regulatory bodies in Jordan should ensure the effectiveness of internal monitoring mechanisms such as the role of independent directors because unlike external auditors, internal corporate governance mechanism can have a mitigating effect on real activities manipulations.

The alternative analysis reveals that firms with high levels of foreign ownership tend to operate in a healthier manner than those with no or low levels of foreign ownership. Therefore, stakeholders could benefit from the conclusions of this research in terms of making informed decisions in which the role of controlling shareholders as well as foreign investors are considered.

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### 7.5. Contributions to Knowledge:

The current study contributes to the ongoing debate on the unity, feasibility and hence, validity of agency theory predictions. Overall, the findings highlight challenges to applicability of agency theory in emerging markets where corporate governance mechanisms are supposed to mitigate agency problems. Accordingly, this research extends agency theory by providing new perceptions.

- Most studies concentrate on the shareholders-managers problem. Such studies are conducted in the US where ownership is dispersed. In contexts where ownership is concentrated, agency problem occurs between controlling shareholders and minority shareholders. Accordingly, the contribution made to accounting research on earnings management and to agency theory is that owner-controlled firms are less likely to manage earnings through real activities than management-controlled firms. To the best of the researcher's knowledge, no such contribution has been achieved in contexts where ownership is concentrated.
- Within the agency theory, on the one hand, foreign investors are expected to act as an effective mechanism that complements governance structure or at least have the capability to invest in firms with good corporate governance. On the other hand, foreign investment could be considered, simply, as motivation. With too little evidence on accruals, and no evidence on real activities, the findings of this research contribute for the first time to accounting research on earnings management and to agency theory. That is, the results do not validate agency predictions in general, and in contexts where levels of foreign ownership are very high.
- The results confirm the ineffectiveness of outside block holders in constraining accruals earnings management (i.e. ownership concentration). Moreover, this research

extends prior literature by documenting the ineffectiveness of outside block holders in constraining real activities manipulations outside the US market.

- The findings confirm that the apparent inconsistency in empirical results, especially concerning institutional ownership and auditor size, is a result of differences in institutional settings of different contexts.
- For the first time, this research finds evidence suggestive of the simultaneous use of accruals and real activities earnings management in emerging markets. Moreover, by employing the model developed in Zang (2012), the results reject the substitutive effect in Jordan. Therefore, with little research investigating this issue in the US, this research is the first to employ these new approaches in the setting of emerging markets.
- To the best of the researcher's knowledge, this research considers abnormal levels of real manipulations in absolute terms for the first time. Although effects of corporate governance mechanisms on magnitudes of abnormal accruals have widely been investigated in the literature, such effects on magnitudes of real earnings manipulations have never been tested before.

# 7.6. Limitations of the Study:

This study is subject to the several potential limitations. Accordingly, a caution should be considered in the interpretation of the study's findings.

- A common yet inevitable limitation associated with earning management studies is measurement error in the estimation of earnings management proxies. So far, the

literature offers no model that estimates normal levels of earnings without criticism. Therefore, abnormal levels of earnings do not necessarily identify firms that actually managed their earnings with total accuracy.

- An apparent limitation in this study is the limited number of listed manufacturing firms in each industry. With only 2 or 3 firms in more than half of the industries in the manufacturing sector in Jordan, the cross-sectional estimation of normal levels of earnings is conducted on a year-by-year basis rather than year-industry basis as in the original models. Although this remedy seems acceptable, the measurement errors might be higher.
- The generalisation of the findings is limited to listed manufacturing firms in Jordan.
  Other sectors differ in their accounts and managerial discretion offered by accounting standards. As such, levels of earnings management might be different.
- This study is conducted within the framework of agency theory where earnings management practices are expected to be opportunistic not beneficial. Therefore, interpretations of the empirical results are restricted to the opportunistic hypothesis.
- The explanatory power of the empirical models suggest that there are still other independent variables that could explain the variation in amounts of managed earnings, such as independent variables pertaining to characteristics and compositions of boards of directors.

# 7.7. Recommendations for Future Research:

There are several avenues through which future research could extend this study.

- Investigating the effect of foreign ownership in developed and other developing markets. Incorporating foreign ownership in future research on earnings management is expected to enrich the literature in two ways. The literature review in this study shows that foreign ownership can motivate manager to engage in earnings management to attract additional capital. No research is found investigating this issue with respect to real activities earnings management. To lesser extent, the effectiveness of foreign investors in mitigating both types of earnings management has yet to be investigated in developed and other emerging markets. Using this reasoning, another area for future research arises. Introducing a sampling design containing firms before and after foreign investment is made would distinguish the effect of foreign ownership on earnings management and hence, constitutes a significant contribution to accounting research on earnings management in general.
- Research on the simultaneous use of accruals and real activities earnings management in emerging markets is needed. While the results of this study reject the substitutive effect and suggest a simultaneous use of accruals and real activities manipulations, further evidence similar to the US evidence provided by Graham et al. (2005) would provide new insights about the extent of earnings management practices outside the US market.
- Further research on what motivates managers to engage in earnings management practices is still an understudied topic in Jordan. For example, conducting a research using a stimulus such as benchmark or initial public offerings according to which abnormal earnings of suspect firms could be compared to the rest of the sample.
- Conducting a research under the beneficial hypothesis would enrich the literature with new perceptions about corporate governance and the practice of earnings management. For instance, if managers were to convey value relevant information,

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directors may allow the practice of earnings management. As such, the interpretations would be different that those made under the opportunistic hypothesis.

- The collection of data, through a survey similar to that in Gabrielsen et al. (2002), about managerial ownership, composition of board of directors, directors' expertise, etc, would indeed increase the explanatory power of any empirical model and hence, provide better understanding about the effectiveness of corporate governance mechanisms in deterring the practice of earnings management in Jordan.
- Investigating the effect of more attributes of good audit quality such as audit hours and audit fees on accruals earnings management, then examining the substitutive effect in Jordan might provide alternative perception about the effect of external audit in Jordan.

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