

FACTORS AFFECTING AUDIT QUALITY IN AN EMERGING MARKET-
TURKEY: A FOCUS ON AUDITOR CHARACTERISTICS IN
ISTANBUL STOCK EXCHANGE

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Dissertation Abstract

Onuralp Armağan, “Factors Affecting Audit Quality in an Emerging Market-Turkey:
A Focus on Auditor Characteristics in Istanbul Stock Exchange”

The objective of this dissertation is to investigate the factors influencing audit quality in Turkey with a focus on auditor characteristics in Istanbul Stock Exchange (ISE). Three studies on listed manufacturing and service firms from 2005 through 2010 are conducted to provide empirical evidence. Using discretionary accruals and abnormal working capital accruals respectively, first two analyses use a firm-context approach and proxy audit quality with earnings management (EM) that is computed from financial statements and disclosures. In contrast, the third analysis adopts an auditor-context approach and measures audit quality in terms of auditor independence that is computed as share of each audit engagement in total audit revenue of each audit firm. The results posit that Big 4 auditors and industry specialist auditors conduct more qualified audits, and disclaimer of opinions could signify high audit quality. EM models provide evidence that longer partner tenures are associated with lower audit quality whilst generally saturated evidence exist for audit firm / partner tenures in all three models. Moreover, EM models show that explanatory power of auditor characteristics are lower when compared with results of auditor independence model, implying that practical significances of firm-related and auditor-related factors might be sensitive to context audit quality is measured in.

Keywords: Audit quality, earnings management, discretionary accruals, abnormal working capital accruals, auditor independence, auditor size, auditor tenure, partner tenure, litigation, cross-sectional Jones model, Turkey.

Tez Özeti

Onuralp Armağan, “Yükselen bir Piyasa’da Bağımsız Denetim Kalitesini Etkileyen Faktörler: Türkiye-İstanbul Menkul Kıymetler Borsası Çerçevesinde Denetçilerin Ayırt Edici Özelliklerine Bir Bakış”

Bu tezin amacı İstanbul Menkul Kıymetler Piyasası (İMKB) çerçevesinde denetçilerin ayırt edici özelliklerine odaklanarak Türkiye’de denetim kalitesini etkileyen faktörleri araştırmaktır. Bu bağlamda ampirik bulgular sağlamak için imalat ve hizmet sektörlerinde faaliyet gösteren halka açık şirketlerin 2005-2010 dönemlerine ilişkin üç araştırma gerçekleştirilmiştir. İlk iki araştırmada; firma kaynaklı bir yaklaşım kullanılarak finansal tablo ve dipnotlar üzerinden sırasıyla ihtiyari tahakkuklar ve olağandışı işletme sermayesi tahakkukları hesaplanmış, denetim kalitesi temsilen kar yönetimi (KY) üzerinden ölçülmüştür. Üçüncü araştırmada ise denetçi kaynaklı bir yaklaşım kullanılmış ve denetim kalitesi, denetçinin müşteriye olan ücret bağımlılığı hesaplanarak bulunan denetçi bağımsızlığı ile ölçülmüştür. Sonuçlar, Dört Büyük denetim firmasının, sektör uzmanı denetim firmalarının ve görüş bildirmekten kaçınma görüşü verebilen denetim firmalarının genel olarak daha yüksek kalitede denetim sağladığını göstermektedir. KY modelleri, aynı müşteri ile uzun süre çalışan sorumlu ortak baş denetçilerin denetimlerinin daha düşük kalitede olduğunu gösterse de yürütülen üç araştırma da denetim firması/sorumlu ortak başdenetçi görev süresinin denetim kalitesi üzerinde etkisi noktasında değişken bulgular ortaya koymuştur. Ayrıca KY modellerinde elde edilen sonuçlar; denetçi kaynaklı ayırt edici özelliklerin denetim kalitesi üzerindeki açıklayıcılığının, denetçi bağımsızlığı modelinden daha az olduğunu göstermiştir ki bu bulgu firma kaynaklı ve denetçi kaynaklı faktörlerin denetim kalitesi üzerindeki etkilerinin, denetim kalitesinin ölçüldüğü bağlama göre değişebileceğini işaret etmektedir.

Anahtar Kelimeler: Denetim kalitesi, kar yönetimi, ihtiyari tahakkuklar, olağandışı işletme sermayesi tahakkukları, denetçi bağımsızlığı, denetçi büyüklüğü, denetçi görev süresi, sorumlu ortak başdenetçi görev süresi, hukuki ve yasal işlemler, yatay-kesitsel Jones modeli, İMKB, Türkiye.

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ABBREVIATIONS

AI	Auditor Independence
CMB	Capital Markets Board of Turkey
EM	Earnings Management
FDI	Foreign Direct Investment
IAS	International Accounting Standards
IASB	International Accounting Standards Board
ICAEW	Institute of Chartered Accountants of England and Wales
IFRS	International Financial Reporting Standards
IFAC	International Federation of Accountants
ISA	International Standards on Auditing
ISE	Istanbul Stock Exchange
PDP	Public Disclosure Platform
PPE	Plant, Property and Equipment
PSLRA	Private Securities Reform Act of 1995
SEC	U.S. Securities and Exchange Commission
SOX	Sarbanes Oxley Act
U.S. GAAP	U.S. Generally Accepted Accounting Principles
UVAP	Within Information Transferring Project

CHAPTER 1

INTRODUCTION

Audit quality has been frequently addressed by Capital Markets Board of Turkey (CMB) from different angles with promulgation of different communiqués in the recent years. Separation of audit and consulting services, qualifications of internal control mechanism of audit firms, and regulations on auditor tenure have been subjects of debate on the Turkish market since amendment of Sarbanes Oxley Act (SOX) in United States.

Auditors directly influence financial reporting quality since auditing aims to minimize financial reporting misstatements. The audit quality is defined initially by DeAngelo (1981) as the probability of auditor to discover and explain a misstatement/fraud in the financial statements audited. An effective audit process requires an auditor to transfer sufficient information and detail on the objectives of audit and the audit report. An effective auditor recommends potential ways of developing financial reporting system and internal control mechanisms, and delivers clients a list of adjusted and unadjusted differences detected during the audit process.

Previous studies in Turkey related to audit quality is limited. Ergun (1999) collects submit surveys to 33 audit partners and reveals that higher audit quality is associated with international audit firms. Kavut (2001), and Altıntaş (2008) conduct a survey to compare perceptions of auditors and auditees related with audit quality, and document the differences in a univariate model. By using an experimental method and manipulating auditor brand name affect on a sample of stakeholders

including loan officers, and managers from intermediary firms and auditees; Nuhoğlu (2010) posits that auditor brand name influences stakeholders in every type of audit opinion, and has a positive impact on decision makers' perceptions of audit quality.

The objective of this dissertation is twofold. First, apart from foregoing previous studies on perceived audit quality, it verifies the factors influencing actual audit quality in Istanbul Stock Exchange (ISE) by using a series of multivariate models. On measures of earnings management with different models, this research empirically attempts to estimate actual audit quality and predictive factors of it.

Secondly, this study compares factors of audit quality on the basis of audit-related versus firm-related classification. As typical for services, both of service providers' qualifications and client characteristics should be considered as parameters in audit production function (O'Keefe, Simunic, & Stein, 1994). Consistently, potential factors influencing audit quality are classified into two groups in all analyses. The first group, audit-related variables, represents service providers' (auditors') qualifications and it is the center of this dissertation on which hypotheses are constructed. The second group, firm-related variables, is used to compare and control for client-related influence on audit quality.

Due to the inverse relationship between audit quality and audit risk, this dissertation also underpins Fearnley, Beattie, and Brandt (2005) for arguing that the audit risk model should be portrayed as function of the risks that originates from the client (firm-related factors) and risks that originate from audit firm (audit-related factors) as to reflect the way in which the independence framework recognizes the safeguards for sustaining audit quality. This dissertation also delineates these risks to specific periods and industries, bringing a conjectural angle to testing of audit model

in the context of ISE.

Foreign direct investment (FDI) supplies emerging markets significant benefits in terms of growth and reduced vulnerability that are accompanied with other advantages such as improved management techniques, more advanced technologies, and related easier access to international financial markets. Having a consistently inclining current deficit, Turkey has been increasingly relying on FDI in recent years of slowdown in world economy. However, lack of reliable corporate financial information is likely to obscure investment opportunities in any emerging country, putting an emphasis on the role of auditing since audit services aim to provide assurance on reliability of corporate financial information that is critical for international investors. Therefore, the researcher finds it practically interesting and contributable to explain and estimate quality of audit services in Turkey, providing beneficial results both for international investors, national investees and regulators in the country.

Empirically, to the best knowledge of the researcher, this research will be the first multivariate study in Turkey measuring actual audit quality in terms of both magnitude and direction of earnings management, and estimating its predictors by using extensive secondary data from financial statements and disclosures. In doing so, it integrates factors such as auditor's industry specialization and CMB sanctions that have not been employed by any of the prior national studies on audit quality. Secondly, it will be the first attempt in national literature to employ abnormal working capital accruals as to estimate earnings management in context of ISE. Finally, this study will be a national initial step to estimating auditor independence upon engagement letter information, opening an empirical pave to further audit fee researches in Turkey.

This research particularly concentrates on the question of how audit quality in ISE is influenced by auditor size, auditor's industry specialization, audit firm and partner tenure, auditor opinion, and CMB sanctions. It is expected that the findings of this study could contribute to ability of audit firms to better understand audit-related and client-related factors imposing risk on audit service quality, and thus they could differentiate their service-provision strategies to improve audit quality. Moreover, this dissertation could empirically assist regulators to retrospectively evaluate the impact of legislative acts taken in past decade as to improve audit quality in ISE.

This dissertation takes a threefold analysis perspective. The first two analyses focus on audit quality-earnings management linkage measuring audit quality from financial statements (firm context) while the third analysis is based on audit quality-auditor independence connection that is based on audit fee information (auditor context). First two analyses adopt earnings management (EM) approach that focuses on the core function of auditing for fair and true presentation of financial statement, i.e. high audit quality results in less earnings management in financial statements. The first EM model employs discretionary accruals as an inverse proxy of audit quality that is estimated from modified cross-sectional Jones model by Dechow, Sloan, and Sweeney (1995) while the second one uses abnormal working capital accruals that is computed by DeFond and Park (2001). Third analysis proxy audit quality with auditor independence (AI) estimated from fee dependency model of Berkess and Simnett (2002). All models examine the influence of audit-related and firm-related variables by using a pooled data from ISE for the period 2005 through 2010. EM models examine a sample of 1144 firm-year observations whilst the AI model employ 592 firm-year observations due to unavailable audit fee information

for some of audit engagements.

All of three studies suggest that Big 4 auditors and industry specialist auditors conduct more qualified audits, and also disclaimer of opinions could generate higher audit quality. EM models and AI model associate low audit quality with long partner tenures and short audit firm tenures, respectively whilst generally saturated evidence exist for audit firm / partner tenures in all three models. Interestingly, EM models and AI model provide different results for explanatory power of auditor characteristics, implying that practical significances of firm-related and auditor-related factors might be sensitive to context audit quality is measured in.

The remainder of this dissertation is organized as follows: Chapter Two reviews the literature on dichotomy of audit-related versus firm-related factors. Chapter Three expounds grounding justifications and presentations of dissertation hypotheses and sample selection procedures. Chapter Four introduces first part of EM analysis with details of modified cross-sectional Jones model and estimations of independent variables commonly used by all models of the dissertation. Chapter Five presents empirical findings of EM Model 1. Chapter Six informs on the methodological differences of EM Model 2 and discusses resulting evidence in comparison with EM Model 1. Chapter Seven prefaces concept of auditor independence and reports explanatory factors. Finally, Chapter Eight summarizes and compares the outcomes of all models and their empirical support for hypotheses while conclusively discussing implications and limitations of the dissertation.

CHAPTER 2

LITERATURE REVIEW

Auditing reduces information asymmetries between managers and firm stakeholders by enabling the outsiders to corroborate the validity of financial statements. The main objective of auditing is providing fair and true presentation of financial statements; thus the effectiveness of auditing is its ability to constrain the earnings management that is expected to alter with the quality of auditor. High-quality auditors are more likely to detect misstatement and qualify their report when compared with low-quality auditors. Therefore, earnings management has been frequently used by studies in accounting literature as an inverse proxy of audit quality, and predictors of earnings management are inversely related to audit quality (Jones, 1991; DeFond & Subramanyam, 1998; Bannister & Wiest, 2001; Chung & Kullapur, 2001; Larcker & Richardson, 2004; Sirinidhi & Gul, 2007).

On the other hand, as the audit risk model remarks, there are firm-related and circumstantial factors comprising inherent risk that is part of total audit risk; thus auditor qualifications do not solely influence audit quality. Consistently; Dechow, Ge, and Schrand (2010) defines six categories of determinants of audit (earnings) quality: (1) Audit-related characteristics, (2) firm characteristics, (3) financial reporting practices, (4) governance and controls, (5) equity market incentives, and (6) external factors.¹ This dissertation adopts the same framework, however

¹ Since the focus of this research is assessing the association between audit-related characteristics and earnings quality, Dechow's path is intentionally distorted and primacy is given to audit-related characteristics and review of other characteristics are given subsequently.

aggregates last five categories under the name of firm-related factors in literature review since earnings management studies frequently have a determinant-specific research design and such a review might provide readers with a convenient tool to broadly cover determinant-specific consequences and commencements of the literature.

Audit-related Characteristics

Assessing audit quality ex ante is difficult since audit report is the only evident end result of the audit, and additionally audit report is a common template and most of the audit reports are standard unqualified opinions. A significant part of audit quality research argues that variances in audit quality can be related to different classes of auditors in terms of auditor size and auditor's industry specialization (Firth & Smith, 1992; Willenborg, 1999; Mayhew & Wilkins, 2003; Behn, Choi, & Kang, 2008).

Furthermore some researchers concentrate on the relationship between service tenure and auditor independence while some other see audit opinion and audit failure as a possible way of assessing ex post audit quality (Reynolds & Francis, 2000; Davis & Ashton, 2002; Francis & Krishnan 2002; Boone, Khurana, & Raman, 2011).

Auditor Size

Auditor size can restrain earnings management and the rationale under the argument is that larger (Big) auditors provides higher quality service since they are more independent and competent than smaller auditors (non Big) since the failure to issue a going-concern opinion to a distressed company can harm Big auditors' reputation

(Dechow et al., 2010). A single client is not significant for Big auditor although an auditor with one or few clients may consider that accommodating with clients and misreporting provides more gain compared to standing resistant and potentially ending the engagement (DeAngelo, 1981).

Similarly, some studies argue that Big auditors had a reputable brand name and have concerns to protect their reputation, thus they provide high quality services (Simunic, 1984; Teoh & Wong, 1993; Weber, Willenborg, & Zhang, 2008). These results could not be perceived as Big audit services are always superior since audit failures and litigation cases can and do exist for Big auditors. In general, focus in these studies is that the Big auditors will be providing higher quality audit services than smaller auditors.

The Big auditor versus non Big auditor dichotomy is used by different lines of the research. Compared to audit of other auditors, Big 4 auditors are found to include a 20 percent premium after controlling for firm specific characteristics such as firm size, complexity (Simunic, 1980). *Ceteris paribus*, a higher audit fee is representative of higher audit quality either as a result of greater auditor expertise (measured by higher charging rates) or more auditor effort (measured by more audit hours). However, while drawing conclusions, the pricing power notion should be attended since higher audit quality is not certainly provided by higher audit fee since if the auditor has pricing power over its clients (Francis, 2004).

Another line of the research focuses on the characteristics of the clients that could demand higher quality audit services. It is remonstrated that firms in need of greater monitoring as a result of higher agency costs are more likely to hire Big 4 auditors (DeFond, 1992; Francis, Maydew, & Sparks, 1999). Moreover, some studies argue that firms with structural uncertainty and greater information asymmetry

between management and outsiders have a bait of hiring a Big auditor as a way of communicating their intrinsic value through an assured high quality financial reporting. Particularly, studies in context of initial public offerings (IPO) show that IPOs with Big auditors contain degraded information symmetry, i.e. less underpricing (Firth & Smith, 1992; Willenborg, 1999; Venkataraman, Weber, & Willenborg, 2008).

Some studies evidence that less frequent cases are filled against Big auditors and Big auditors are less frequently sanctioned after controlling for client size (Palmrose, 1988). By contrast, it could be argued that Big auditors have large and sufficient resources for lawsuits so that it may not be the higher audit quality reducing the number of litigation cases.

This argument is confounded by the results of further researches on audit outcomes evidencing higher audit quality is associated with Big auditors. Audit outcomes are of two types: Audit reports and audited financial statements. Greater accuracy of financial reporting for Big 4 auditors in United Kingdom (Lennox, 1999) and greater auditor conservatism for Big 4 auditors in terms of lower thresholds for issuing modified audit reports (Francis & Krishnan, 1999) are found. Venkataraman et al. (2008) document that accuracy of pre-IPO reports of Big 4 and large national auditors are likely to have more predictive accuracy compared to smaller size auditors, considering the future stock returns.

The studies assessing financial statements also maintain that Big auditors are associated with higher audit quality. On basis of Jones discretionary accruals model, less earnings management and thus higher audit quality is evidenced for clients of Big 4 auditors since they have lower discretionary accruals (Becker, DeFond, Jiambalvo, & Subramanyam, 1998; Francis et al., 1999; Krishnan, 2003a). In

support, Big auditors are documented to detect income-increasing earnings management of firms and require them to make proper adjustments (Nelson, Elliott, & Tarpley, 2002). Furthermore, Teoh and Wong (1993) report that stock market more highly value earnings surprises of Big 4 clients, which points earnings audited by Big auditors are perceived as more credible. Consistently, analysts' forecasts are found to be more accurate and earnings surprises are evidenced to be smaller for Big auditors (Behn et al., 2008).

On the whole, the argument that Big 4 auditors provide higher quality assurance is strongly underpinned by aggregate evidence of many studies in spite of recent high-profile cases like Enron, Lehman Brothers and AIG. For Francis (2004) there is one bugging facet in this line of the literature: The high earnings quality may be basically due to the fact that Big 4 auditors are hired by "good" companies which are less likely to manage earnings. It is not higher audit quality but higher earnings quality of the clients of Big auditors that causes outcomes to conclude Big auditors provide higher audit quality. Although firm-specific characteristics have been controlled in prior literature, this endogeneity and self-selection analysis deserves attention and cannot be completely eliminated.

For instance Hogan (1997) uses self-selection analysis to assess whether entrepreneurs select the type of auditor that reduces the cost of underpricing and auditor fee. The client-specific risk on total costs is found to be conjointly varying across auditor groups, and underpricing and auditor fee is shown to differentiate among auditor and client groups. Taking auditor choice endogenous, Ireland and Lennox (2002) focuses on the Big audit firm fee premium and indicate that Big auditors attract "good" clients which require less than average audit effort. Weber and Willenborg (2003) and Boone, Khurana, and Raman (2010) note that second-tier

auditors are likely to provide informative pre-IPO opinions only after self-selection is considered.

Industry Specialization

The foregoing line of the literature view Big 4 auditors as a uniform group, which is relaxed by other studies flexing this premise and analyzing other plausible sources of differentiation in audit quality among Big 4 auditors. Another explanation for this approach is that market shares of Big 4 auditors increase worldwide and even pass 90 percent of listed public firms in the US, meaning that research designs of studies comparing Big and non Big auditors have low power due to the fact that majority of samples are audited by Big auditors and thus there is low variance in the experimental variable (Francis, 2004).

The focus on industry specialization is an important dimension through which auditors identify themselves with specific client characteristics and demands. The specialization is a worthwhile way of differentiation since it enables auditor to serve large group of client with akin characteristics.

Firms require auditors as part of their financial information disclosure strategy. Industry specialized auditors are hired for advantages such as potentially lower fee rates, higher audit quality and disclosure advice. Signaling their investors that the firm has an intention to provide highly assured financial disclosures is of high significance for firms.

Firstly, the auditor can achieve higher economies of scale as auditor's level of industry specialization, measured by industry market share, increases. Research suggest that competition in audit market lead auditors to share this advantage with

their clients; albeit industry leader firms that greatly exceed their closer competitors in terms of market share are shown to obtain significant fee premiums (Mayhew & Wilkins, 2003).

Secondly, industry specialist auditors have more industry specific experience and knowledge compared to non-specialist auditors. Recent studies show that industry specialist auditors are likely to execute more qualified audits that are documented by higher earnings quality (Jaggi, Gul, & Lau, 2012; Chi & Chin, 2011; Balsam, Krishnan, & Yang, 2003). Their experience, which stems from auditing other firms in the same industry and attaining the best practices in the industry, enhances their ability to identify misstatements and accounting errors more promptly and efficiently (Solomon, Shields & Whittington, 1999).

Thirdly, industry specialist auditors are more motivated to disclose misstatements and qualify their opinions in order to sustain their market shares. Failure to detect errors increases industry specialist auditor's litigation risk that could negatively affect its reputation and also clients' reputation. Consequently, industry specialist auditors have a strong concern to deliver high quality service to reduce litigation risk and prevent loss of reputation, which indirectly increases disclosure quality and financial reporting credibility of their clients (Dunn & Mayhew, 2004).

Elder and Zhou (2002) examine the association between industry specialization and earnings management in IPO process and find less underpricing and discretionary accruals in IPOs of clients of industry specialists. Krishnan (2005) investigates the relation between industry specialization and the speed with which publicly available bad news is reflected in earnings. Industry specialist auditors are more likely to be timely in reflecting bad news compared to non-specialist auditors.

Balsam et al. (2003) compare absolute level of discretionary accruals and earnings response coefficients of clients of industry specialist auditors and non industry specialist auditors and document clients of industry specialist auditors to have lower discretionary accruals and higher earnings response coefficient than other clients. Basing on a large sample of Big auditor clients, Krishnan (2003b) states that clients of industry specialist auditors have 1.2 percent lower discretionary accruals than clients of non specialist auditors.

Reichelt and Wang (2010) find that national and city-specific industry specialists are associated with lower discretionary accruals, implying that national and city-specific industry specialists deliver higher quality audit services. They also found lower discretionary accruals for clients of auditors that are only city-specific industry specialists. In accordance, Chi and Chin (2011) documents lower discretionary accruals for clients of auditors that are audit firm-level and individual partner-level industry specialist.

Similar to auditor size studies, audit fee is taken by some of the studies to proxy audit quality and associated with industry specialization. DeFond, Francis, and Wong (2000) find evidence for Big auditor premiums for industry specialization. Ferguson, Francis, and Stokes (2003) remonstrate that an average of 24 percent fee premium exist for auditors of both national and city-specific industry leader.

In support, Francis, Reichelt, and Wang (2005) examine pricing of industry leader Big auditors in U.S. audit market and find 19 percent fee premium for auditors that are both national and city-level industry leader. Fifty percent of fees belong to industry leader auditors whereas 22 percent of fees belong to industry second. However, no premium is found for national industry leader auditors that are not city-level industry leader.

While industry specialist auditors help their clients in signaling their designation to disclose high quality financial statements, improved disclosure quality is also accompanied by some costs. Client costs could be considerable if an industry specialist is hired. For instance, auditors could learn some of clients' trade secrets, strategies and business practices during their fieldwork. Thus, as to reduce the dangers of transferring confidential information, clients would also preventively choose not to hire auditors who audit majority of their competitors. The risk of information transfer increases as the market share of the industry specialist auditor increases (Mayhew & Wilkins, 2003).

Kwon (1996) argues that firms avert from hiring auditors of their major competitors to obscure inside information. His results show that as the client's industry become less concentrated, clients' preference to hire auditors of their competitors decreases. He also evidences his argument on basis of a real story: when Ernst and Young is cofounded by merger of Ernst, Whittney, and Arthur, it suddenly become auditor of Coca Cola and Pepsi. This situation is unacceptable to both clients and eventually Pepsi departed.

Audit firms may also prevent extensively focusing on one industry. When auditors engage multiple clients with correlated business risk, potential of correlated judgmental errors increases, offsetting precision improvement of being an industry specialist. Beck and Wu (2006), and Simunic and Stein (1990) document that audit firms must balance between outcomes of industry specialization and portfolio concentration.

Audit Firm Tenure

Tenure is the length of auditor-client relationship and this line of research focuses on the affects of audit firm tenure on audit quality. The research is motivated by discussion of mandatory auditor rotation in business which is based on the argument that auditors can become tolerant to clients and lose their professional skepticism as the tenure lengthens. Long audit engagements could restrain auditor's due diligence and independence.

Although audit firm rotation is not mandatory in U.S. and there is no related regulation in SOX, CMB of Turkey enacted a regulation by promulgation of Communiqué 22 in 2006, stating that audit firm rotation is mandatory for every seven years for public companies, and at least a two year of lag is required for a public company to hire the predecessor audit firm. By later amendments in 2009 and 2011, audit partner rotation is included as an alternative only if certain conditions related to internal control mechanisms and staff are met by both client and audit firm.

Myers, Myers, Palmrose, and Scholz (2003) analyze announced financial restatements between 1997 and 2001 and compare them with a matched sample of non-stating firms. Controlling for firm age, they document that restatements offsetting increased core earnings are more likely to occur in long auditor-client relationships whereas restatements offsetting non-core earnings are likely occur rarely as audit firm tenure lengthens. Client's better understanding of auditor's work plan could be argued as an additional explanation to this outcome.

Dao, Mishra, and Raghunandan (2008) focus on investors' perception of long audit firm tenure and examine shareholders votes on auditor ratification as a proxy. Using 635 firm-year data in 2006, they find that the shareholders votes against

auditor ratification are positively associated with audit firm tenure which supports the view that long audit firm tenure jeopardizes audit quality.

The counter argument in literature maintains that auditors cultivate in-depth knowledge of client's business structure, operations and processes, thus become able to deliver a high quality audit service (Johnson, Khurana, & Reynolds, 2002). Auditors develop a better understanding of client's financial condition and enhance the ability to detect going-concern problems. They also argue that auditors have economic reasons to preserve due care and independence, thus rotation of audit team could be a satisfactory method to sustain professional skepticism and independence of auditor.

Another reasoning of this argument is that audit quality may lower in initial year of the engagement during which auditor acquire information about the new client. Respectively, three studies examine the association between discretionary accruals and tenure. Johnson et al. (2002) find higher discretionary accruals for the first three years of audit engagement following auditor switches compared to continuing engagements of four or more years. This reflects lower audit quality in initial years of new engagements. Consistently, Myers, Myers, and Omer (2003) find no association between discretionary accruals and short audit firm tenure and evidence that discretionary accruals slightly decrease as audit firm tenure increases, thus audit quality has a positive association with audit firm tenure.

Additionally, Carcello and Nagy (2004) examine the association between audit firm tenure and fraudulent financial reporting, and compare firms listed for fraudulent reporting from 1990 to 2001 with a matched sample of non-fraud firms. They find fraudulent financial reporting is more common during the first three years of audit-client relationship while no association is achieved between fraudulent

financial reporting and longer audit firm tenure. Their results are consistent with the counter argument that audit firm rotation may have adverse consequences on audit quality.

Mansi, Maxwell, and Miller (2004) analyze the association between audit firm tenure and the cost of debt financing, showing that audit firm tenure is negatively associated with cost of debt financing. They suggest that role of audits in terms of assurance and communicating financial information is influential to cost of debt.

Gosh and Moon (2005) investigate perceptions of investors and financial intermediaries on audit firm tenure, and as a proxy of investor perceptions of earnings quality, they measure earnings response coefficients from returns-earnings regressions. They find a positive relation between investor perceptions of earnings quality and audit firm tenure, and additionally document that reported earnings more strongly influence stock rankings as audit firm tenure increases. Furthermore they find that influence of past earnings on one-year-ahead earnings forecasts is positively associated with audit firm tenure. Their results show that investors and intermediaries take audit firm tenure as an enhancing factor in relation to auditor quality. It may also be argued that auditors tend to lengthen their engagements with firms having high quality accounting mechanisms, thus longer auditor tenure with a client represents better financial reporting quality the client.

Ho, Liu, and Schaefer (2010) examine the relation between audit tenure and earnings surprises. They concentrate on influence of audit firm tenure on the ways firms prevent negative earnings surprises either by employing upward earnings management or downward earnings forecasting. Using a sample of 1,553 firms from 1996 to 2003, they find that audit firm tenure is negatively associated with upward

earnings management, while there is positive relation between audit firm tenure and downward earnings forecast. The results support the argument that as auditor-client relationship lengthens, auditors more affectively restrains firms' manipulative action, thus assurance on financial reporting increases. However, it appears that firms substitute upward earnings manipulation with downward forecast guidance.

Audit Partner Tenure

One limitation of the research on audit firm tenure is that the results could be inferred to partner tenure since audit firm tenure is correlated with audit partner tenure. Therefore it is argumentative to associate audit firm tenure with earnings quality. Studies on partner tenure attempt to explain the association between audit partner tenure and earnings quality.

Mandatory Audit partner rotation has become a hot debate both in business practice and academic literature in post-Enron/Anderson crisis. The issue is addressed in U.S. by the section 203 of Sarbanes-Oxley Act which requires audit partner rotation for every five years for public companies. The rotation is applied to lead auditor and the auditor reviewing the audit work.

CMB of Turkey accepted a similar rule in its promulgation of Communiqués 25 and 27, stating that audit partner rotation is mandatory for every five years and could be an alternative to mandatory audit firm rotation if certain conditions related to internal control mechanisms and staff are met by both clients and audit firms.

Hamilton, Ruddock, Stokes, and Taylor (2005) examine audit partner rotation in Australia and find that partner switches are negatively associated with signed discretionary accruals. However, switching from Big to non Big audit partner is

positively associated with upward discretionary accruals. They evidence that the results condense in periods when mandatory partner rotation become in effect. Thus, audit partner rotation is likely to be negatively associated with discretionary accruals, but only in existence of mandatory audit partner rotation.

Studying on Taiwanese firms, Chi and Huang (2005) document that discretionary accruals are negatively associated with audit partner tenure and audit firm tenure. They find that familiarity with clients improve audit quality, albeit, the association reverse turns for tenures over five years, meaning that excessive familiarity creates lower audit quality.

Carey and Simnett (2006) use Australian data for a period that partner rotation is voluntary, and analyze the relation between audit quality and audit partner tenure. They measure audit quality in three ways: (1) auditor's propensity to issue a going-concern audit opinion for financially distressed companies, (2) the sign and magnitude of discretionary accruals, and (3) beating of earnings forecasts. Lower propensity to issue going-concern reports and beating of earnings forecast are found for longer audit partner tenures. They interpret this as evidence for longer audit partner tenure decreases audit quality. However, long audit partner tenure is found to be not associated with discretionary accruals.

Chen, Lin, and Lin (2008) use performance-adjusted discretionary accruals for audit quality and find that absolute and positive discretionary accruals decrease with increasing audit partner tenures. After controlling for partner tenure, absolute discretionary accruals are found to decrease as audit firm tenure increases.

Manry, Mock, and Turner (2008) use data acquired from actual audits by U.S. offices of Big auditors, and find that there is a significant association with audit quality and audit partner tenure. In detail, discretionary accruals are negatively

associated with audit partner's tenure with specific client. When they control for client size and engagement risk, audit partner tenure is negatively associated with discretionary accruals of small size firms with audit partner tenures longer than seven years, while they find no association between discretionary accruals of large firms and audit partner tenures. The results commend that auditors of small firms are less likely to accommodate aggressive financial reporting of these firms as audit partner tenure lengthens. However, audit partner tenure appears to be not related to audit quality for larger firms or smaller firms with short audit partner tenure.

Non-audit Services

Provision of non-audit services is viewed as a potential threat to auditor independence mainly for two reasons: First, non-audit service increases fee dependency to client, thus, concerning of losing their engagement, auditors' ability to endure client pressure decreases. Second, nature of consulting services requires auditors to adopt a managerial role that jeopardizes auditor's objectivity about the transactions audited (DeFond, Raghunandan, and Subramanyam, 2002). This view is included in International Federation of Accountants (IFAC) Code of Ethics (2005):

290.158...The provision of non- assurance services may, however, create threats to the independence of the firm, a network firm or the members of the assurance team, particularly with respect to perceived threats to independence...

The concern of regulators is that earning large non-audit fees may counterbalance the potential costs of losing auditor independence such as reputation loss and litigation costs. However, Simunic (1984) maintains that auditors providing non-audit services can create economic rents due to knowledge spillovers, i.e. auditors can develop

information during delivery of consulting services that produces economic rents by reducing auditing costs. This spillover may enable clients to buy services at lower rates if markets are assumed competitive enough to transfer some of cost saving to clients (Arrunada, 1999). IFAC Code of Ethics (2005) gives place to spillover affect as well:

290.158...The provision of such non- assurance services will often result in the assurance team obtaining information regarding the assurance client's business and operations that is helpful in relation to the assurance engagement. The greater the knowledge of the assurance client's business, the better the assurance team will understand the assurance client's procedures and controls, and the business and financial risks that it faces...

Most studies analyze the relation between non-audit service fees and evidence of earnings management. Particularly, they examine whether firms with higher non-audit fees are likely to have larger discretionary accruals or meet analysts' forecast. Albeit, the results appear saturated.

Chung and Kallapur (2001) use ratio of total of non-audit and audit client fees divided by total audit firm revenues as measures of client importance and examine the association with discretionary accruals. They do not find a statistically significant association in between.

Frankel, Johnson, and Nelson (2002) show evidence that non-audit fees have positive correlation with absolute discretionary accruals although audit fees are negatively correlated with the proxy. They also find a slightly significant negative association between non-audit fees and share values on the date the fees were announced. Reynolds, Deis, and Francis (2004) replicate results of Frankel et al. (2002) and find a significant positive association between level of non-audit fees and discretionary accruals.

Lennox (1999) theoretically discusses that the influence of non-audit fees on auditor's opinion in United Kingdom and finds that firms with higher non-audit fees are more likely to receive a qualified opinion. DeFond et al. (2002) make an extensive analysis based on a U.S. sample of 1158 financially distressed firms. They find no association between auditor's propensity to issue a going-concern report and the ratio of non-audit service fees to audit fees. Similarly, Geiger, and Rama (2003) search for the association between non-audit fees and auditor report modification decisions for financially distressed firms. They find a positive association between magnitude of audit fees and auditor's propensity to issue a going-concern modification but could not achieve a relation between non-audit fees and going-concern opinions.

Francis and Ke (2006) examine whether U.S. Securities and Exchange Commission (SEC)'s mandated disclosure of audit and non-audit service fees influence market's perception of auditor independence and earnings quality. Their evidence suggest that the market valuation of earnings surprises is likely to be lower for firms with higher non-audit fees compared to firms with lower non-audit fees.

Zhang and Emanuel (2008) analyze the association between non-audit services and conservatism. As a different angle of earnings quality, conservatism is conceptualized as adoption of accounting policies that borrow from future periods to increase current expenses. However, they find no significant association between higher non-audit fees and reduced earnings conservatism.

Krishnan, Lixin, and Zhang (2011) argue that the decrease in non-audit services after SEC's prohibition in 2003 can be examined to surface firms having likely impaired auditor independence in pre-SOX period. Using discretionary accruals in pre-SOX era, they find that discretionary accruals are positively

associated with reduced non-audit services, but only for upward earnings management.

Willoughby, Carmona, and Momparler (2012) examine the affect of provision of consulting services on audit reporting quality. They test the association between non-audit fees and audit reports and document that there is no statistical relation between non-audit fees and audit outcome, thus find no evidence for non-audit fees impair audit quality.

Audit Opinion

Financial reporting assumes the continuity of the reporting firm. Auditors consider firm's ability to continue as a going-concern. Under circumstances contrary to going-concern assumption, the auditor should consider issuing a going-concern opinion.

International Standard on Auditing – ISA 200 (2010) defines audit risk as:

13/c...The risk that the auditor expresses an inappropriate audit opinion when the financial statements are materially misstated. Audit risk is a function of the risks of material misstatement and detection risk.

Thus audit risk comprehends failure to issue an unqualified opinion in convenient settings. However, auditor's approach is influential to the amount and type of supporting evidence. As auditor reduces thresholds for materiality and acceptable audit risk, auditors more closely monitor firms' accounting choices and prevent aggressive practices (Payne, 2002).

Although modified reports represent a minor portion of total audit reports, a way assessing the audit quality is to determine if investors react to modified reports in a manner that they convey bad news about the firm. If there is high audit quality,

modified reports should communicate useful information; yet if there is low audit quality, then these reports should convey little informational value to investors (Francis, 2004).

Auditors can balance their risk exposure by keeping their threshold for issuing modifications, which increases number of modified reports but also decrease the risk of not issuing a modified report when required. Relatedly, Francis and Krishnan (1999) test if auditors of high-accrual firms in U.S. are likely to issue modified reports for asset realization uncertainties and going-concern problems. They find that firms with higher accruals are more likely to receive modified reports, and income-increasing discretionary accruals are more likely to receive modification than income-decreasing discretionary accruals. Using an experimental design, Davis and Ashton (2002) find that auditors are likely to adjust thresholds downward for more going-concern firms.

Reynold and Francis (2000) consider client size as a proxy to economic dependence that may lead auditors to compromise their opinions and report in favor of client as to continue their engagements. They find no evidence that economic dependence of auditor causes favorable reporting for larger clients. However, since larger clients bring high litigation risk, they find that Big auditors are associated with more conservative reporting, thus auditor behavior is dominated by reputation protection. In contrast, Barbadillo, Aguilar, Barbera, and Benau (2004) find that larger size clients are less likely to receive going-concern opinion while Big auditors are more likely to issue going-concern opinion.

Chen and Church (1996) evidence that market reacts to bankruptcy announcement less negatively if the auditor has previously delivered a going-concern opinion, implying that bankruptcy is not a surprise for investors. Francis and

Krishnan (2002) find that on average six out of seven going concern reports are reports for firms that do not subsequently fail or become financially distressed. This suggests that auditors may not be prudent enough for issuing going-concern reports.

Whereas DeFond et al. (2002) find no association between non-audit services and issuance of going-concern reports, Weber and Willenborg (2003) analyze audit reports related to IPO events and find that 25 percent of microcap IPOs under \$10 million receive a modified opinion, thus pre-IPO audit reports have a anticipating capacity related to stock returns and delistings.

Auditor's Litigation Risk

Simunic and Stein (1996) summarize auditor's cost into two components: (1) Resource cost which is associated with auditor effort and (2) potential future loss. Potential future loss includes likelihood of litigation, the possibility that auditor actions could be taken to court, and this line of research associated direction of earnings with litigation component of potential future loss.

Lys and Watts (1994) find that incidence of lawsuits against auditors increases in parallel to receipt of modified audit opinions. Their proposition is that modified audit opinions reflect past and present negative financial information thus causes lawsuits. Using a sample of 655 U.S. bankrupt firms, Carcello and Palmrose (1994) evidence that auditors not issuing a going concern report before firm bankruptcy are sued more often, 64% versus 36%, and have lower case dismissal rates.

Francis and Krishnan (2002) argue that the threat of private litigation lead auditor to more conservatism in issuing audit reports, thus as the litigation risk

increases, the propensity of auditor to issue a going-concern opinion increases.

Houston, Peters, and Pratt (1999) use an experimental design to examine the circumstances that affect auditor's perception of litigation risk. They find that accounting choices marking presence of accounting irregularities lead higher litigation perception and fee premiums. Even more they suggest that, in explaining auditor planning behavior, litigation risk is observed as dominating inherent risk assessments of the audit risk model. Consistently, Barron, Pratt, and Stice (2001) document that auditor assessment of litigation risk and planned audit effort increases much more for potential errors overstating financial performance than errors understating. The association becomes stronger if the client industry has a higher litigation risk.

As the likelihood of auditors of firms having abnormal accruals to be sued increases, a positive association between discretionary accruals and auditor litigation risk could be expected. On the other hand, if auditors encounter higher potential litigation risk, they may be less tolerable to demands of their clients for earnings management, suggesting a negative association between litigation risk and discretionary accruals.

In this respect, Heninger (2001) study the relation between earnings management and auditor litigation and evidence that probability of auditor litigation increases as clients have more income-increasing discretionary accruals. He argues that investors hold auditors responsible for earnings management activities carried by the clients. Relatedly, Lee and Mande (2003) investigates impact of Private Securities Reform Act of 1995 (PSLRA), which reduces litigation risk, on earnings management and find that income-increasing discretionary accruals have increased in post-PSLRA period. Supporting, Palmrose, and Scholz (2004) find a significant

association between restatements and litigation, specifically for core restatement that stem from misstatements of revenue.

Abbott, Parker, and Peters (2006) associate downward (upward) earnings management risk, measured by income-decreasing (increasing) discretionary accruals, with lower (higher) audit fees. Their results are consistent with auditor conservatism argument that income-increasing discretionary accruals bring forth higher potential litigation costs than income-decreasing discretionary accruals.

Boone et al. (2011) suggest that firm-specific litigation risk influence auditors' consideration of client demands for earnings management, thus as the auditor litigation risk increases, the resistance and restrictions of auditors are more likely to increase. Consistent with prior studies, they conclude that PSLRA has reduced the firm-specific litigation risk.

Firm-related Characteristics

Studies that concentrate on firm performance examines whether firms having weak performances carry out accounting tricks to enhance their earnings, thereby reducing their earnings quality. Particularly, poor performance is found to cater motivations to implement earnings management and studies suggest that when earnings are poor and estimated future profits are good; managers shift some of future earnings to use in current period. When future estimations are poor and current earnings are good, then managers apart some of current earnings to utilize in future periods (Petroni, 1992; Defond & Park, 1997; Keating & Zimmerman, 1999; Doyle, Ge & McVay, 2007).

Table 1. Literature Review of Audit-related Factors' Influence

Prior Studies	Independent Variables	Dependent Variables	Conclusions
Simunic, D. A. (1980)	Firm size, number of subsidiaries, industry dummy, foreign assets to total assets, accounts receivable to total assets, inventory to total assets ratio, return on assets, negative earnings, auditor opinion	Audit fee divided by assets	Compared to audit of other auditors, Big auditors are found to include a 20 percent premium after controlling for firm specific characteristics such as firm size, complexity.
DeAngelo, L. E. (1981)	Auditor Firm Size, significance of client.	Audit Quality as the joint probability that the auditor detect and report the noncompliance in financial data of the client.	Audit quality is not independent of auditor firm size if specific quasi-rents are earned by the auditor. A positive association is found between the size of the auditor and fee independency to client.
Uecker, W. C., Brief, A. P., & Kinney, W. R. (1981)	Aggressiveness of external/internal auditor, manipulated as being in position of directly reporting to board of directors.	Allowance for doubtful accounts	Results of experiments show that aggressiveness of the internal and external auditor are found to not affect corporate irregularities.
Simunic, D. A. (1984)	Audit fee, non-audit fee, internal audit costs, fee dependency to client, firm size, number of subsidiaries, foreign assets ratio, accounts receivable to total assets, inventories to total assets	Audit fee divided by total assets	Audit fees of clients with non-audit services are higher than audit fees of only audit service client.
Palmrose, Z. (1988)	Auditor size	Number of all cases and public company cases against auditor, number of dismissed and payment cases	Less frequent cases are filled against Big auditors and Big auditors are less frequently sanctioned after controlling for client size.
Jones, J. J. (1991)	Import relief investigation versus no investigation, ITC decision, relief granted, change in income, industry dummies	Discretionary accruals	Managers are more likely to manager earnings during import relief investigations.
DeFond, M. L. (1992)	Management ownership, leverage, total accruals, firm growth, equity issuance	Auditor choice	The association between audit quality and agency conflicts is found to be sensitive to both time period over changes in agency conflicts.
Firth, M. & Smith, A. (1992)	Firm size, cash raised via equity issuance, leverage, stock market experience, oil industry or not, underwriter size, underpricing	Auditor choice measured by auditor size	The level of underpricing can not be associated with auditor size.
Teoh, S. H. & Wong, T. J. (1993)	Market-to-book value, beta of the firm, firm size, number of analysts' forecast	Cumulative abnormal return continuously compounded between forecast date and the earnings date.	Earnings response coefficients of big 8 clients are evidenced to be higher than non big 8 clients.
Carcello, J. V. & Palmrose, Z. (1994)	Existence of modification ZFC/Sinkey index, financial reporting irregularity, persistence of modified opinion, firm size, bank vs. non-bank	Existence of auditor litigation	Using a sample of 655 U.S. bankrupt firms, they evidence that auditors not issuing a going concern report before firm bankruptcy are sued more often, 64% versus 36, and have lower case dismissal rates.

Table 1 (Continued)

Prior Studies	Independent Variables	Dependent Variables	Conclusions
Hirst, D. E. (1994)	Market-buy-out-induced compensation incentives of managers, bonus induced compensation incentives of managers	Auditors' judgments of the probability that a misstatement exists.	As results of experiments on two manipulated variables, auditors show higher alertness of misstatement when cases include market-buy-out and bonus incentives.
Lys, T. & Watts, R. (1994)	Probability of bankruptcy, stock returns, probability of acquisition, total accruals, firm size, auditor opinion, auditor's fee dependency to client	Litigious firm vs. non-litigious firm	Incidence of lawsuits against auditors increases in parallel to receipt of modified audit opinions.
Chen, K. C. W. & Church, B. K. (1996)	Probability of bankruptcy, size-adjusted cumulative excess return, accumulation of three-day excess returns surrounding disclosure, going-concern opinion	Size-adjusted window cumulative excess return	Market reacts to bankruptcy announcement less negatively if the auditor has previously delivered a going-concern opinion.
Kwon, S. (1996)	Big auditor client concentration in industries, fee dependency to industry, big auditor concentration in industries, regulated vs. non regulated industry	Dispersion of number of client firms for an industry, ratio of number of client to the number of audit firms in each industry	As the client's industry become less concentrated, clients preference to hire auditors of their competitors decreases.
Simunic, D. A. & Stein, M. T. (1996)	Firm size, foreign assets to total assets ratio, operational complexity, number of separate audit reports, leverage, inherent risk	Audit fee, auditor hours	Increased litigation is likely to cause clients to switch from high quality auditors to low quality auditors.
Hogan, C. E. (1997)	Carter and Manaster underwriter ranking, firm size, total offering value, high-litigation industry	Auditor size	The client-specific risk on total costs is found to be conjointly varying across auditor groups, and underpricing and auditor fee is shown to differentiate among auditor and client groups.
Becker, C. L., DeFond, M. L., Jiambalvo, J., & Subramanyam, K. R. (1998)	Auditor size, operating cash flow, firm size, leverage, absolute value of total accruals, equity issue, equity buy back, auditor tenure	Absolute/Signed discretionary accruals	Absolute value of discretionary accruals for non big 6 clients are higher than big 6 clients. Non big 6 clients also reports higher income increasing discretionary accruals.
DeFond, M. L. & Subramanyam, K. R. (1998)	Absolute/Signed operating cash flow, auditor rotation, last/first year of the auditor, firm growth, first year of the auditor, share issuance, acquisition expenditures divided by total assets.	Discretionary accruals	Income increasing discretionary accruals are higher in last year before auditor rotation whereas insignificant initial year after the rotation. They are also more common in firms with higher litigation risk.
Arrunada, B. (1999)	No statistical technique to discover relationship between variables.		Non-audit services are likely to reduce total costs and do not jeopardize auditor independence and audit quality.

Table 1 (Continued)

Prior Studies	Independent Variables	Dependent Variables	Conclusions
Francis, J. R., Krishnan, J. (1999)	High and low Positive net accruals, high and low negative net accruals, high gross accruals	Probability to receive modified audit opinion	Firms with higher accruals are more likely to receive modified reports, and income-increasing discretionary accruals are more likely to receive modification than income-decreasing discretionary accruals.
Francis, J. R., Maydew, E. L., & Sparks, H. C. (1999)	Operating cycle, capital intensity, auditor tenure, firm size, leverage, price/earnings ratio, share issuance, industry regulation, financial distress	Auditor choice, discretionary accruals	Firms with greater accruals are more likely to hire big 6 auditors to provide assurance that financial reporting is credible. Big 6 clients are found to have lower discretionary accruals compared to clients of other auditors.
Houston, R. W., Peters, M. F., & Pratt, J. H. (1999)	Change in business risk, change in materiality, change in inherent risk, change in control risk	Change in audit investment, change in audit fee	Accounting choices marking presence of accounting irregularities lead higher litigation perception and fee premiums.
Lennox, C. S. (1999)	No statistical technique to discover relationship between variables.		He theoretically discusses that clients with higher non-audit fees are more likely to receive a qualified opinion.
Solomon, I., Shields, M. D., & Whittington, O. R. (1999)	Auditor experience, auditor training	Plausible error and non-error explanations	Results of the experiments show that industry specialist knowledge and experience are negatively associated with non-error knowledge.
Willenborg, M. (1999)	Firm size, inventory to total assets, receivables to total assets, number of subsidiaries, existence of foreign subsidiaries, auditor opinion, IPO gross proceeds	Audit fee for IPO process	Transaction size is likely to explain auditor compensation for both star-up and established firms.
Davis, L. R., Soo, B., & Trompeter, G. (2000)	Auditor tenure, auditor opinion, auditor size, absolute value of total accruals, cash flow from operations, auditor rotation	Absolute/signed discretionary accruals	Auditor tenure and absolute discretionary accruals are found to be negatively associated.
DeFond, M. L., Francis, J. R., & Wong, T. J. (2000)	Natural log of total assets, square root of subsidiaries, proportion of foreign subsidiaries, current assets to total assets, quick ratio	Natural log of total audit fees	Big 6 auditors are more likely to have audit fee premiums for both brand reputation and industry specialization.
Bannister, J. W. & Wiest, D. N. (2001)	Pre and Post-enforcement periods	Discretionary accruals	They find evidence that firms have more decreasing accruals during the period that their auditor is under investigation to a SEC enforcement.
Barron, O., Pratt, J., & Stice, J. D. (2001)	Litigation risk in the client's industry, initial auditor misstatement risk assessment, initial planned audit investment, final auditor litigation risk assessment.	Final planned audit investment	Auditor assessment of litigation risk and planned audit effort increases much more for potential errors overstating financial performance than errors understating. The association becomes stronger if the client industry has a higher litigation risk.

Table 1 (Continued)

Prior Studies	Independent Variables	Dependent Variables	Conclusions
Chung, H & Kallapur, S. (2001)	Firm size, current and prior operating cash flow, current and prior total accruals, return on assets, existence of acquisition, equity issuance, auditor tenure, fee dependency ratios	Absolute/Signed discretionary accruals	No significant association between discretionary accruals and non-audit fees to audit fees ratio.
Heninger, W. G. (2001)	Discretionary accruals, auditor size, fee dependency to client, auditor tenure, financial distress (Zmijewski score), firm size, firm growth	Litigation (auditor's name in lawsuit or not)	Probability of auditor litigation increases as clients have more income-increasing discretionary accruals.
Davis, E. B. & Ashton, R. H. (2002)	Cost of misclassifying a non-going concern, cost of misclassifying a going-concern	Not continuing going-concern opinion	As results of experiments, auditors are likely to adjust materiality thresholds downward for more going-concern firms.
Elder, R. & Zhou, J. (2002)	Auditor size, industry specialization, market-to-book ratio, firm size, absolute value of total accruals, capital intensity	Discretionary accruals	Clients of big 5 and industry specialist auditors are negatively associated with earnings management in IPO process.
Francis, J. R. & Krishnan, J. (2002)	Firm size, firm growth, financial distress (Zmijewski score), auditor tenure, total accruals, industry dummy	Going concern opinion	On average six out of seven going concern reports are reports for firms that do not subsequently fail or become financially distressed. This suggests that auditor may be inadequately prudent to issue going-concern reports.
Frankel, R. M., Johnson, M. F., & Nelson, K. K. (2002)	Auditor size, auditor tenure, operating cash flow, absolute operating cash flow, absolute value of total accruals, leverage, litigation risk, market-to-book ratio, firm size, institutional ownership, financial distress	Absolute/signed discretionary accruals	Non-audit fees are positively associated with magnitude of discretionary accruals whereas audit fees are negatively associated with accrual quality.
Johnson, V. E., Khurana, I. K., & Reynolds, J. K. (2002)	Operating cash flow, firm size, leverage, financial distress (Altman Z score), firm age, auditor tenure	Absolute discretionary accruals	For auditor tenure, short tenures of 2 to 3 years are associated with lower audit quality while no association is found for long tenures of over 9 years.
Geiger, M. A. & Raghunandan, K. (2002)	Firm size, financial distress (Hopwood model), default vs non default firm, lag between report and bankruptcy date, auditor tenure	Going concern audit opinion	Audit reporting failures likely to exist in the early years of the engagement compared to later years of the engagement.
Ireland, J. C. & Lennox, C. S. (2002)	Firm size, sales turnover, number of subsidiaries, negative earnings, special fiscal year, nonexecutive to executive directors ratio in board, influential director affiliation with large audit firm	Auditor choice	Big auditors are more likely to attract high quality clients compared to non Big auditors

Table 1 (Continued)

Prior Studies	Independent Variables	Dependent Variables	Conclusions
Nelson, M.W., Elliott, J. A., & Tarpley, R. L. (2002)	precise vs. non-precise standard, structured vs. non-structured transaction, material vs. non-material, firm size	Auditor adjustment decision	Big auditors are documented to detect income-increasing earnings management of firms are require them to make proper adjustments.
Payne, J. L. (2002)	Auditor size, auditor opinion, prior year discretionary accrual, operating cash flow, firm size, negative earning	Absolute/signed discretionary accruals, total accruals	The level of total and discretionary accruals for financial statements with going-concern opinion is not significantly associated with auditor size.
Balsam, S., Krishnan, J., & Yang, J. S. (2003)	Being, Industry specialist, auditor's market share in industry, number of clients in industry, absolute value of total accruals,	Absolute discretionary accruals	Clients of industry specialist auditors have lower discretionary accruals than clients of non-specialist auditors.
Geiger, M. A. & Dasaratha V. R. (2003)	Firm size, probability of bankruptcy (Hopwood model), firm in default, debt issuance, equity issuance, cost reduction program, asset sale, strong audit committee, auditor size, audit fee, non-audit fee	Going concern opinion	A positive association is found between magnitude of audit fees and auditor's propensity to issue a going-concern modification but could not achieve a relation between non-audit fees and going-concern opinions.
Gul, A. F., Chen, C. J. P., & Tsui, J. S. L. (2003)	Discretionary accruals, leverage, number of subsidiaries, current ratio, auditor opinion, percentage of managerial ownership	Audit fee	Discretionary accruals and audit fees are positively associated and this association weakens if managerial ownership exists.
Kim, J., Chung, R., & Firth, M. (2003)	Leverage, firm size, operating cash flow, share issuance, share buyback, auditor tenure, discretionary accruals in prior year.	Discretionary accruals	Big 6 auditors are more (less) effective in restricting income-increasing (decreasing) manipulations.
Krishnan, G. V. (2003a)	Operating cash flow, non-discretionary accruals, discretionary accruals, and auditor size.	Stock return calculated over a 12-month period ending there months after the fiscal year end.	Clients of big 6 auditors have higher association between discretionary accruals and stock returns.
Krishnan, G. V. (2003b)	Firm size, leverage, absolute value of total accruals, auditor rotation, market-to-book value, earnings persistence, financial distress, industry specialization	Absolute discretionary accruals	Clients of specialist auditors are found to be report less absolute discretionary accruals.
Lee, H. Y. & Mande, V. (2003)	Auditor size, auditor tenure, auditor exposure, firm size, change in net income, firm growth, financial distress (Altman Z-score) negative earnings	Absolute/Signed discretionary accruals	The impact of Private Securities Reform Act of 1995 (PSLRA), which reduces litigation risk, on earnings management is investigated and concluded that income-increasing discretionary accruals have increased in post-PSLRA period.

Table 1 (Continued)

Prior Studies	Independent Variables	Dependent Variables	Conclusions
Mayhew, B. W. & Wilkins, M. S. (2003)	Firm size, issue size, leverage, one-year post-IPO standard deviation of stock returns, number of foreign subsidiaries, underwriter size, high-growth IPO industry, industry share of auditor, industry leadership of auditor	Audit fee for IPO process	As audit firm industry market share increases without differentiation in market shares, the audit fee for IPOs decreases.
Myers, J. N., Myers, L. A., & Omer, T. C. (2003)	Auditor tenure, capital market experience, firm size, industry growth, operating cash flow, auditor size, industry dummy, year dummy	Absolute/Signed discretionary accruals	There appears no association between discretionary accruals and short audit firm tenure and evidence that discretionary accruals slightly decrease as audit firm tenure increases, thus audit quality has a positive association with audit firm tenure.
Myers, J. N., Myers, L. A., Palmrose, Z., & Scholz, S. (2003)	Auditor tenure, capital market experience, firm size, leverage, positive earnings, existence of mergers, the first year of misstated financial data.	Restatement vs. otherwise	Restatements that offset increased core earnings are more likely to occur in long auditor-client relationships whereas restatements offsetting non-core earnings are likely occur rarely as audit firm tenure lengthens.
Weber, J. & Willenborg, M. (2003)	Development stage enterprise, pre-IPO firm size, existence of foreign subsidiaries, liquidity ratio, number of IPO risk factors, number of proceeds, underwriter rank	Auditor size	25 percent of microcap IPOs under \$10 million receive a modified opinion, thus pre-IPO audit reports have a anticipating capacity related to stock returns and delistings.
Barbadillo, E. R., Aguilar, N. G., Barbera, C., & Benau, M. A. G. (2004)	Auditor tenure, auditor specialization, client size, auditor size, financial distress (Zmijewski score), litigation	Type of audit opinion	Clients of larger auditors are more likely to receive going-concern opinion. Larger firms are less likely to receive going-concern opinion.
Carcello, J. V. & Nagy, A. L. (2004)	Auditor tenure, firm size, financial distress (Zmijewski score), firm SEC experience, mark-to-book ratio, auditor size, outsider proportion in board, number of directors in board	Fraudulent reporting expressed as whether company is charged by SEC for fraud or not.	Shorter auditor tenure has a positive relationship with fraudulent financial reporting.
Dunn, K. A. & Mayhew, B. W. (2004)	Market value, earnings-return correlation, standard deviation of returns, auditor specialization	AIMR score	A positive association exists between industry-specialist auditor and accrual quality of their clients in unregulated industries, but no relation for clients in unregulated industries.
Larcker, D. F. & Richardson, S. A. (2004)	Auditor's audit fee dependence to the client, auditor's non audit fee dependence to the client	Absolute/positive/negative discretionary accruals	Ratio of non-audit fees to total fees has a positive association with absolute discretionary accruals. Level of audit/non audit fees has a negative association with accruals.

Table 1 (Continued)

Prior Studies	Independent Variables	Dependent Variables	Conclusions
Mansi, S. A., Maxwell, W. F., & Miller, D. P. (2004)	Auditor tenure, capital market experience, credit rating of the firm, return on assets, leverage, interest coverage ratio, existence of bank debt	Credit spread	Audit firm tenure is negatively associated with cost of debt financing. They suggest that role of audits in terms of assurance and communicating financial information is influential to cost of debt.
Palmrose, Z. & Scholz, S. (2004)	Number of core accounting issues, existence of fraud/irregularities, change in income, firm size, bankrupt or delisted, IPO, sales growth, auditor size	Litigious firm vs. non-litigious firm, litigious auditor vs. non-litigious auditor	A significant association is found between restatements and litigation, specifically for core restatement that stem from misstatements of revenue.
Chi, W. & Huang, H. (2005)	Auditor size, auditor tenure, equity issuance, capital market experience, firm size, industry and year dummies.	Discretionary accruals	Discretionary accruals are negatively associated with audit partner tenure and audit firm tenure. Familiarity with clients improve audit quality, albeit, the association reverse turns for tenures over five years, meaning that excessive familiarity creates lower audit quality.
Francis, J. R., Reichelt, K., & Wang, D. (2005)	Firm size, number of business segments, current ratio, quick ratio, leverage, return on assets, proportion of foreign sales, audit opinion, negative earnings, industry and city leadership, industry leadership, city leadership	Natural log of audit fees	There appears a 19 percent fee premium for auditors that are both national and city-level industry leader. 50 percent of fees belong to industry leader auditors whereas 22 percent of fees belong to industry second. However, no premium is found for national industry leader auditors that are not city-level industry leader.
Ghosh, A. & Moon, D. (2005)	Auditor tenure, capital market experience, cumulative market-adjusted returns, return on market equity, S&P stock/debt ranking, one-year ahead EPS forecast	Earnings response coefficient	A positive relation exists between investor perceptions of earnings quality and audit firm tenure, additionally, reported earnings more strongly influence stock rankings as audit firm tenure increases.
Hamilton, J., Ruddock, C., Stokes, D., & Taylor, S. (2005)	Partner switch, operating cash flow, market value of equity, leverage, equity issuance, existence of merger, market-to-book ratio, block ownership, total accruals	Absolute/Signed discretionary accruals	Audit partner rotation in Australia find that partner switches are negatively associated with signed discretionary accruals. However, switching from Big to non Big audit partner is positively associated with upward discretionary accruals.
Krishnan, J. (2005)	Audit committee variables, SEC sanction, industry specialization ratio, auditor tenure, auditor size, internal audit function, proportion of outsider in board, firm size, firm growth, equity issuance, negative earnings	Internal weakness disclosures	Industry specialist auditors are more likely to be timely in reflecting bad news compared to non-specialist auditors.
Beck, P. J. & Wu, M. G. H. (2006)	Number of clients with correlated risk, firm size, auditor size	Existence of correlated judgmental errors	When auditors engage multiple clients with correlated business risk, potential of correlated judgmental errors increases.

Table 1 (Continued)

Prior Studies	Independent Variables	Dependent Variables	Conclusions
Carey, P. & Simnett, R. (2006)	Auditor tenure, financial distress (Zmijewski score), firm size, stock market experience, negative earnings, auditor size, non-audit fees to audit fee ratio, operating cash flow, mining industry vs. non-mining industry.	Auditor opinion	Lower propensity to issue going-concern reports and beating of earnings forecast are found for longer audit partner tenures. However, long audit partner tenure is found to be not associated with discretionary accruals.
Francis, J. R. & Ke, B. (2006)	Ratio of non-audit fees to total fees, absolute value of quarterly accruals, standard deviation of 90-day stock prices, financial distress, restructure, leverage, growth forecast, market value	Earnings response coefficient	Earnings response coefficients are significantly lower for firms with high levels of non-audit fees.
Abbott, L. J., Parker, S., & Peters, G. F. (2006)	Discretionary accruals, price-earnings ratio, firm size, number of subsidiaries, number of foreign subsidiaries, inventory, accounts receivables, negative earnings, leverage	Natural log of audit fees	Positive discretionary accruals are associated with higher audit fees.
Sirinidhi, B. & Gul, F. (2007)	Firm size, operating cycle, sales volatility, negative earnings, log of total fees, log of audit fee, log of non-audit fee.	Discretionary accruals	Accrual quality is negatively associated with the magnitude of non-audit fees, but positively associated with magnitude of audit fees.
Behn, B. K., Choi, J., & Kang, T. (2008)	Auditor size, industry specialization, firm size, change in earnings, financial distress (Zmijewski score), forecast-announcement lag, earnings volatility	Dispersion of analysts' forecast	Clients of big 5 auditors and industry specialist non big 5 auditors are associated with better analysts' forecasting performance.
Caramanis, C. & Lennox, C. (2008)	Audit hours, firm size, auditor size, current ratio, leverage, auditor tenure, auditor switch, public/private firm	Absolute/positive/negative discretionary accruals	As audit hours per firm-year decreases, positive accruals are found to be larger than negative accruals and firms are more likely to engage in accrual increasing actions.
Chen, C., Lin, C., & Lin, Y. (2008)	Auditor size, partner tenure, firm size, firma age, operating cash flow, growth over sales	Absolute/positive/negative discretionary accruals	Absolute and positive discretionary accruals decrease as partner tenure increases.
Dao, M., Mishra, S., & Raghunandan, K. (2008)	Firm size, insider ownership, block ownership, institutional ownership, return on assets, CEO-president same person, one year common stock return, ratio of non-audit fees to audit fees, director vote, auditor size, auditor tenure	Natural logarithm of the percent of votes against or abstaining from auditor ratification	Shareholders votes against auditor ratification are positively associated with audit firm tenure which supports the view that long audit firm tenure jeopardizes audit quality.
Francis, J. R. & Wang, D. (2008)	Auditor size, investor protection proxies, firm size, operating cash flow, leverage, firm growth in sales, change in PPE	Signed discretionary accruals	Accrual quality is greater as investor protection betters, but only for big 4 clients.
Manry, D. L., Mock, T. J., & Turner, J. L. (2008)	Partner tenure, firm size, firm growth, operating cash flow, leverage, return on assets, total audit hours, pre-audit engagement risk	Signed discretionary accruals	Discretionary accruals are negatively associated with partner tenure, thus audit quality is found to increase with longer partner tenure. Albeit this association is not significant for large clients.

Table 1 (Continued)

Prior Studies	Independent Variables	Dependent Variables	Conclusions
Venkataraman, R. V., Weber, J., & Willenborg, M. (2008)	No statistical technique to discover relationship between variables.		Accuracy of pre-IPO reports of Big 4 and large national auditors are likely to have more predictive accuracy compared to smaller size auditors
Weber, J., Willenborg, M., & Zhang, J. (2008)	Financial distress (Zmijewski score), market-to-book ratio, USGAAP vs IAS adopter, auditor switch, firm size, accounts receivable to total assets ratio, number of subsidiaries, number of foreign subsidiaries	Weighted portfolio return	After ComROAD scandal, KPMG's clients have negative abnormal returns and number of KPMG clients decreased.
Zhang, B. & Emanuel, D. (2008)	Annuals stock return, non-audit fee level, auditor size, firm size, leverage	Net income after tax	There appears no significant association between higher non-audit fees and reduced earnings conservatism. Conservatism is conceptualized as adoption of accounting policies that barrow from future periods to increase current expenses.
Boone, J. P., Khurana, I. K., & Raman, K. K. (2010)	Auditor tenure, firm size, leverage, capital market experience, financial distress (Zmijewski score), market adjusted stock return, negative earnings, operating cash flow, non audit to audit fee ratio, issuance of going-concern report	Big 4 vs. Non Big 4 auditors	Big 4 auditors are more likely to issue going-concern report to distressed companies.
Ho, L. J., Liu, C., & Schaefer, T. (2010)	Sign of discretionary accruals, difference of actual and estimated earnings forecast, auditor tenure, institutional ownership, market-to-book value, durable industry, labor intensity, R&D intensity, firm size, auditor size	Signed discretionary accruals	As auditor tenure increases, discretionary accruals decreases, thus audit quality increases with auditor tenure.
Reichelt, K. J. & Wang, D. (2010)	Firm size, operating cash flow, leverage, negative earnings, market-to-book ratio, litigious industry, financial distress (Altman Z score), auditor tenure, prior total accruals, auditor size, national industry leader, city industry leader	Absolute discretionary accruals	National and city-specific industry specialists are associated with lower discretionary accruals, implying that national and city-specific industry specialists deliver higher quality audit services.
Boone, J. P., Khurana, I. K., Raman, & K. K. (2011)	Post vs. pre-PSLRA period, financial distress (Zmijewski score), firm growth, leverage, inventory, accounts receivable, current ratio	Litigation Risk	As the auditor litigation risk increases, the resistance and restrictions of auditors are more likely to increase. Consistent with prior studies, they conclude that PSLRA has reduced the firm-specific litigation risk.
Chi, H. & Chin, C. (2011)	Firm size, leverage, capital market experience, operating cash flow, prior total accruals, auditor tenure, industry specialization	Absolute discretionary accruals	Lower discretionary accruals for clients of auditors that are audit firm-level and individual partner-level industry specialist.
Krishnan, J., Su, L., & Zhang, Y. (2011)	Change in non-audit fee, pre-SOX vs. post-SOX period, auditor size, auditor tenure, firm size, leverage, operating cash flow, firm growth, market-to-book ratio, litigation of auditor, existence of merger, equity issuance, debt issuance	Absolute/Signed discretionary accruals	Discretionary accruals are positively associated with reduced non-audit services, but only for upward earnings management.

Table 1 (Continued)

Prior Studies	Independent Variables	Dependent Variables	Conclusions
Jaggi, B., Gul, F. A., & Lau, T. S. C. (2012)	Industry specialist auditor, legal enforcement index, electoral system, market-to-book ratio, auditor size, leverage, earnings persistence, negative earning, total accruals, firm size, industry dummy	Absolute discretionary accruals	Earning quality is positively associated with industry specialist auditors in countries with the proportional electoral system that represents weaker investor protection.
Willoughby, M., Carmona, P., & Momparler, A. (2012)	Non-audit fee to total fee ratio, current assets to total assets ratio, leverage, income before interest and taxes, negative earnings, auditor size, prior year auditor opinion	Auditor opinion	There appears no statistical relation between non-audit fees and audit outcome, thus find no evidence for non-audit fees impair audit quality.

On the other hand DeAngelo, DeAngelo, and Skinner (1994) argue that weakly performing firms have limited chance to manage earnings and Francis et al. (1996) do not reach any connection between firm performance and write-offs. They view their results as the outcome of managers' real choices rather than accrual distortions.

Bowan, Noreen, and Lacey (1981) defend the fact that highly levered firms may easily encounter debt covenant restriction enforcing their managers to manage their earnings upward as to avert this risk. Many other studies show leverage levels are associated with several proxies of earnings management such as accounting choices (Balsam et al., 1998; Sweeney, 1994) and abnormal accruals (DeFond & Jiambalvo, 1994) albeit DeAngelo et al. (1994) suggest insignificant difference between accruals of firms with different leverage levels.

However, whether the lower quality of earnings stems from debt covenant restrictions or from other incitements such as financial distress, bankruptcy risk and refinancing concerns is a continual question (Skinner, 1993). Although studies employing proxies for covenant restrictions mention that managers do accounting choices to prevent closing of covenants, earnings quality, it is difficult to clearly manifest that they jeopardize earnings quality.

Firm growth and earnings quality is examined on several measurements by different studies. Growth decreases earnings and accounting rates of return, increases unrecorded reserves. Penman and Zhang (2002) argue that firms slowing investment create earnings and higher rates of return by releasing these reserves, and if there is temporary change in investment, then the impact on earnings and rates of return is temporary, making accruals less qualified. In their study high growth firms on basis of sales or plant, property and equipment (PPE) growth are found to have lower earnings quality.

Myers, Myers, and Omer (2003), Fairfield, Whisenant, and Yohn (2003) and Bauwhede, Willekens, and Gaeremynck (2003) remonstrate that increased investment might cause diminishing marginal returns for the reason that sustaining same prices become arduous for expanding industries, resulting price drops thus causing drops in profit margins as well. They argue that the change in PPE has negative impact in earnings persistence and explain this as growth contributes lower earnings quality.²

Moreover, as Dechow et al (2010) annotates that diminishing returns can not be solely related to growth as there can be some other reasons causing decline in returns: (1) A decrease in sales prices (the foregoing argument), (2) an increase in costs that weakens the margins, or (3) a decrease in efficiency that consequently changes the margins.

In parallel with Dechow et al. (2010); Richardson, Sloan, Soliman, and Tuna (2006) underpin the argument by stating that the growth will lead to higher sales if investment growth is indicated by accruals. They suggest that if accruals incline with no alteration in sales, this situation would explain that increase in accruals are by cause of decrease in efficiency stemming from accounting distortions. The diminishing returns story expresses an association between sales growth and accrual increases, but does not imply an association between efficiency decreases and accrual increases. They evidenced that high growth firms with diminishing returns for their products do not essentially go the route of lower earnings persistence, though it can still terminate to decrease in earnings quality.

² Although diminishing returns is explained at industry level, Myers and Omer (2003) Fairfield et al. (2003a) and Bauwhede, Willekens, and Gaeremynck (2003) measure growth at firm level which entails firm-level growth to be strongly correlated with industry growth or the firm to be predominant in the industry. Yet there are other studies measure firm-level growth in scale with industry-level growth as to respond this limitation (Young et al., 1998; Richardson, Sloan, Soliman, & Tuna, 2006).

Additionally, the relative complexity of growing firms' operating environment reflected generally by high sales growth and merger and acquisition activities may encumber them in sustaining sufficient internal control activities. Thus the negative association between growth and earnings quality is supported by studies using other proxies for earnings management such as internal control weaknesses (Doyle et al., 2007; Ashbaugh-Skaife, Collins, & Kinney, 2007) and earnings management opportunities (Richardson, Sloan, Soliman, & Tuna, 2005). Notwithstanding; using restated amounts as a proxy, Lee, Li, and Yue (2006) do not provide support for the negative association between growth and earnings management.

It might be useful at this point to emphasize that lower earnings persistence does not denote accruals are unusable. The findings imply that earnings will have lower persistence when they consist essentially of accruals rather than cash flows. Arguing accruals do not enhance earnings quality does not necessarily mean that accruals are not useful. Compared to cash flows, earnings are found to be less volatile and more consistently associated with stock returns (Dechow, 1994; Barth, Beaver, & Landsman 2001). Thus with the potential of lowering earnings persistence, accruals can contextually improve the usefulness of earnings. Albeit growth and discretionary adjustments affect accruals' relation to persistence, accrual changes can be useful for decision makers.

Studies on the linkage between firm size and earnings quality bring forth different suggestions. A negative association between firm size and earnings quality is suggested by early researches for the reason that larger firms are more prone to regulatory audit thus would choose income-decreasing methods (Watts and Zimmerman, 1990). Another line suggests that large firms faces higher pressures to

beat analysts' forecast thus engage more frequently in income-increasing earnings management (Barton & Simko, 2002; Myers, Myers, & Skinner, 2006). On the other hand Moses (1987) and Young (1998) found that income-smoothing accounting method changes are negatively associated with firm size and market share whereas recent studies predict a positive linkage between firm size and earnings quality since larger firms have better corporate and financial opportunities to execute sufficient internal control procedures over financial reporting. Small firms are more prone to internal control weaknesses and are more likely to restate their previous earnings (Ashbaugh-Skaife et al., 2007; Doyle et al., 2007; Ge and McVay, 2005).

If earnings management is apparent to decision maker and they can induce that income-increasing distortions are applied to meet some certain objectives (e.g. preventing debt covenant restrictions), usefulness of earnings is not jeopardized from the angle of decision maker who identifies it. At this point, Shivakumar (2000) studied on whether decision makers are able to infer corporate motivations for earnings management and include it into their pricing decisions and finds that investors identify rational earnings management and see it as a result of debt contracting. However, this finding is only for debt related concern which is the most studied and documented motivation for earnings management, and possibly the most apparent to decision makers.

Finally, the managers' ability to manage earnings may vary on the mix of current and noncurrent assets. Large current assets provide firms greater ability to manage earnings through working capital than firms with low current assets, i.e. capital intensity is negatively associated with discretionary accruals. Firms with higher capital intensity are evidenced to have less discretionary accruals (Francis et al, 1999; Elder & Zhou, 2002; Gul et al., 2003; Ashbaugh-Skaife et al., 2008).

Financial Reporting Practices

Studies have been done on interim reporting and financial statement classification has been done to assess the impact of financial reporting practices on earnings quality. Harris and Shi (2011) and Brown and Pinello (2007) evidenced that firms elapse throughout the quarterly periods, which influence the quality of earnings in interim reporting relative to that of annual (forth quarter) reporting. They find that firms manage earnings to prevent negative earnings in interim statements compared to annual statements since interim financial audit practices elevate happenings for earnings management. McVay (2006) documents that firms engage in discretionary actions over income statement classification categories to match analyst forecasts and carry expenses into classes as special items, viewing it as less persistent.

The studies focusing on the relationship between earnings management and principles-based (International Financial reporting Standards-IFRS) versus rules-based standards (U.S. Generally Accepted Accounting Principles- U.S. GAAP) have saturated results. Theoretically, principle-based standards eliminate different accounting treatments for a transaction and bring forth basic principles that emphasize substantiality under the transaction, thus more communicative earnings figures and less alternatives for earnings management. Evidently, Barth, Landsman, and Lang (2008) find a decrease in earnings management for voluntary adopters of International Accounting Standards/International Financial Reporting Standards (IAS/IFRS) whereas Ahmed, Neel, and Wang (2012) find increase for mandatory adopters (2005 onwards). He imputes this difference to self selection: Early adopters have motivations to adopt IFRS whereas later adopters delay it until IAS/IFRS become mandatory.

Capkun, Collins, and Jeanjean (2012) attributes the foregoing difference to the fact that IAS/IFRS standards has changed significantly in the period from 2003 to 2005 when International Accounting Standards Board (IASB) make accommodations to receive acknowledgement of European Union members. These accommodations provide firms with flexibility to employ different accounting treatments which attained disapproval in issued opinions of IASB board members. Thus Capkun et al (2012) argue the provided flexibility under current IAS/IFRS regime has lead to greater earnings management compared to pre-2005 regime and find post-2005 financial statements have increasing earning management in comparison with those of pre-2005 period.

Governance and Control

Studies focusing on internal control system and characteristics of Board of Directors view internal control system as a monitoring mechanism to restrain opportunities to manage earnings, although managerial compensation is commonly estimated to create motivations leading earnings management that affects earnings quality (Bergstresser and Phillippon, 2006; Guidry, Leone, & Rock, 1999).

Internal control procedures are evidenced to be negatively correlated with earnings management (Davidson, Stewart, & Kent, 2005; Doyle et al., 2007; Ashbaugh-Skaife, Collins, & Kinney, 2008). More independent Board of Directors (measured by a larger proportion of independent members) and higher audit committee quality (measured by existence and expertise of independent members and meeting frequency) are found to restrict earnings management as well (Beasley, 1996; Klein, 2002; Krishnan, 2005).

Studies focusing on the association between managerial compensation and earnings management are prolific in the literature. As a driver of accounting choices bonus plans and earnings-based compensation (Healy, 1985; Guidry et al., 1999) and equity-based compensation (Baker, Collins, & Reitenga, 2003; Bergstresser and Phillippon, 2006; Efendi, Srivistava, & Swanson, 2007) are analyzed as proxies. They predict that managers will manage earnings' components excluding those observable by compensation committees.

Another predictor of earnings management in this literature is insider trading. Beneish (1999) mentions that managers of the firms with upward earnings management are more likely to sell their shares and paid for their stock appreciation rights during the period that earnings are boosted, compared to managers of firms in a control sample. He argues that if managers act as informed traders, then managers are likely to use their information on earnings overstatement for their personal benefit.

Additionally, Beneish (1999) investigates whether managers are penalized after earnings manipulations are discovered. Employment losses and penalties imposed on manipulator managers are expected to be material if these charges deter managers to attend earnings manipulations and make moneymaking transactions. Nevertheless, following the discovery of manipulations, employment losses in overstating firms are found not to differ significantly from non-overstating firms. In addition, SEC is found not to put restrictions on managers in firms with overstated earnings, excepting that managers sell their own holdings as part of firm public offering.

After all, the outcomes of the literature on governance and control mechanisms are as follows: A negative association between audit committee quality

and earnings management is provided consistently by the studies (Klein, 2002; Davidson et al. 2005; Krishnan, 2005). Since it is the central responsibility of the audit committee to keep an eye on financial reporting process, predicting the association between audit committee quality and accrual quality has a strong internal validity among all governance and control mechanisms. However, for Dechow et al. (2010), the association between Board of Directors quality and earnings management should be acknowledged with caution since it is usual for directors to be involved in high level decision such as setting overall strategy. Although it is easier to argue that an association between Board of Directors and the quality of acquisition decisions, it is less persuading to imply Board of Directors characteristics can expound earnings management.

As Larcker, Richardson, and Tuna (2007) and Krishnan (2005) point out; there is another significant point in this literature to keep in mind that internal control mechanisms could act as substitutes to each other. For instance, audit committees and internal control procedures could be complement to each other, thus using few measures of corporate governance mechanisms instead of a broad framework of measures can provide us with invalid implications. As a respond, Larcker et al. (2007) adds stock ownership, institutional ownership variables and management compensation mix variables into their 39-variable set and construct 14 factors. They find saturated results for the association between these factors and earnings management. However; using Gompers' corporate governance score, Demirkan and Platt (2009) also find a significant and clear negative association between corporate governance index score and discretionary earnings.

Equity Market Incentives

It is hypothesized that firms change accounting choices during the periods they raise capital. Incentives on price or availability of capital may lead to tactful accounting choices, thus earnings quality of firms may be distorted when they raise capital. In contrast litigation risk augments the cost of tactful accounting choices.

Teoh et al. (1998a) and Morsfield and Tan (2006) find that firms' accrual choices change around IPO as to influence equity valuations of decision makers. Using Accounting and Auditing Enforcement Releases (AAERs) and accounting restatements as aftereffect proxies of earnings management Dechow, Sloan, and Sweeney (1996), and Efendi, Srivastava, and Swenson (2007) argue that capital raising is positively associated with earnings management.

Christie and Zimmerman (1994) reiterate that income increasing earnings management is more likely to be found in takeover targets than an industry-matched sample. The implications of earnings management are more in retained earnings than it is on current net income, meaning that earnings are likely managed rather over long periods in takeovers.

Dietrich, Harris and Muller III (2000) analyze whether incentives one-time for accounting choices when the firm raises capital in debt markets. They argue that annual revaluation boosts are applied by managers to smooth the change in net assets which is a significant industry performance measure, and to increase reported property fair values earlier to raising new debt. Reported estimates of property valuations are found to be understated, which is attributed to motivations of managers to boost reported earnings by undervaluing the property to be sold. Yet the evidence that earnings are not likely to be managed for better leverage

presentation before issuing new equity.

However, such one-time accounting choices may have lasting jeopardizing impacts on firms' reputation for credible financial reporting. If a firm's reputation for credible reporting is negatively influenced by one-time accounting choices, this may negatively affect equity valuation. On the other hand, impacts of these costs or the trade-off between reputation loss and short-term benefits of accounting choices are not embodied in studies on one-time accounting choices at time of certain incidents such as IPO (Dechow et al, 2010).

Kaszniak (1999) investigates whether managers issuing annual earnings forecasts manage earnings to meet forecasts and finds that managers engage in income-increasing (decreasing) accounting actions, i.e. discretionary accruals, when earnings are lower (higher) than their forecasts and manipulating actions increase as costs of forecast errors increase. These costs grow in parallel to magnitude of forecast error and likely to be higher for overestimating errors than underestimating errors.

Roychowdhury (2006) defines earnings management as "real activities manipulation" and suggests managers apply price discounts to increase sales, force overproduction to decrease costs of goods sold, and reduce discretionary expenditures to proliferate reported margins and meet their earnings forecasts. Managers manipulate earnings to meet these targets although it may reduce firm value since income-increasing actions taken in current period can have a negative impact on future cash flows of the firm. For instance, aggressive price discounts to boost sales volumes to meet short-term earnings forecasts can create expectations in the market for future discounts which may decrease profitability margins. Overproduction results in abundant inventories to be sold in future periods,

increasing future storage costs of the company (Graham, Harvey, & Rajgopal; 2005).

External Factors

Studies on regulation frequently focus on capital requirements. Most of the research on capital regulations is on banking and insurance industries, and accruals -mainly loan loss provision- is analyzed in association with capital regulations.

Kim and Kross (1998) investigate whether accruals are managed by banks with low capital ratios as to manage their capital ratios. They find banks with low capital ratios are more likely to decrease loan loss provisions and increase write-offs in comparison with banks with high capital ratios, which seem not to manage their loss provisions. In support, Schrand, and Wong (2003) argue that if banks are sufficiently capitalized to absorb the period influence of the valuation allowance, then the amount of allowance incline proportion to bank's capital. The valuation is discretionarily adjusted in subsequent years to smooth the earnings. Chen and Daley (1996) focus on direct tax effects of loan loss provisions and evidence to tax effect to influence provisional decisions, however the results do not uphold tax effects on reserve decision.

After all, banking industry has an environment proper to strongly test and detect earnings management actions that are to comply with regulations on the direct connection between capital requirements and provision transactions (Dechow et al., 2010). Therefore, evidence on the association of earnings management with capital requirements should be acknowledged with caution since this conclusion may not be generalized to firms in other industries.

Tax regulation is the second sphere of literature on external factors and earnings management is mainly associated with two tax items: the valuation allowance and the tax contingency reserve.

The valuation allowance is a reduction account to deferred tax assets based on expectations of future taxable amounts. Justifying the changes in the account is difficult and this paves the ground for earnings management since expectations of earnings for long years into the future are used (Miller & Skinner, 1998). The change in valuation allowance directly influences earnings by altering deferred tax asset recognized. Particularly, earnings are decreased (increased) with an increase (decrease) in valuation allowance for a particular asset.

Studies bring forth saturated results related to valuation allowance. Bauman, Bauman and Halsey (2001) find that earnings management is limited whereas Frank and Rego (2006) provide more discursive evidence, arguing that managers use valuation allowance to meet analyst forecasts. On the other hand they do not find any evidence for usage of valuation allowance through the association between earnings management and historical earnings per share targets.

The second tax related account used is tax contingency reserve. Managers are required to accrue a liability for contingent challenges against tax positions in current and past tax positions. Management assesses the riskiness of a firm's tax position and estimates the likely additional tax liability to be assessed upon a future tax audit. The firm expenses the amount albeit it does not pay this amount and the tax position is not challenged by tax authorities. Gupta, Laux, and Lynch (2011) find evidence that managers use contingency reserve accounts to manage earnings to meet analyst forecasts and targets.

As Hanlon and Heitzman (2010) argue, tax regulations alter over time in terms of computation and disclosure, and the extent firms can manage their earnings via foregoing ways may change and this transforming tax environment may open new fields of research for further studies.

Other than tax environment, SOX has become a frequently studied factor in the literature. Lobo and Zhou (2006) find that accrual quality increases after SOX regulation. However, Cohen, Dey, and Lys (2008) argue that managers can employ real operational activities other than accrual-based activities to manage the earnings. Managers can restrict discretionary spending on Research and Development (R&D) and advertising as to reach analyst forecasts or postpone starting of a new project if such a delay may create a small sacrifice in firm value (Graham, Harvey, & Rajgopal, 2005). The evidence suggests that, aftermath of SOX, the level of earnings to its prior trend before SOX and real earnings management activities increase although earnings management on accrual basis is found to decline.

In addition, attributing the foregoing changes in earning managements specifically to SOX should be acknowledged with caution. Concurrent incidents happen after promulgation of SOX such as alertness of regulators, investors and auditors, and greater diligence of managers in financial reporting processes after adverse publicity rise after scandals (Cohen et al., 2008). Albeit these simultaneous events are somehow associated with SOX, readers should be careful for inducing direct causality.

Hall and Stammerjohan (1997) argue that litigation costs may function as an incentive to manage the accruals. Their findings show that managers in oil firms that are prone to large damage awards during litigation periods are more inclined to decrease accruals than managers of oil firms without potential damage awards.

Rosner (2003) predicts that firms that do not appear to be distressed before bankruptcy engage in accrual increasing actions in non going-concern years than do control firms. These firms show material boost in receivables, inventory, PPE, and sales, accompanied with discretionary accruals than do matched control firms (Lee, Ingram, & Howard, 1999).

All of these studies provide the insight that accrual management will be time-varying if the external factors lead to earnings quality problems. If external factors lead to different accounting method choices or different firm action (advancing internal control procedures in post-SOX era), the impact on accrual quality will be permanent. However, external factors that are period specific (capital requirement) will create variation of accrual quality only in that period as well (Shackelford & Shelvin, 2001).

Table 2. Literature Review of Firm-related Factors' Influence

Prior Studies	Independent Variables	Dependent Variables	Conclusions
Bowan, R. M., Noreen, E. W., & Lacey, J. M. (1981)	Management compensation linked with reported earnings or not, dividends divided by unrestricted earnings, net income divided by interest expense, leverage, firm size	Interest capitalization	Income increasing accrual activity (interest capitalization) is more likely in big size firms and firms with explicit CEO compensation.
Healy, P. M. (1985)	No statistical technique to discover relationship between variables.		Changes in accounting procedures are associated with alterations and execution of compensation plans.
Moses, O. D. (1987)	Firm size, market share, degree of unionization, bonus compensation, ownership control, standard deviation of earnings	Existence of smoothing accounting change (dummy)	Income smoothing is positively associated with bonus plans and negatively associated with firm size.
Petroni, K. R. (1992)	No statistical technique to discover relationship between variables.		Managers of financially weak insurers are more likely to manage estimates of loss reserves downward relative to other insurers.
Skinner, D. J. (1993)	Leverage, bonus plan, return on assets, market value, asset beta, PPE, R & D scaled by sales, Tobin's q	Inventory method choice, depreciation method choice	Firm size is positively associated with income-decreasing depreciation and inventory procedures. Leverage and bonus plans are positively associated with income-increasing depreciation and goodwill procedures.
Christie, A. A. & Zimmerman, J. L. (1994)	Tax-loss carry forward, interest coverage ratio, firm's stock return less industry mean, leverage, firm size	Accounting-method choice	Income increasing earnings management is more likely to be found in takeover targets than an industry-matched sample.
DeAngelo, H., DeAngelo, L., & Skinner, D. J. (1994)	No statistical technique to discover relationship between variables.		Firms having binding debt covenants are likely to have higher accruals.
DeFond, M. L., & Jiambalvo, J. (1994)	Not presented for brevity purposes	Discretionary accruals	In prior year to covenant violation, discretionary accruals are significantly positive, and in the year of violation abnormal working capital accruals are significantly positive.
Sweeney, A. P. (1994)	No statistical technique to discover relationship between variables.		Firms closer to default are more likely to upward earnings management.
Beasley, M. S. (1996)	Percentage of outsiders in board, firm growth, negative earnings, market experience, insider ownership, CEO tenure, CEO-President being same person, percentage of shares blockheld	Existence of fraud	Firms without fraud have significantly higher percentages of outsider members than fraud firms.
Chen, P., Daley, L. (1996)	Earnings before taxes, loan loss experience in prior period, current and prior manufacturing capacity utilization, change in total assets. The level of primary capital in prior period	Loan loss experience, pre-tax transfer of general reserves to contingencies, the change due to issuance of common or preferred stock	Capital management for both loan loss experience and reserve accrual decisions whereas direct tax effect is not as significant in this association.
Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1996)	20 accounting and corporate governance variables, not given for brevity purposes.	Ex ante measure of firm's need for financing (depends on firm's free cash)	Ex ante firm's need for financing is positively associated with earnings management

Table 2 (Continued)

Prior Studies	Independent Variables	Dependent Variables	Conclusions
Francis, J., Hannai J. D., & Vincent, L. (1996)	Amount of write-off, write-of as a corporate decision or not, earnings per share, unusual gain/loss with write-off, firm size	Abnormal return	Investors give negative reaction to write-off announcements and these reaction are driven by write-offs giving information on impairment of assets.
DeFond, M. L. & Park, C. W. (1997)	Net income, operating cash flow, leverage, firm size, industry median for net income, current relative performance, expected relative performance.	Discretionary accruals	Managers are likely to barrow (save) from future (current) earnings to use in the current (future) period when current earnings are poor (good) and expected future earnings are good (poor).
Hall, S. C. & Stammerjohan, W. W. (1997)	Change in oil price, return on assets, firm size, potential versus distant damage award	Total/working/ non-working capital accruals	Potential large damage awards are likely to lead managers in oil industry to engage in earning decreasing manipulations.
Balsam, S. (1998)	Operating cash flow, nondiscretionary accruals, discretionary accruals, sign of discretionary accruals, reported income beats analyst's forecast or not.	Cash salary and bonus to CEO	Discretionary accruals have a stronger association with CEO compensation than nondiscretionary accruals do. Positive discretionary accruals have a stronger association with nondiscretionary accruals than negative accruals do. The association is stronger in companies with opportunity of reducing loss and with CEO cash compensation proportion to reported income
Kim, M. & Kross, W. (1998)	Gross loan balance, change in gross loan balance, non-performing loan, change in non-performing loan, return on assets, business failure rate of state, bank size	Loan loss provision	Banks with low capital ratios are more likely to decrease loan loss provisions and increase write-offs in comparison with banks with high capital ratios, which seem not to manage their loss provisions.
Miller, G. S. & Skinner, D. J. (1998)	Average return on assets, realized future return on assets, Altman Z-score, expected growth, dividend growth, market-to-book ratio	Valuation allowance of firm	Valuation allowance is positively associated with deferred tax assets, and negatively associated with higher levels of expected future taxable income.
Teoh, S. H. & Wong, T. J. (1993)	Market-to-book value, beta of the firm, firm size, number of analysts' forecast	Cumulative abnormal return continuously compounded between forecast date and the earnings date.	Earnings response coefficients of big 8 clients are evidenced to be higher than non big 8 clients.
Young, S. (1998)	Firm size, leverage, operating cash flow, director's equity ownership firm growth, average asset life, asset intensity, income smoothing	Absolute/positive/negative discretionary accruals	Discretionary accruals are negatively associated with firm size and managerial ownership.

Table 2 (Continued)

Prior Studies	Independent Variables	Dependent Variables	Conclusions
Beneish, M. D. (1999)	Existence of insider trading, technical default and bonus plan, existence of redeeming of stock by managers, equity issuance, leverage	Signed discretionary accruals	Managers of the firms with upward earnings management are more likely to sell their shares and paid for their stock appreciation rights during the period that earnings are boosted, compared to managers of firms in a control sample
Guidry, F., Leone, A. J., & Rock, S. (1999)	Total accrual levels, manager turnover	Signed discretionary accruals	Managers are more likely to manipulate earnings to increase their short-term benefits from compensation plans.
Kaszniak, R. (1999)	Below vs. Above forecast benchmark, cumulated/yearly raw return minus weighted return, lag between forecast issuance and fiscal year-end.	Signed discretionary accruals	Firms with overestimated earnings have significant positive discretionary accruals in the forecasting year compared to other years.
Keating, A. S. & Zimmerman, J. L. (1999)	Net income, firm size, impact of change on net income, return on assets, leverage, current ratio	Income increasing versus neutral versus income decreasing depreciation policy changes	Managers of firms with poorer performance are more likely to adopt income-increasing depreciation policy changes.
Lee, T. A., Ingram, R. W., & Howard, T. P. (1999)	Firms size, absolute value of total accruals, leverage, sales, market return, retained earnings, market value of equity, auditor change, share issuance, firm age	Fraud firms	Total accruals calculated as difference between adjusted net income and operating cash flow is greater for fraud firms relative to non fraud firms.
Dietrich, J. R., Harris, M. S., & Muller III, K. A. (2001)	Change in net-asset-value, leverage, debt issuance, share issuance, dividends paid out.	Discretionary accrual in revaluation increment	Managers use discretion in revaluation activities to smooth reported earnings.
Shivakumar, L. (2000)	Absolute discretionary accruals, firm size, book-to market ratio	Raw returns, market-adjusted returns, control-firm adjusted returns	Investors identify rational earnings management and see it as a result of debt contracting.
Bauman, C. C., Bauman, M. P., & Halsey, R. F. (2001)	No statistical technique to discover relationship between variables.		Financial statement disclosures are inadequate with respect to valuation allowance changes, thus provides limited relation in terms of earnings management.
Klein, April (2002)	Majority versus minority / percentage of outsiders in board, Majority versus minority / percentage of outsiders in audit committee, % of CEO shares, absolute value of change in net income, leverage, firm size, market-to-book value	Absolute discretionary accruals	Abnormal accruals are found to be negatively associated with audit committee independence and board independence. Minority versus majority of outside directors is found to be the most detrimental.
Penman, S. H. & Zhang, X. (2002)	Firm size, book-to-market ratio, leverage, earnings per share, financial distress	Year-ahead returns	High growth firms on basis of sales or plant, property and equipment (PPE) growth are found to have lower earnings quality.
Baker, T., Collins, D., & Reitenga, A. (2003)	Target earnings minus pre-managed earnings scaled by assets, leverage, firm size, CEO stock and option holdings, first year of CFO	Signed discretionary accruals	High option compensation is positively correlated with income-decreasing accrual choices in periods close to option award dates.

Table 2 (Continued)

Prior Studies	Independent Variables	Dependent Variables	Conclusions
Bauwhede, H. V., Willekens, M., & Gaeremynck, A. (2003)	Auditor size, being public/private company, leverage increase, equity issue, firm size, leverage, operating cash flow, increase/decrease in fixed assets	Signed discretionary accruals	Listed firms engage in less earnings management. Big 6 clients engage in less decreasing earnings management. In terms of increasing earnings management, there is no significant difference between big 6 and non big 6 clients.
Fairfield, P. M., Whisenant, J. S., & Yohn, T. L. (2003)	Accruals, net operating assets	Return on assets	Accruals and growth in long-term net operating assets are likely to have a negative association with one-year-ahead return on assets.
Myers, J. N., Myers, L. A., & Omer, T. C. (2003)	Auditor tenure, firm age, firm size, industry growth, operating cash flow, auditor size	Discretionary accruals / Current accruals	Longer auditor tenure is positively associated with higher earnings quality.
Rosner, R. L. (2003)	Firm size, sales, net income, return on assets, working capital, operating cash flow, retained earnings, financial distress (Z- Altman score), stressed/non-stressed bankrupt years	Signed discretionary accruals	When healthy appearing firms approach bankruptcy, they are more likely to engage in income-increasing accruals compared to control sample of firms.
Schrand, C. M. & Wong, M. H. (2003)	Components of deferred tax assets, capital-ratio less than industry median or not, deferred tax items, return on assets	Deferred Tax Assets, and future income measured by historical return on average assets and realized return on average assets	The magnitude of discretionary accruals increases as deviation of unadjusted earnings increases.
Davidson, R., Stewart, J., & Kent, P (2005)	Proportion of non-executive directors, independent chairman, audit committee independence, number of meeting of audit committee, internal audit function, auditor size, firm size, leverage, market to book ratio, absolute current earnings	Absolute discretionary accruals	Majority of Non-executive directors and audit committee is negatively associated with earnings management.
Ge, W. & McVay, S. (2005)	Business complexity (multiple segments and foreign currency), firm size, return on assets, firm age, market cap, operating cash flow, auditor size	Disclosure of internal weaknesses	Disclosure of internal control weakness is positively associated with business complexity, but negatively associated with firm size and firm profitability.
Graham, J. R., Harvey, C. R., & Rajgopal, S. (2005)	No statistical technique to discover relationship between variables.		As a result of interviews, managers are documented to beat earnings benchmarks as to build market credibility, maintain/increase stock price, improve management reputation, and convey future growth.
Krishnan, J (2005)	Size of audit committee, proportion of outsiders in audit committee, number of members with financial expertise, fraud in company background, proportion of outsiders in board, firm size, auditor tenure, auditor size, internal control function exists or not, firm growth, equity issuance, receivables/total assets, financial distress (Zmijewski score)	Incidence of internal control problems	Independence of audit committees and financial expertise of audit committee members are positively associated with quality of corporate internal control.

Table 2 (Continued)

Prior Studies	Independent Variables	Dependent Variables	Conclusions
Richardson, S. A., Sloan, R. G., Soliman, M. T., & Tuna, I. (2005)	Return on assets, current operating assets, current operating liabilities, non-current operating assets, non-current liabilities, change in short and long term investment, change in financial assets and liabilities.	Operating income after depreciation, average return on assets, annual buy-hold size-adjusted return	Discretionary accruals lead to lower earnings persistence, though investors do not seem to fully predict lower persistence, routing in stock mispricing.
Bergstresser, D. & Philippon, T. (2006)	CEO option holding divided by total CEO compensation, firm age, sales volatility, leverage	Signed discretionary accruals	Discretionary accruals are more likely in firms where CEO compensation is tied to share value and option holdings.
Frank, M. M & Rego, S. O. (2006)	Change in deferred assets, change in deferred liabilities, change in pretax income, change in earnings per share, market value of equity	Valuation allowance of firm	Firms use valuation allowance to smooth earnings toward analyst forecast.
McVay, S. (2006)	Core earnings in prior year, asset turnover ratio, total accruals, sales growth	Change in core earnings	Managers are more likely to shift expenses from core expenses to special items to meet the analyst forecast
Lee, C. J., Li, L. Y., & Yue, H. (2006)	Return on assets, analysts forecasts of long term earnings growth	Earnings quality measured as discretionary accruals divided by net income	Earnings quality is positively associated with reported earnings and negatively related to expected growth.
Lobo, G. J. & Zhou, J. (2006)	Period dummy, auditor size, firm size, operating cash flow, leverage, income before discretionary accruals scaled by market value, share issuance, share buyback	Signed discretionary accruals	Firms appear to report lower discretionary accruals in post-SOX period and they record losses more quickly than gains in post-SOX period.
Morsfield, S. G. & Tan, C. E. L. (2006)	Being venture capitalist backed IPO, auditor size, underwriter ranking, firm growth, leverage, firm size, operating cash flow	Signed discretionary accruals	Venture capitalists play a monitoring role and IPO-year discretionary accruals are more likely to be low in the presence of venture capitalists.
Richardson, S. A., Sloan, R. G., Soliman, M. T., & Tuna, I. (2006)	Net operating assets, operating assets, operating liabilities, net current assets, net current liabilities, firm growth, existence of SEC sanction	Rank of total accrual, return on net operating assets	Lower persistence of accruals appear to be unrelated to sales growth and extreme accruals appear to be associated with alleged cases of earnings manipulation.
Roychowdhury, S. (2006)	Firm size, market-to-book ratio, net income, suspected earnings	Abnormal CFO, abnormal discretionary expenses, abnormal production costs.	As to avoid annual losses, managers are found to use price discount to increase sales, overproduction to report lower cost of goods sold, and lessen discretionary expenditures to increase earnings.
Ashbaugh-Skaife, H., Collins, D., & Kinney, W. R. (2007)	Existence of foreign sales, merger and acquisition, restructuring, sales growth, firm size, negative earnings, financial distress (Altman Z-score), auditor size, institutional ownership share, existence of litigation.	Disclosure of internal control (ICD) weaknesses.	Small firms are more prone to internal control weaknesses and are more likely to restate their previous earnings
Brown, L. D. & Pinello, A. S. (2007)	Earnings per share, initial analyst forecast, last analyst forecast, earnings surprise, forecast error, market value, negative earnings, market-to-book value	Signed discretionary accruals	Compared to interim reporting, annual reporting reduces income-increasing discretionary accruals but increases the magnitude of downward expectations management.

Table 2 (Continued)

Prior Studies	Independent Variables	Dependent Variables	Conclusions
Doyle, J., Ge W. & McVay, S (2007)	Market capitalization, firm age, bankruptcy risk, number of special purpose entities, number of segment firm operates in, sales growth, corporate governance score	Probability of disclosing material weakness	Firms with weaknesses of internal control are likely to be financially weaker, more complex, rapidly growing and experiencing restructuring.
Efendi, J., Srivastava, A., & Swanson, E. P. (2007)	Firm size, leverage, interest coverage ratio, debt and equity issuance, acquisition, CEO-president same person, CEO salary exceeds firm performance	Restatement or non-restatement firm	Misstatements are more likely when CEOs have sizable holdings of in-the-money stock options.
Lara, J. M. G., Osma B. G., & Panelva, F. (2007)	Firms size, growth, operating cycle, operating cash flow, leverage, CEO tenure, auditor size, industry regulation	Signed discretionary accruals	Strong-governance firms use income-decreasing accruals to accelerate investor's recognition of bad news.
Larcker, D. F., Richardson, S. A., & Tuna, İ. (2007)	Includes 39 variables in seven main groups: Board variables, stock ownership variables, institutional ownership variables, activist variables, debt variables, compensation variables, anti-takeover variables	Absolute discretionary accruals, accounting restatements, future operating performance, and future stock returns.	Corporate governance variables are likely related to future operating performance and excess stock returns.
Ashbaugh-Skaife, H., Collins, D., Kinney, W. R., & LaFond, R. (2008)	Existence of ICD weaknesses, merger and acquisition, restructuring, standard deviation of sales and operating cash flow, foreign sales, firm growth, inventory turnover, capital intensity, firm size, financial distress (Altman Z core), auditor size, book-to-market ratio	Absolute/signed total accruals	Firm reporting internal control deficiencies are more likely to have lower accrual quality, and have larger absolute discretionary accruals.
Barth, M. E., Landsman, W. R., & Lang, M. H. (2008)	Positive earnings management, firm size, firm growth, equity issue, leverage, sales divided by total assets	Being an IAS adopter	Firms applying IAS show less earnings smoothing and management, and recognize losses more timely.
Cohen, D. A., Dey, A. & Lys, T. Z. (2008)	Auditor size, change in GDP, market value of equity, post-SOX period versus pre-SOX period, compensation structure	Abnormal/positive/negative discretionary accrual	Accrual-based earnings management decreases in post-SOX period.
Demirkan, H. & Platt, H. (2009)	Financial distress (Altman Z-score), Gompers corporate governance index score, leverage, firm size, negative earnings, return on assets, operating cash flow	Signed discretionary accruals	A positive association is found between discretionary accruals and the governance index.
Gupta, S., Laux, R., & Lynch, D. (2011)	21 variables, not presented for brevity purposes.	EPS meets median analysts' forecast or not	Managers are likely to use contingency reserve accounts to manage earnings to meet analyst forecasts and targets
Harris, D. & Shi, L. (2011)	Return on assets, total accruals, firm size, market value, earnings level	Non-discretionary net income (NDNI)	Firms with NDNI near and far from their targets, as well as above and below, are more likely to have earnings management.
Ahmed, A.S., Neel M., & Wang, D. (2012)	Mandatory vs. voluntary adoption of IFRS, leverage, growth, change in liabilities, return on assets, firm size operating cash flow, book-to-market value.	Income scaled by total assets, total accruals, and earnings per share before extraordinary items	They find significant increase in income smoothing and aggressive reporting of accruals, and a significant decrease in loss recognition for mandatory adopters of IFRS compared to voluntary adopters.

Table 2 (Continued)

Prior Studies	Independent Variables	Dependent Variables	Conclusions
Capkun, V., Collins, D. W., & Jeanjean, T. (2012)	No statistical technique to discover relationship between variables.		The flexibility under current IAS/IFRS regime has lead to greater earnings management compared to pre-2005 regime and post-2005 financial statements have increasing earning management in comparison with those of pre-2005 period.

CHAPTER 3

HYPOTHESIS DEVELOPMENT

Mainly, audit services can enhance the quality of earnings by decreasing the difference between reported economic circumstances of a client and the underlying economic situation of the client (Behn et al. 2008). A stakeholder would perceive high audit quality truthful and valid since it minimizes both intentional and unintentional misreporting. DeFond (1992) and Becker et al. (1998) suggest that high-quality audits curtail earnings management whereas high-quality audits may also minimize unintentional errors (Watkins et al., 2004).

The main assumption in this dissertation is that reliability of financial reporting increases with higher audit quality, which could be inferred from auditor size, industry specialization, audit firm tenure, partner tenure, audit report type, and litigation risk.

DeAngelo (1981) argues that auditor size is an indicator of audit quality since no single client but the reputation is important for the auditor if it misreports. Potential litigation costs of Big auditors associated with audit failure is higher compared to non Big auditors (Kim et al., 2003). However, an auditor with a single client might be more tolerant to client demands due to its concerns related to sustaining the engagement with the client. Subsequently, many studies focusing on accrual quality have evidenced that Big 4 auditors deliver higher quality audit services (Palmrose, 1988; Teoh & Wong, 1993; Becker et al., 1998).

Furthermore, corroborative research supports the argument that Big 4 auditors deliver high quality audit services. Big 4 auditors are sued less frequently and sanctioned less frequently by the regulators (Palmrose, 1988; Frankel et al., 2002). Francis and Krishnan (1999) posit that Big 4 auditors have lower thresholds to issue going concern report, and Nelson et al. (2002) evidence that Big 4 auditors detect efforts to manage earnings and require their clients to make proper adjustments.

Thus it is likely that audit quality increases with auditor size, and Big 4 clients are more strictly curtailed for their opportunistic earnings-managing accrual choices than non Big 4 clients. Therefore it is hypothesized that quality of the audit services provided by Big 4 auditors are higher when compared to non Big 4 auditors. My first hypothesis (in alternate form) is:

H1: Quality of the audit services provided by Big 4 auditors are higher when compared to non Big 4 auditors.

Big 4 auditors employ their industry specialization as a marketing tool and it is observed that market shares are not smoothly shared among Big auditors (Francis, 2004). Solomon et al. (1999) suggest that industry specialist auditors have a deeper knowledge than non specialist auditors because they have wider experience in the industry that provides them with more accurate judgments. Subsequent studies also suggest that there is a positive association between industry specialization of auditor and audit quality (DeFond et al., 2000; Krishnan, 2003b & 2005; Behn et al., 2008).

Jaggi et al. (2012) summarize the reasoning behind these studies as: (1) Industry specialization has been widely recognized among Big 4 auditors and they

market this expertise by providing high quality audit services, (2) auditors acquire expertise and experience by servicing to different international clients within the same industry, enabling them to detect errors and irregularities more effectively than auditors without industry specialization, and (3) industry specialist auditors charge premium fees to their clients, allowing them to allocate more time and resources to audit work, and thus ensure higher audit quality.

DeFond et al. (2000) evidence that top three industry leader auditors charge a fee premium in Hong Kong relative to other Big 4 auditors in the market. Ferguson et al. (2003) posit that two industry leader auditors can charge a fee premium when compared to other Big auditors. Francis et al. (2005) report that industry leader auditor in the U.S. could earn a fee premium relative to other Big 4 auditors.

Balsam et al. (2003), Krishnan (2003b), Dunn and Mayhew (2004) and Reichelt and Wang (2010) suggest that abnormal accruals are lower for clients of industry specialist auditors. In support, earnings surprises of specialist auditors' clients are found to be valued higher by the stock market (Krishnan, 2003b), whereas Behn et al. (2008) report that analysts' forecasts are more accurate for clients of industry specialist auditors.

It is likely that the industry specialist auditors have deeper knowledge due to their wider practice and greater experience that enable them to effectively detect misreporting and errors of their clients. In this respect, it is hypothesized that quality of the audit services provided by industry specialist auditors are higher when compared to non industry specialist auditors. My second hypothesis is:

H2: Quality of the audit services provided by industry specialist auditors are higher when compared to non industry specialist auditors.

In addition significance of professional knowledge and industry knowledge, degree of client-specific knowledge could affect the quality of audit work and determine start-up costs (DeAngelo, 1981). In the early years of engagements, auditors have less client-specific knowledge, thus they may have less ability to detect misstatements. As auditors acquire knowledge of client's business environment and operations, their ability to detect misstatements could better (Beck, Frecka & Solomon, 1988).

DeAngelo (1981) suggests that client specific assets such as knowledge admit auditor in charge to earn quasi rents by maintaining the engagement. Thus financial reporting quality in the early years of engagement could be reduced due to the concerns of the auditor to sustain the engagement. Geiger and Raghunandan (2002) also posit that auditors are likely to be less aggressive in early years of the engagement because they know little of client-specific risks.

The above discussion shows that auditors are likely to lack client-specific knowledge in their early engagement years and they are also likely to have concerns for maintaining their new clients, conjointly reducing the likelihood that auditor detects and adjusts misstatements. Many studies evidence outcomes supporting this argument (Davis, Soo & Trompeter, 2000; Johnson et al., 2002; Myers et al., 2003; Carcello & Nagy, 2004; Ho et al., 2010). Thus first part of my third hypothesis is:

H3a: Quality of the audit services provided in early years of the audit firm tenure is lower when compared to medium years of the audit firm tenure.

The increasing client-specific knowledge obtained through repeated audit work could reduce audit effort if it exceeds an optimal level. This over confidence resulting from long auditor-client relationship may lead auditor to employ less laborious and less advanced audit procedures (Shockley, 1981). Furthermore, auditor's concerns might shift from litigation risk to sustaining engagement and profiting from client. The auditor could lose professional objectivity and the audit effort applied during audit work may decrease, resulting in inferior detection of misreporting and higher discretionary accounting (Chiu & Huang, 2005; Dao et al, 2008). Therefore, it is more likely that quality of audit service decreases in later years of the engagement. The second part of third hypothesis is:

H3b: Quality of the audit services provided in later years of the audit firm tenure is lower when compared to medium years of the audit firm tenure.

Especially in aftermath of SOX, it is studied whether partner rotation is associated with higher quality financial statements and whether audit partner tenure has similar affects on audit quality as audit firm tenure does.

Although, at audit partner level, start-up costs due to familiarizing itself to client's operations and business environment, and reporting policies are considerably less when compared to audit firm level - because the audit team could remain largely unchanged- many studies evidence that audit quality is lower in early years and it likely increases as audit partner tenure increases (Carey & Simnett 2006; Chen et al., 2008). This discussion leads to my fourth hypothesis:

H4a: Quality of the audit services provided in early years of the audit partner tenure is lower when compared to medium years of the audit partner tenure.

However, similar to concerns related to audit firm tenure, longer partner tenure may result in over confidence, decreased audit effort and quality of audit procedures. In addition, partner's incentive to maintain engagement may reduce auditor's resistance to client pressures. In support, Chi and Huang (2005) report that discretionary accruals increase for clients audited by the same audit partner for more than five years. Thus the second part of my fourth hypothesis is:

H4b: Quality of the audit services provided in later years of the audit partner tenure is lower when compared to medium years of the audit partner tenure.

Another line of the studies extends the research by examining accrual quality in financial statements with a modified audit opinion, although there is saturated evidence provided. Lys and Watts (1994) document that auditor's litigation risk increases in parallel to modification of its opinions. Francis and Krishnan (1999) suggest that magnitude of discretionary accruals is higher for financial statements with modified audit opinion.

Lennox (1999) argue that a modified report may signal to stakeholders that managers inadequately administrate firm affairs or they attempt to present an over optimistic view of firm's performance. Additionally, modified report could result in decreasing share prices, and may generate unfavorable earnings to managers when

their compensation is based on market value of the firm, reflecting the deterrence affect of audit opinion on managerial choices. Furthermore, Krishnan, and Krishnan (1997) discuss that, in the aim of offsetting the litigation risk, auditors are likely to increase audit effort and quality of audit planning as to extensively cover risky matters/accounts in firm-periods they issue modified opinion. Payne (2002) and Barbadillo et al. (2004) provide supporting evidence for the foregoing argument.

Therefore, there are solid reasons for arguing that auditors and firms will have more incentives to prevent earnings management in the presence of issuing modified opinion. It is likely that receiving modified auditor opinion could increase the concurrent accrual quality of the client, thus may signify a qualified audit service provided by the auditor. Therefore my fifth hypothesis is:

H5: Issuing modified auditor opinion signifies high quality of audit services provided by the auditor.

Litigation costs and reputation loss are suggested as two important drivers of audit quality. External stakeholders may hold auditors responsible for failure to curtail discretion in accruals as to present a favorable view of financial statements, meaning that litigation risk could increase when discretion in accounting system increases (Lys & Watts,1994). Evidently, DeFond and Subtamanyam (1998) and Heninger (2001) report that discretionary accruals are positively associated with litigation risk, suggesting audit quality is likely to be low for the periods within the scope of litigation.

CMB could sanction auditors if inefficient and inadequate procedures are detected during the control of auditor's previous work. The sanctions are likely to

distort auditor's reputation and it might be argued that, following sanctions by CMB, auditors may reactively increase audit effort (Barron et al., 2001) and more carefully contemplate abnormal accruals in order to recover their reputation and to reduce future risks related with being added to "black list" of the regulator (Boone et al, 2011). Therefore I expect and hypothesize a reactive increase in quality of audit services for the years following CMB sanctions on audit firm.

H6: CMB sanctions generate a reactive increase in the quality of audit services provided by the auditor in post-sanction years.

CHAPTER 4

MODEL 1: MEASURING AUDIT QUALITY BY DISCRETIONARY ACCRUALS AND MEASURES OF COMMON INDEPENDENT VARIABLES

The fundamental aim of audit service is to determine whether the financial reporting is true and fair. When audit quality is inadequate, the financial statements probably comprise items that jeopardize firm's "true" financial condition. Thus the quality of earnings in financial statements indicates the quality of audit service (Chen et al, 2008). Furthermore, poor earnings quality sources audit failures and litigation, and magnitude of accruals are evidenced to be positively related to resultant audit failures and litigation (Lys & Watts, 1994; Becker et al., 1998; Heninger, 2001); thus quality of accruals is used as a proxy for audit quality in this study.

Studies on audit quality typically consider total accruals in two components as non-discretionary (expected) accruals and discretionary (abnormal) accruals, a method that is based on the accuracy of the expectations model used. The models based on non-discretionary accruals depend on the estimation of parameters. In time series models, the parameters are estimated for each firm in the sample by employing data from prior period to the event period. However, in cross-sectional models, the parameters are estimated each period for each firm by employing the associative data of firms in the related industry (Jeter & Shivakumar, 1999).

The difference in the approaches of the two models results in different estimates of discretionary accruals. In its estimation of parameters, time-series models use data of a period that contains no expectation of systematic earnings

management. In cross-sectional models, there is no assumption related to earnings management but a simple assumption that parameters are the same for all firms in the estimation sample.

Cross-sectional models provide researchers with detection of earnings management around average independent earnings management for an industry. While, time-series models can be tuned to control for industry-level earnings management, they contain a severe survivorship bias as well as a selection bias. At least ten items are required in the estimation period to estimate reliable parameters, meaning that if a study uses annual data, a minimum of eleven-year data is needed. The continuing firms are more likely to be large size firms that have more litigation risk if earnings managing activities are surfaced. Thus time-series model contains selection bias (Jeter & Shivakumar, 1999). However, cross-sectional model has the superiority of constructing larger samples without lying on firm-specific coefficients.

On the basis of this argument, Bartov, Gul, and Sui (2001) show in detail that cross-sectional models are superior to time series models. Following Bartov et al. (2001) this research uses cross-sectional model because, for the reasons discussed above, it results in a larger sample size that is less affected by survivorship bias, and will also enable examining of sample of firms with short history.

Measures of Accruals

Measuring discretionary accruals start with measuring total accruals. A model is specified for composing non-discretionary part of total accruals, allowing total accruals to be divided into discretionary and non-discretionary parts. In this decomposition, the non-discretionary part results from business conditions, such as

growth and operating cycle, whereas discretionary accruals reflect managerial choices. Conceptually, since there is no business related reason to discretionary accruals, they are assumed as originating from management choices.

The model has two assumptions. First, current accruals result from changes in firm's economic circumstance, and thus current accruals are related to changes in revenues, or revenue growth, since the equation is estimated with all variables scaled by lagged assets. Second, the non-discretionary gross property, plant and equipment is used as a control for the share of total accruals connected to non-discretionary depreciation expense (Beneish, 2001).

Measure of Total Accruals

The model includes measuring of total accruals (TACC). Prior research uses balance sheet approach to measure TACC as follows:

$$TACC_t = \Delta CA_t - \Delta Cash_t - \Delta CL_t + \Delta DCL_t - DEP_t$$

where

ΔCA_t = the change in current assets in year t ;

$\Delta Cash_t$ = the change in cash and cash equivalents in year t ;

ΔCL_t = the change in current liabilities in year t ;

ΔDCL_t = the change in debt included in current liabilities in year t ; and

DEP_t = the depreciation and amortization expense in year t .

Revsine, Collins, Johnson, and Mittelstaedt (1999) show that this balance sheet approach can result in serious errors, especially when a firm has engaged in merger, acquisitions or divestments. The joint working capital accounts and accrual

parts of earnings could be destroyed if these events occur. Respectively, Collins and Hribar (1999) employ a method based on cash flow statement:

$$TACC_t = NI_t - CFO_t \quad (1)$$

where

NI_t = the net income in year t ; and

CFO_t = the cash flow from operations in year t .

They show in detail that cash flow statement method for measuring total accruals is superior to balance sheet method, and subsequently it is frequently employed by later studies (Bartov et al., 2001; Bergstresser & Phillippon, 2006; Doyle et al., 2007; Ashbaugh-Skaife et al., 2008; Cohen et al., 2008). Referencing these studies, this research uses cash flow statement model to compute total accruals of items in my sample.

Measure of Discretionary Accruals

This study uses cross-sectional modified Jones model in Dechow et al. (1995) as to estimate non-discretionary accruals. The model attempts to control the impacts of changes in firm's economic conditions on non-discretionary accruals. The cross-sectional modified Jones model for non-discretionary accruals in the event year is:

$$NDACC_t = \alpha_1 (1/A_{t-1}) + \alpha_2 (\Delta SALES_t - \Delta REC_t) + \alpha_3 (\Delta PPE_t) \quad (2)$$

where

$NDACC_t$ = the non-discretionary accruals in year t scaled by total assets in year $t-1$;

$\Delta SALES_t$ = sales in year t minus sales in year $t-1$;

ΔREC_t = net receivables in year t less net receivables in year $t-1$;

ΔPPE_t = gross property plant and equipment at the end of year t scaled by total assets in year $t-1$; and

$\alpha_1, \alpha_2, \alpha_3$ = industry and year specific parameters.

Estimates of the firm-specific parameters are calculated by using cross-sectional data. Therefore estimates of parameters, α_1, α_2 , and α_3 , are not firm-specific but industry and year-specific. They are obtained by using data from all firms matched on event year and ISE index groupings. It is important to note that the estimates of the parameters are obtained from original Jones model.³ However, the difference of modified Jones model is that revenues are adjusted for the change in receivables in the event period.

Estimates of the industry and year specific parameters, α_1, α_2 , and α_3 , are computed by using the following model in the estimation industry and year:

$$TACC_t = a_1 (1/A_{t-1}) + a_2 (\Delta SALES_t - \Delta REC_t) + a_3 (\Delta PPE_t) + \varepsilon_t \quad (3)$$

where:

a_1, a_2 , and a_3 = the OLS estimates of α_1, α_2 , and α_3 ; and

$TACC_t$ = total accruals in year t .

ε_t is the residual and represents the discretionary part of total accruals for each firm-year item. If discretionary accrual is positive (negative), the model assumes there is income-increasing (decreasing) earnings management in the firm although it is audited, and thus existence of discretionary accruals symbolizes inadequate audit quality. Magnitude of discretionary accruals is shown in absolute value and denoted with ABSDACC in the empirical model whereas positive and negative discretionary accruals are denoted with POSDACC and ABSNEGDACC, respectively. Following

³ Original Jones Model for non-discretionary accruals in event year is: $NDA_t = \alpha_1 (1/A_{t-1}) + \alpha_2 (\Delta REV_t) + \alpha_3 (\Delta PPE_t)$; where ΔREV_t is revenue in year t minus revenue in year $t-1$; other definitions are given in equation 2.

Francis and Yu (2007), negative discretionary accruals are measured in absolute value in order to facilitate the discussion of empirical results.

Measures of Audit-related Variables

Auditor size is denoted with BIG4 in the model and measured on the basis of Big versus non Big classification that is used way back in the literature as a proxy for auditor size (Palmrose, 1988; Teoh & Wong, 1993; Becker et al, 1998; Francis et al., 1999; DeFond et al., 2000; Krishnan, 2003a; Behn et al., 2008; Boone et al., 2010). After mergers and acquisitions among Big audit firms from 1988 to 2002, their number decrease from eight to four. Currently, Big audit firms consist of PricewaterhouseCoopers (PWC), Deloitte and Touche (Deloitte), Ernst and Young (EY), and Klynveld Peat Marwick Goerdeler (KPMG), which have also been listed as top four accounting networks in International Accounting Bulletin Rankings since 2002. Following the foregoing studies, firms are coded as 1 for the years they are audited by a Big 4 auditor; otherwise they are coded as 0.

Auditor's industry specialization is presented as INDSPEC in the model. A common proxy for industry specialization is auditor concentration, i.e. market share of an auditor in an industry relative to other competitor auditors.

Following Hogan and Jeter (1999), total assets of firms are used and industry market shares (IMS) are computed as in Krishnan (2003b):

$$IMS_{ik} = \frac{\sum_{J=1}^{J_{ik}} ASSETS_{ijk}}{\sum_{J=1}^k \sum_{J=1}^{J_{ik}} ASSETS_{ijk}}$$

where ASSETS is total sales, and the numerator is the sum of total assets of all J_{ik} clients of audit firm i in industry k . The denominator is the total assets in industry k summed over all I_k audit firms in the sample with clients (J_{ik}) in industry k (Krishnan, 2003b). Industries are based on ISE Indices. Following Krishnan (2003b), each pair of ISE Index codes and calendar years are required to have at least eight observations (Chen et al, 2008). An auditor is considered an industry specialist in any ISE industry where the auditor's asset-based market share exceeds 15 percent (Krishnan, 2003b). An auditor is coded as 1 if it is a specialist of an ISE industry; otherwise it is coded as 0.

Demonstrating the computation of IMS for PWC for the textile industry will be explanatory to the readers: For the period 2005 through 2010, the total assets of all clients of PWC in the textile industry (XTEKS) is TRY 11,368,999,265. The aggregated total assets of all clients in the textile industry is TRY 28,894,376,854 for the same period. Therefore, PWC's market share in textile industry is:

$$IMS_{PWC, \text{Textile}, 2005-2010} = (\text{TRY } 11,368,999,265 / \text{TRY } 28,894,376,854) \times 100 = 39 \%,$$

thus, PWC's market share exceeds 15 percent and will be accepted as a specialist auditor for textile industry for the period 2005 through 2010.

Audit firm tenure is the length of audit firm-client engagement, i.e. number of consecutive years from the beginning of the engagement that the audit firm audits the same client. Following Johnson et al (2002) and Carcello and Nagy (2004), audit firm tenure is denoted with SHORT, and when the audit firm audits a client firm for less than three years, SHORT is coded as 1; and otherwise 0. Moreover, audit firm

tenure is denoted with LONG, and when the audit firm audits a client firm for nine or more years, LONG is coded as 1; and 0 otherwise.

Audit partner tenure is the length of audit partner-client engagement, i.e. number of consecutive years from the beginning of the engagement that the audit partner audits the same client. Consistent with measures of audit firm tenure, audit firm tenure is denoted with PSHORT, and when the audit partner audits a client firm for three or less years, PSHORT is coded as 1; and 0 otherwise. Additionally, audit partner tenure is denoted with PLONG, and when the audit firm audits a client firm for nine or more years, and PLONG is coded as 1; and 0 otherwise.

In Turkey, CMB Communiqué 22 adopts the exact framework of ISA for types of audit opinions. ISA 705 classifies modification to the auditor opinion in four types: (1) Qualified opinion, (2) disclaimer of opinion, and (3) adverse opinion. In qualified opinion, the auditor concludes that misstatements are material but not pervasive to the financial statements (ISA 705-10-a); or is unable to obtain sufficient appropriate audit evidence but the possible effects on the financial statements of that inability are material but not pervasive (ISA 705-10-b). The auditor issues a disclaimer of opinion when the auditor is unable to obtain sufficient audit evidence and the possible effects on the financial statements of that inability are both material and pervasive (ISA 705-12), and the auditor expresses an adverse opinion when the auditor concludes that misstatements are material and pervasive to the financial statements (ISA 705-11).

Many studies in this line of the literature uses a modified versus unqualified audit opinion classification to associate audit opinion to earnings quality (Francis & Krishnan, 1999; Chen et al, 2001; Choi & Chin, 2011). Although types of modifications present different opinions on materiality of misstatements and

limitations on audit work, the foregoing researches do not differentiate between the effects of types of modified opinion, i.e., qualified opinion, disclaimer of opinion and adverse opinion.

To the knowledge of the researcher, there are few studies examining influence of different types of modifications on accrual quality. Frost (1994) employs disclaimer of opinion versus unqualified opinion approach, and Davis et al. (2001) associate qualified opinion (contingent opinion) with accrual quality.

This research combines the classifications of prior studies and group audit opinions in a way that allows explanation of how different types of modifications are related with accruals and audit quality. Qualified audit opinion is denoted with QUA, and when a firm receives qualified opinion, QUA is coded as 1, and 0 otherwise. DISC represents disclaimer of opinion, and when a firm receives disclaimer of opinion, DISC is coded as 1, and 0 otherwise. At last, the research model does not include any variable for adverse opinions since no firm in ISE received an adverse opinion in the period 2005 through 2010.

Researchers frequently use litigation cases filed against auditors as a proxy for audit failures reflecting inferior audit quality for the periods covered in the lawsuits (Palmrose, 1988; Carcello & Palmrose; 1994; Lys & Watts, 1994; Heninger, 2001; Boone et al., 2011). However, CMB rarely file lawsuits against auditors, and the lawsuits filed by other stakeholders are not promulgated in bulletins and newspapers. Therefore reliable and representative information on lawsuits are almost unavailable.

Another proxy for audit failures is penalties charged by CMB to audit personnel and audit firms. CMB regularly controls audit work of authorized audit firms, and charges penalties and enforce sanctions to audit personnel and audit firms

if required. This information is available in weekly bulletins of CMB. Following Bannister and Wiest (2001), regulatory penalties and sanctions are employed as proxy for audit failure and denoted with AUDPEN. However, since client-periods related with penalties/sanctions are not available and it is likely that audit quality increases in post-penalty/sanction period (Bannister & Wiest, 2001), AUDPEN is reversely coded as 1 for all clients of an audit firm in the periods following the punishment; and 0 otherwise.

Measures of Firm-related Variables

As it is summarize in literature review, firm-specific factors are found to significantly influence accrual quality in financial statements. Thus, most studies using accrual quality as a proxy of audit quality also include firm-specific variables in their empirical models assessing audit quality (Lee et al., 1999; Klein, 2002; Myers et al., 2003; Davidson et al., 2005; Ashbaugh-Skaife et al., 2008).

As typical for services, client characteristics are parameters in audit production function (O'Keefe, Simunic, & Stein, 1994). Specifically, auditors consider firm characteristics during their audit planning and execution of fieldwork; therefore firm characteristics influence both inputs and outputs, i.e. the audit quality.

Client characteristics are considered in auditor's assessment of litigation risk, and thus influence audit quality (Pratt & Stice, 1994). Consistent with measuring auditor's litigation and following Abbott, Park, and Parker (2000), this study uses CMB sanctions and penalties to clients as a proxy for firm's litigation, and denotes it with FIRMPEN. It is coded as 1 for the client firm in the period it received penalty; and otherwise 0.

Firm size is a frequently used variable in empirical models of audit quality studies, and it is denoted with FIRMSIZE in this research model (Teoh & Wong, 1993; Lys & Watts, 1994; Hogan, 1997; Becker et al, 1998; Heninger 2001; Myers et al., 2003; Krishnan, 2005; Doyle et al., 2007, Chi & Chin, 2011; and etc.). Although few studies employ natural logarithm of total sales as a proxy (Young, 1998; Francis et al., 1999; Dechow & Dichev, 2002); many studies use natural logarithm of total assets as a proxy to firm size (Becker et al., 1998; Johnson et al., 2002; Balsam et al. 2003; Bauwhede et al., 2003; Myers et al., 2003; Krishnan, 2005; Manry et al., 2006; Chi & Chin, 2011, and etc.). Following the cited studies above, FIRMSIZE is measured as natural logarithm of total assets in empirical model of this research.

Leverage is included in the analysis and it is denoted with LEV, since debt covenant restrictions may create pressures on managers to manipulate earnings (Bowen et al., 1981, DeFond & Jiambalvo, 1994; Becker et al., 1998). Following Frankel et al. (2002) and Choi et al (2007), the research model measures LEV as the ratio of total liabilities to total assets for each of firm-year observation.

Dechow (1994) argues that cash from operations reflect less about firm performance as the length of operating cycle increases, and accruals are likely to play a more important role in determining the financial view of firms with long operating cycles. The literature expects a positive association between operating cycle and discretionary accrual management (Francis et al. 1999; Dechow & Dichev 2002; Lara, Osma, & Panelva, 2007; Srinidhi & Gul, 2007). Following Lara, Osma, and Penalva (2007); this study measures operating cycle as the natural logarithm of total of firms' days of receivables and days of inventory. It is denoted with OPERCYC in the model.

Firms with higher capital intensity are expected to have less discretionary accruals since higher current assets provide managers with greater ability to manage earnings (Francis et al. 1999; Elder & Zhou, 2002; Ashbaugh-Skaife et al., 2008). Capital intensity is denoted with CAPINS in the model. Following Francis et al. (1999), it is measured as the ratio of gross property plant and equipment to total sales.

Client firm's accruals-generating potential is another factor influencing audit quality. Greater accruals-generating potential creates greater uncertainty about firm's reported earnings due to the difficulty in differentiating discretionary and non-discretionary accruals (Francis, Maydew, & Sparks; 1996); therefore absolute value of total accruals is included in some studies in order to control the likelihood that firms with greater absolute value of total accruals also have higher discretionary accruals (Becker et al., 1998; Davis et al, 2000; Elder & Zhou, 2002; Frankel et. al., 2002; Balsam et al. 2003; Krishnan, 2003b; Francis & Ke, 2006). Following this studies, absolute value of discretionary accruals is included in the research model in order to control for firm's accruals-generating potential and it is denoted with ABSTACC.

Another factor affecting firm's accruals-generating potential is the magnitude of operating cash flows, since total accruals are computed by subtracting operating cash flow from net income of the period. Following Frankel et al. (2002) and Reynolds, Deis, and, Francis (2004), this study employs absolute value of operating cash flow in order to control for accruals-generating potential. It is denoted with ABSCFO in the empirical model.

Another firm performance-related factor considered in literature is earnings impersistence, and low persistence firms are expected to have higher discretionary

accruals (Ali, 1994). Krishnan (2003b) and Jaggi et al. (2012) suggest that higher audit quality should be reducing discretionary accruals in low persistence firms. Ali (1994) classifies observations in each industry-year into ten groups according to absolute value of change in income before extraordinary items, scaled by firm size. He considers the observations in top-two and bottom-two deciles as low-persistence, and observations in the middle six deciles as high-persistence firms. Earnings impersistence is denoted with IMPERSIST in this study, and following Ali (1994) and other two mentioned studies, the foregoing method is employed and firms with lower persistence are coded as 1; 0 otherwise. However, due to the fact that income statement does not comprise extraordinary items under IFRS, absolute value of change in net income is alternatively used in computation of persistence.

Beneish (1998) discusses that managers may manage earnings upward since they have incentives to sell personal holdings during or after equity offerings. This argument is consistent with findings of Becker et al. (1998), Teoh et al. (1998a), Kim et al. (2003), Morsfield and Tan (2006), and Efendi et al. (2007), who evidence that earnings management related to seasoned equity offerings. Furthermore, Becker et al. (1998) argues that managers may have incentives to manage earnings downward in reaction to share repurchases, which is evidenced by subsequent studies (Shivakumar; 2000, Kim et al. 2003, Lobo & Zhou, 2006). This study uses equity issuance (SHAREINC) and equity repurchase (SHAREDEC) variables for analyzing how audit quality is influenced by likely earnings management around share increasing/decreasing transactions. Following Becker et al. (1998), Kim et al. (2003), and Lobo and Zhou (2006), firms are coded as 1 in the periods when there is an equity issuance/repurchase greater than ten percent of the number of concurrent outstanding shares; 0 otherwise.

Corporate governance scores are included in many studies in order to measure influence of corporate governance on accrual quality (Dechow et al., 1996; Doyle et al., 2007; Larcker et al., 2007; Demirkan & Platt, 2009). These studies construct their governance scores on large number of different variables such as characteristics of board members, audit committee members, bylaw and charter limitations on voters, compensation contracts, director indemnification, parachute pensions etc. Although corporate governance principles are promulgated in 2003 by CMB and listed in Communiqué 41, compliance and disclosure of corporate governance report is hold optional, therefore obtaining information on each of foregoing measures for all sample firms is unavailable.⁴

As an alternative, this study considers firms in ISE Corporate Governance Index (ISECGI) as compliers of corporate governance principles. In order to be accepted to this index, a firm must be reviewed by an authorized rating company and should have a corporate governance rating score more than seven out of ten. Considering the year of entrance, ISECGI is coded as 1 for firms in ISE corporate governance index; 0 otherwise.

Finally, many studies consider year and industry effects in their regression models (Jones 1991; Francis and Krishnan, 2002; Myers et al., 2003; Chi & Huang, 2005; Jaggi et al., 2012). Following Chi and Huang (2005), industry dummies and year dummies are included in the model.

⁴ Being valid for disclosures of 2012 and later, new CMB communiqué 56 enforces mandatory disclosure of corporate governance report.

The Empirical Model for Audit Quality

As a result of foregoing discussion and specifications, the final empirical model is eventually specified as follows:

$$\begin{aligned}
 \text{ABSDACC}_t / \text{POSDACC}_t / \text{ABSNEGDACC}_t = & \beta_0 + \beta_1 \text{BIG4}_t + \\
 & \beta_2 \text{INDSPEC} + \beta_3 \text{QUA}_t + \beta_4 \text{DISC}_t + \beta_5 \text{SHORT}_t + \beta_6 \text{LONG}_t + \\
 & \beta_7 \text{PSHORT}_t + \beta_8 \text{PLONG}_t + \beta_9 \text{AUDPEN}_t + \beta_{10} \text{FIRMPEN}_t + \\
 & \beta_{11} \text{FIRMSIZE}_t + \beta_{12} \text{LEV}_t + \beta_{13} \text{OPERCYC}_t + \beta_{14} \text{CAPINS}_t + \\
 & \beta_{15} \text{ABSTACC}_t + \beta_{16} \text{ABSCFO}_t + \beta_{17} \text{PERSIST}_t + \beta_{18} \text{SHAREINC}_t + \\
 & \beta_{19} \text{SHAREDEC}_t + \beta_{20} \text{ISECGI}_t + \mu_t
 \end{aligned} \tag{4}$$

where,

ABSDACC = absolute value of discretionary accruals;

POSDACC = income-increasing discretionary accruals;

ABSNEGDACC = absolute value of income-decreasing discretionary accruals;

BIG4 = 1 if the firm is audited by a Big 4 audit company (Deloitte & Touche, Ernst & Young, KPMG, and PricewaterhouseCoopers),
0 otherwise;

INDSPEC = 1 if the firm is audited by an industry specialist audit company, 0 otherwise;

QUA = 1 if the firm received a qualified opinion, 0 otherwise;

DISC = 1 if the firm received a disclaimer of opinion, 0 otherwise;

SHORT = 1 if the auditor tenure is shorter than 3 years, 0 otherwise;

LONG = 1 if the auditor tenure is longer than 9 years, 0 otherwise;

PSHORT	= 1 if the partner tenure is shorter than 3 years, 0 otherwise;
PLONG	= 1 if the auditor tenure is longer than 9 years, 0 otherwise;
AUDPEN	= 1 for the concurrent and post-sanction years if audit firm is sanctioned by Capital Market Board, 0 otherwise;
FIRMPEN	= 1 if firm is sanctioned by Capital Market Board, 0 otherwise;
FIRMSIZE	= natural logarithm of firm's total assets;
LEV	= total liabilities divided by total assets;
OPERCYC	= natural logarithm of sum of days sales in inventory and receivables;
CAPINS	= gross plant property equipment, scaled by sales;
ABSTACC	= firm's net income minus cash flow from operations, scaled by total assets, shown in absolute value;
ABSCFO	= cash flow from operations, scaled by total assets, shown in absolute value;
PERSIST	= 1 if the firm has low earnings persistence, 0 otherwise;
SHAREINC	= 1 if the firm has equity issuance more than 10%, 0 otherwise;
SHAREDEC	= 1 if the firm has equity repurchase more than 10%, 0 otherwise;
	and
ISECGI	= 1 if the firm is a member of Corporate Governance Index in ISE, 0 otherwise.

Discussion on Self-Selection

In standard multiple regression analysis, researchers must be aware of self-selection effects on outcome variables. Self-selection is a term used generally when a binary

indicator of participation might be systematically related to unobserved factors, i.e. an explanatory variable can be endogenous (Wooldridge, 2009). Controlling for selection bias is executed by a standard procedure developed by Heckman (1979); however the researcher is required to identify exogenous independent variables from first stage choice model that can be validly excluded from the group of variables in the second stage regression model (Little, 1985).

Selection models are usually employed in analysis of audit fees, non-audit services, and corporate governance studies in audit literature. There are few studies documenting significantly different results after controlling for selection (Chaney, Jeter, & Shivakumar, 2004; McMeeking, Peasnell, & Pope; 2007), contrasting to majority of the literature documenting indifferent results for OLS and two-stage analysis (Lee & Mande, 2005; Kim et al., 2003; Li, Xie, & Zhou, 2010; Sun & Liu, 2011; Lassila, Omer, Shalley, & Smith, 2010; Zhang & Emanuel, 2008; Coville, 2008; Lara, Osma, & Penelva, 2009; Goosh & Moon, 2009).

Lennox, Francis, and Wang (2012) documents empirically that the selection model is fragile and its outcomes in accounting literature can be non-robust and therefore unreliable since researchers have frequently chosen any exclusion restriction in an ad hoc fashion or simply chosen non. They examine the accounting studies through 2000 to 2010, and posit that majority of the studies do not employ a selection-analysis. Only few studies employ (16 studies in audit literature) self-selection analysis, however these studies do not report their justifications of exclusion restrictions and do not examine whether their results are sensitive to alternative exclusion restrictions. Additionally they do not discuss the problems (e.g. multicollinearity) arising when selection model is used. Lennox et al. (2012) illustrate that accounting researchers often impose ad hoc specification of the

selection model that corroborates OLS findings and suggest that:

...Corroborative findings provide little assurance that selection bias exists or has truly been eliminated, as they are easily overturned using alternative and equally plausible specifications of the selection model. In this situation, the researcher should explain that a potential endogeneity problem could affect the study's inferences, but that it is very difficult to implement a credible selection model. In our view, this is better science than making unreliable claims of having controlled for selection bias. In turn, we believe that reviewers and editors should be more hesitant about pushing authors to use the selection model to corroborate the results from OLS...

In summary, Lennox et al. (2012) empirically illustrates that exclusion restrictions are frequently unjustified in accounting literature, which creates a fragile ground for proceeding self-selection analysis and yields non-robust inferences, and suggest that researchers may use standard regression unless they could come up with proper and based justifications.

As a response to this vulnerability, a recent trend appears in the accounting literature to construct samples that are matched on their propensity scores (Krishnan, 2011; Francis 2011; Lawrence et al., 2011). However, appropriate matching procedure requires enough industry-year sizes that cease to exist in ISE.

Moreover, according to Wooldridge (2009) standard multiple regression analysis can, to some degree, reduce the self-selection problem if enough factors correlated with error terms are included in the data, which is a method widely used in studies to mitigate self-selection concerns related to their construction of corporate governance scores (Vafeas, 1999; Bhagat & Black, 2002; Hodgson, Lhaopadchan, & Buakes, 2011).

The difficulty in accounting literature to critically appraise the quality of exclusion restrictions in selection models, and unavailable large industry sizes for matching propensity scores guide this study to follow suggestions of Lennox et al.

(2012) to adopt standard multiple regression method for its robustness and lower multicollinear results, although it has limitations in assessing endogeneous relationships in model specification. Additionally, following Wooldridge (2009), number of controlling factors is kept high to reduce this limitation. Since the majority of the literature finds insignificant differences between OLS and selection models, the self-selection effect is expected to have limited distortions in our results, as well.

Sample Selection

Public Disclosure Platform (PDP)⁵ and ISE online database⁶ is searched to identify sample firms and obtain financials, and firm and audit-related data. The sample covers a six-year period from 2005 through 2010. The selection of 2005 as the start point has two reasons: (1) Before 2005, adoption of IFRS is optional for ISE firms, thus there were few voluntary IFRS adopters and many firms were using national accounting standards. As to avoid “comparing apples with oranges”, it is required that the same set of accounting standards is used in preparation of financial statements. (2) The statement of cash flow is not among the mandatory financial statements before reinforcement of IFRS in 2005. Since total accruals are computed on cash flow statement basis, using financial statements before 2005 is not proper unless the computing method is changed.

The information on gross PPE, auditor tenure, partner tenure, and audit opinion is collected by screening audit reports and disclosures of the sample firms

⁵ Please visit <http://www.kap.gov.tr> for details.

⁶ Please visit <http://www.ise.org.tr> for details.

for the period 2005 through 2010. Penalties charged to auditors and firms are received from CMB Department of Accounting Standards upon formal request.

All industrial and commercial firms that are listed on ISE and publish consolidated financial statement are included in the sample. Consistent with prior literature, the financial institutions are excluded (ISE index codes of XBANK, XSGRT, XFINK, XHOLD, XGMYO, and XYORT).⁷ Following Chen et al. (2008), a threshold of eight observations are required for an industry to be included in the sample, however telecommunication firms (XILTM) are added to technology (XUTEK) industry since XUTEK also includes firms producing telecommunication technology. Although the number of tourism (XTRZM) industry is below eight for years of 2005 and 2006, it is exceptionally included in the sample. Consequently, 92 observations from small industries of sports (XSPOR), electricity (XELKT), and transportation (XULAS) are deleted from the sample. Finally, the observations with unavailable audit report and insufficient data to compute discretionary accruals are deleted. The selection procedure results in a sample of 1164 firm-year observations.

Table 3. Sample Selection Procedures

Total number of firm-year observations in ISE	1882
Less	
Financial, holding, trusts, and insurance firm-year observations	(614)
Less	
Small industries having less than 8 observations per year	(92)
Firm-year observations with insufficient data	(12)
Total number of observations used in the analysis	1164

⁷ XBANK, XSGRT, XFINK, XHOLD, XGMYO, and XYORT stand for banks, insurance firms, leasing and factoring firms, holdings, real estate investment trusts, and securities investment trusts; respectively.

Descriptive Statistics

Table 4 presents the overview of the sample firm-year observations and firms per industry: The selection procedures result in 10 remaining industries. Textile-leather industry (172) constitutes the largest share of firm-year observations with 14.78 percent, followed non-metal mineral products (168 – 14.43%) and metal products – machinery industries (160 – 13.75%). Numbers of observations in other industries are: chemicals-petroleum-plastics (144 – 12.37%), food - beverage (138 – 11.86%), wood-paper-printing (98 – 8.42%), technology (88 – 7.56%), basic metal (80 – 6.87%), warehousing and retail trade (70 – 6.01%), and tourism (46 – 3.95%).

Table 5 exhibits industry market shares of auditors in our pooled sample for selected industries. When an auditor's market share exceeds 15 percent in an industry by ISE index, it is defined as industry specialist. In the period 2005 through 2010, DT (Deloitte & Touche) is the largest industry specialist with 7 specialties in food-beverage, wood-paper-printing, chemicals-petroleum-plastics, non-metal mineral, warehousing-retail trade, and tourism industries. DT is followed by PricewaterhouseCoopers (PWC) and Ernst and Young (EY) with 6 and 4 specialties, respectively. Klynveld Peat Marwick Goerdeler (KPMG) is the only Big 4 auditor having no specialty in any of manufacturing and services industries.

Non Big 4 auditors have four specialties. Grant Thornton (GT) has two specialties in warehousing-trade and tourism industries. Another second-tier auditor, Baker Tilly (BT), have a specialty in technology industry; a national auditor ATA holds a specialty in technology industry, as well.

Table 4. Number of Firms or Firm-year Observations per Industry

ISE industry code	Industry	2005	2006	2007	2008	2009	2010	Total	Total(%)
XGIDA	Food, beverage	21	23	23	23	24	24	138	11.86%
XKAGT	Wood, paper, printing	16	16	16	16	17	17	98	8.42%
XKMYA	Chemicals, petroleum, plastics	24	24	24	24	24	24	144	12.37%
XMANA	Basic metal	13	13	13	13	14	14	80	6.87%
XMESY	Metal products, machinery	25	26	27	27	28	27	160	13.75%
XTAST	Non-metal mineral products	27	27	28	28	29	29	168	14.43%
XTCRT	Warehousing and retail trade	9	11	11	11	14	14	70	6.01%
XTEKS	Textile, leather	28	29	28	28	30	29	172	14.78%
XTRZM	Tourism	7	7	8	8	8	8	46	3.95%
XUTEK*	Technology	12	14	15	15	16	16	88	7.56%
TOTAL		182	190	193	193	204	202	1164	100.00%

Notes:

*Tourism industry is exceptionally included in the sample although it remains under threshold of 8 observations in years 2005 and 2006.

**Includes firms in telecommunication industry.

Table 5. Industry Market Shares and Industry Specialist Auditors for Selected Industries

ISE industry code	Explanation	Industry market shares (%)									
		Big 4					Non Big 4				
		DT	EY	KPMG	PWC	Total	ATA	BT	GT	Other	Total
XGIDA	Food, beverage	0.22	0.51	0.01	0.17	0.91	0.00	0.01	0.00	0.08	0.09
XKAGT	Wood, paper, printing	0.19	0.01	0.01	0.42	0.63	0.00	0.05	0.00	0.32	0.37
XKMYA	Chemicals, petroleum, plastics	0.41	0.12	0.01	0.34	0.88	0.00	0.00	0.00	0.12	0.12
XMANA	Basic metal	0.68	0.18	0.00	0.02	0.88	0.03	0.04	0.00	0.04	0.12
XMESY	Metal products, machinery	0.07	0.22	0.00	0.43	0.72	0.00	0.02	0.00	0.26	0.28
XTAST	Non-metal mineral products	0.32	0.23	0.02	0.14	0.72	0.00	0.01	0.01	0.26	0.28
XTCRT	Warehousing and retail trade	0.23	0.08	0.01	0.41	0.74	0.00	0.00	0.21	0.05	0.26
XTEKS	Textile, leather	0.04	0.04	0.00	0.39	0.47	0.07	0.05	0.02	0.40	0.53
XTRZM	Tourism	0.20	0.03	0.07	0.06	0.36	0.00	0.08	0.41	0.15	0.64
XUTEK*	Technology	0.02	0.01	0.00	0.13	0.15	0.31	0.22	0.03	0.30	0.85

Notes:

DT: Deloitte & Touche, EY: Ernst Young, KPMG: Klynveld Peat Marwick Goerdeler, PWC: PricewaterhouseCoopers, ATA: Ata, BT: Baker Tilly, GT: Grant Thornton. Total assets is used as base in computing industry shares. An auditor is coded as industry specialist where auditor's market share exceeds 15 percent. Bold denotes that auditor is specialist.

*Includes firm in telecommunication industry

CHAPTER 5

EMPIRICAL RESULTS FOR MODEL 1

Descriptive and Univariate Results

Following Caramanis and Lennox (2008) and Doyle et. al. (2007), top 1 percent and bottom 99 percent of dependent variables are winsorized to eliminate potential outliers, decreasing our total sample to 1144.

Table 6 presents the average figures for both dependent and independent variables for our sample. Discretionary accruals of the sample firms are circa 8.7 percent of their total assets, and income-increasing (positive) discretionary accruals (8.8%) are slightly higher than income-decreasing (negative) discretionary accruals. Big auditors and industry specialist auditors audit 48% and 39% percent of the firms, respectively, therefore assurance services in ISE are not dominated by Big 4 and industry specialist auditors.

In period 2005 through 2010, one third of observations have been audited by auditors having short tenures below 3 years, whereas one tenth of observations have long tenure auditor over 9 years of engagement. The figures are similar for partner tenures: 32% and 10%, respectively. Eighty-seven percent of observations receive unqualified opinion, and 11% and 2% of the sample respectively receive qualified opinion and disclaimer of opinion.

Measured by ratio of total debt to total assets, sample firms have an average leverage of 0.52, and firm size, measured as logarithm of total assets, has a mean of

8.29. Average operating cycle and capital intensity are 2.13 months (63.6 days) and 1.20, respectively. Finally, 37 percent of observations are found to have impersistent earnings, since they are placed in top and bottom two deciles in terms of earnings persistence model of Ali (1994).

Table 6. Descriptive Statistics of Variables for Pooled Sample (n=1144)*

		Mean	Std. Deviation
<u>Dependent Variables:</u>			
Absolute discretionary accruals	ABSDACC	0.087	0.079
Positive discretionary accruals (n=559)	POSSIGN	0.088	0.081
Absolute negative discretionary accruals (n=583)	NEGSIGNABS	0.086	0.077
<u>Independent Variables:</u>			
Big 4	BIG4	0.480	-
Industry specialist	INDSPEC	0.390	-
Short auditor tenure	SHORT	0.330	-
Long auditor tenure	LONG	0.110	-
Short partner tenure	PSHORT	0.320	-
Long partner tenure	PLONG	0.010	-
Qualified opinion	QUA	0.110	-
Disclaimer of opinion	DISC	0.020	-
Penalty to auditor	AUDPEN	0.020	-
Penalty to firm	FIRMPEN	0.020	-
Firm size	FIRMSIZE	8.289	0.655
Leverage	LEV	0.521	0.643
Operating cycle	OPERCYC	2.129	0.354
Capital intensity	CAPINS	1.205	1.113
Total accruals (Absolute value)	ABSTACC	0.092	0.140
Cash flow from operations (Absolute value)	ABSCFO	0.100	0.124
Earnings impersistence	IMPERSIST	0.370	-
Share increase	SHAREINC	0.050	-
Share decrease**	SHAREDEC	0.000	-
Corporate governance index member	ISECGI	0.040	-

Notes:

* Top dependent variables are winsorized at top 1% and bottom 99% percentiles.

**There are 5 share buy-back operations for period 2005 through 2010, making mean very marginal.

Panel A of Table 7 registers univariate statistics for discretionary accruals of client firms on basis of auditor size, auditor's industry specialization, and auditor's litigation. The results presents that clients of Big 4 auditors have significantly less

discretionary accruals scaled by total assets both in magnitude (absolute value) and positive/negative (upward/downward) directions. The difference is significant at the 0.01 level for absolute and positive discretionary accruals, whereas it is significant at the 0.05 level for negative discretionary accruals.

Clients of industry specialist auditors have less absolute/positive/negative discretionary accruals at 0.01 significance level, and the differences for specialists versus non specialists are slightly higher than differences for Big 4 versus non Big 4 auditors. The univariate analysis of influence of CMB sanctions on subsequent audit service quality exhibits heterogeneous results. In line with expectations, positive discretionary accruals are lower for clients of sanctioned auditors despite it has no statistical significance; however, the magnitude of negative discretionary accruals is higher for clients of sanctioned auditors in subsequent years at 0.10 significance level. It is expected that multivariate analysis will more clearly reveal the relationship between discretionary accruals and auditor's litigation.

Panel B of Table 7 indicates the results of ANOVA tests for differences of discretionary accruals in relation with audit firm tenures, partner tenures, and audit opinion types. For audit firm tenures, short and long tenures have the expected differences of absolute/positive/negative discretionary accruals when compared to medium audit firm tenures but the differences are not statistically significant. Consistent with expectations, medium partner tenures sustain lower absolute (0.085, $p < 0.05$) and positive discretionary accruals (0.085, $p < 0.05$), although the differences are not statistically significant for negative discretionary accruals, either.

Table 7. Univariate Tests for Model 1

Panel A: Descriptive Statistics of Mann-Whitney U Tests

	Big 4	Non Big 4		Industry specialist	Non industry specialist		Sanctioned auditor	Non sanctioned auditor	
	Mean	Mean		Mean	Mean		Mean	Mean	
ABSDACC	0.079	0.095	***	0.073	0.096	***	0.098	0.087	
POSDACC	0.077	0.098	***	0.073	0.098	***	0.080	0.089	
ABSNEGDACC	0.080	0.092	**	0.072	0.094	***	0.119	0.085	*

Panel B: Descriptive Statistics of ANOVA Tests

	Audit firm tenure			
	Short	Medium	Long	
	Mean	Mean	Mean	
ABSDACC	0.093	0.083	0.092	
POSDACC	0.097	0.083	0.094	
ABSNEGDACC	0.090	0.084	0.089	

	Partner tenure			
	Short	Medium	Long	
	Mean	Mean	Mean	
ABSDACC	0.090	0.085	0.130	**
POSDACC	0.093	0.085	0.159	**
ABSNEGDACC	0.087	0.085	0.097	

	Auditor opinion			
	Non Qualified	Qualified	Disclaimer	
	Mean	Mean	Mean	
ABSDACC	0.084	0.110	0.075	***
POSDACC	0.086	0.113	0.066	*
ABSNEGDACC	0.083	0.109	0.079	**

Notes:

***, **, * denote significant significance at 1%, 5%, and 10%, respectively

ABSDACC = Absolute value of discretionary accruals. POSDACC = Positive discretionary accruals.

ABSNEGDACC = Absolute value of discretionary accruals

The differences of absolute and positive discretionary accruals between short and medium partner tenures are lower than those of between long and medium partner tenures. This is consistent with argument that partner changes is less likely to impose risk on audit quality since engagement team may not be rotated, thus client

knowledge and experience is retained (Carey & Simnett, 2006).

For audit opinion types, the results exhibit statistically significant but mixed results. Clients receiving disclaimer of opinion have absolute/positive/negative discretionary accruals lower than clients of non qualified opinions, nevertheless the same trend does not hold for the difference between client with qualified and nonqualified opinions. Clients of qualified opinions have larger and significant discretionary accruals both in magnitude (0.110, $p < 0.05$) and upward/downward directions (0.113 & 0.109; $p < 0.05$). Further multivariate analysis will help to illuminate the relation between discretionary accruals and auditor opinion type.

Multivariate Results

Standard Ordinary Least Squares (OLS) regression method is employed, and the expected signs of associations and regression results of Model 1 are respectively given in tables 8 and 9 which measure audit quality by absolute discretionary accruals (ABSDACC) and signed discretionary accruals (POSDACC & ABSNEGDACC), computed by cross sectional Jones model, as proxy for earnings management. ABSDACC represent magnitude of earnings management in presence of audit services while POSDACC and ABSNEGDACC represent upward and downward earnings management, respectively. Table 8 presents the expected signs and estimated signs while Table 9 presents coefficients and model summary statistics.

Multicollinearity is a term that refers to correlation among the independent variables in a multiple regression model, and assessing singular effect of each independent variable becomes difficult in the presence of multicollinearity

(Wooldridge, 2009). If variance inflation factor (VIF) is above 10, then it is concluded that multicollinearity exist as a problem in the model. After controlling Pearson correlations matrix and VIF scores of regressions, none of independent variables are find to present a multicollinearity problem. The results are presented in tables 21-21-22-24 in Appendix A.

Table 9 documents that the regressions of Model 1 have adjusted R-squared values of 0.29, 0.40, and 0.38 for absolute/positive/negative discretionary accruals, respectively. The models in literature including variables of absolute value of total accruals and absolute value of cash flow have R-squared values between circa 10 percent (Davis et al., 2000; Elder & Zhou, 2002) and 52 percent (Frankel et al., 2002; Balsam et al., 2003). For instance, Frankel et al. (2002) reports 0.47, 0.40, and 0.52 R-squared values for their regressions of absolute/positive/negative discretionary accruals whereas Balsam et al. register 0.53 R-squared value for their absolute discretionary accrual regression. Therefore the R-squared values of this study appear to fit in the variance of literature studies. In all regressions, F-statistic values are significant at 1 percent level, expressing a significant relationship between dependent and independent variables.

Absolute and positive discretionary accruals are not statistically significant for Big 4 clients, albeit they have the expected sign for the direction of relationship. Negative discretionary accruals appear to be statistically higher for Big 4 at five percent level, implying that reputation related costs might be generating over conservatism on Big 4 auditors, resulting in suppression of earnings downwards.

The coefficient for clients of industry specialist auditors is significantly negative at five percent level for absolute and negative discretionary accruals. The clients of industry specialist auditors have 1.2 percent less discretionary accruals in

magnitude (absolute value), and 1.5 percent less negative discretionary accruals when compared with clients of non industry specialist auditors. The clients of industry specialist auditors have circa 1 percent less upward earnings management, albeit it is not statistically significant.

SHORT exhibits a positive relationship between auditor tenure less than 3 years and absolute/positive/negative discretionary accruals although the results are not statistically significant. Contrary to our expectations, LONG has a inverse relationship with negative discretionary accruals (-0.018 , $p < 0.10$), favoring another line of literature arguing that auditor quality increases with increasing auditor tenure (Davis et al, 2000; Ho et al., 2010).

PSHORT seem to have insignificant negative relation with absolute/positive/negative discretionary accruals. However, PLONG is positively related with magnitude of earnings management (0.030 , $p < 0.10$) and with upward earnings management (0.047 , $p < 0.05$), implying that auditor independence could be jeopardized more significantly at partner-level than it could at audit firm-level.

Although the results do not present any significant relationship between discretionary accruals and presence of qualified opinion, clients with disclaimer of opinion have 0.047 less discretionary accruals in magnitude ($p < 0.01$), and 0.042 less income-decreasing discretionary accruals ($p < 0.05$) when compared with clients with other types of audit opinions. This finding may imply that issuance of disclaimer of opinion remarks higher audit independence that represents a likely higher audit quality.

The coefficients of AUDPEN are not statistically significant, suggesting auditor's litigation has an insignificant effect on absolute/positive/negative discretionary accruals. Nevertheless, firm's litigation has a significant association

with all types of discretionary accruals. Firms sanctioned by CMB (FIRMPEN) appear to have less absolute discretionary accruals (-0.046, $p < 0.01$), negative discretionary accruals (-0.053, $p < 0.01$), and positive discretionary accruals (-0.038, $p < 0.10$). The findings designate that firm litigation has larger and statistically significant influence on discretionary accruals than auditor litigation.

Leverage, measured by total debt divided by total assets, is positively associated with discretionary accruals and the relation is statistically significant at 1 percent level for ABSDACC (0.010) and POSDACC (0.013). The relation is marginal and significant at 10 percent level for ABSNEGDACC (0.002).

Furthermore, it is expected that firms with longer operating cycles (OPERCYC) have more accrual management which is moderately supported by the coefficients for ABSDACC (0.011, $p < 0.10$) and POSDACC (0.021, $p < 0.05$). CAPINS, measured by gross property, plant, and equipment scaled by total sales, demonstrate the expected sign but a light support for the suggestion that higher capital intensity could result in lower absolute (-0.001, $p < 0.10$) and positive (-0.001, $p < 0.10$) discretionary accruals.

Larger total accruals provide firms with larger opportunities to manage their accruals, thus ABSTACC is expected to have a positive association with discretionary accruals, which is significantly supported by our results for ABSDACC (0.402, $p < 0.01$), POSDACC (0.703, $p < 0.01$), and NEGABSDACC (0.332, $p < 0.001$) and consistent with findings in literature (Frankel et al., 2002, Balsam et al., 2003). Larger operating cash flows reduces total accruals, thus a negative association is expected with discretionary. Although all regressions have estimated the direction of relation as expectedly, only ABSDACC provides the statistically significant finding (-0.05, $p < 0.05$). The results imply that larger operating cash flows could

narrow the accounting opportunities facilitating discretionary transactions.

Clients with impersistent earnings present higher discretionary accruals. The coefficient is 0.01 for ABSDACC and 0.013 for POSDACC, both being significant at five percent level. ABSNEGDACC reveal the expected sign albeit it is not statistically significant. The figures pinpoint that earnings impersistence could have roots in accrual impersistence that may result from discretionary actions by management.

Equity issuance (SHAREINC) and buy-back operations (SHAREDEC) could create ex ante incentives for earnings management. The coefficients for SHAREINC are not statistically significant in our regressions. However, SHAREDEC exhibits a significant negative relation with absolute (-0.068, $p < 0.05$) and negative (-0.195, $p < 0.01$) discretionary accruals, implying that firm may not be reducing their earnings due to litigation cost concerns increasing with condense visibility brought forth by buy-back operations.

Finally, member of firms in ISE Corporate Governance Index register lower discretionary accruals both in magnitude and signed directions. The relationship is significant for ABSDACC (-0.003, $p < 0.05$) and ABSNEGDACC (-0.003, $p < 0.10$). More independent boards and better internal control mechanisms in ISECGI could signify a confined environment to conduct earnings management that reduces risk on audit quality.

The evidence for Model 1 indicates that industry specialist auditors are more likely to reduce discretionary accruals, and thus provide higher audit quality when compared to non industry specialists. The positive association between Big 4 and income-decreasing accruals implies higher auditor conservatism due to higher reputation-related costs of Big auditors. The results for auditor and partner tenures

Table 8. Expected Signs of Coefficients in Regressions of Absolute/ Positive /Absolute Negative Discretionary Accruals with Auditor-related and Firm-related Variables

$$ABSDACC_t / POSDACC_t / ABSNEGDACC_t = \beta_0 + \beta_1 BIG4_t + \beta_2 INDSPEC + \beta_3 SHORT_t + \beta_4 LONG_t + \beta_5 PSHORT_t + \beta_6 PLONG_t + \beta_7 QUA_t + \beta_8 DISC_t + \beta_9 AUDPEN_t + \beta_{10} FIRMPEN_t + \beta_{11} FIRMSIZE_t + \beta_{12} LEV_t + \beta_{13} OPERCYC_t + \beta_{14} CAPINS_t + \beta_{15} ABSTACC_t + \beta_{16} ABSCFO_t + \beta_{17} PERSIST_t + \beta_{18} SHAREINC_t + \beta_{19} SHAREDEC_t + \beta_{20} ISECGI_t + \mu_t$$

Dependent variable:		Absolute discretionary accruals (ABSDACC)			Positive discretionary accruals (POSDACC)			Negative discretionary accruals (ABSNEGDACC)		
		<u>Expected</u>	<u>Estimated</u>		<u>Expected</u>	<u>Estimated</u>		<u>Expected</u>	<u>Estimated</u>	
<u>Independent variables:</u>	<u>Abbreviation</u>	<u>sign</u>	<u>sign</u>		<u>sign</u>	<u>sign</u>		<u>sign</u>	<u>sign</u>	
Intercept		?	+		?	-		?	+	
Big 4	BIG4	-	-		-	+		-/+	+	**
Industry specialist	INDSPEC	-	-	**	-	-		-	-	**
Short auditor tenure	SHORT	+	+		+	+		+	+	
Long auditor tenure	LONG	+	-		+	+		+	-	*
Short partner tenure	PSHORT	+	-		+	-		+	-	
Long partner tenure	PLONG	+	+	*	+	+	**	+	-	
Qualified opinion	QUA	-	+		-	+		-	+	
Disclaimer of opinion	DISC	-	-	***	-	-		-	-	**
Penalty to auditor	AUDPEN	-	-		-	-		-	+	
Penalty to firm	FIRMPEN	-	-	***	-	+	*	-	-	***
Firm size	FIRMSIZE	-/+	-		-/+	+		-/+	-	
Leverage	LEV	+	+	***	+	+	***	+	+	*
Operating cycle	OPERCYC	+	+	*	+	+	**	+	+	
Capital intensity	CAPINS	-	-	*	-	-	*	-	-	

Table 8 (Continued)

Total accruals (Absolute value)	ABSTACC	+	+	***	+	+	***	+	+	***
Cash flow from operations (Absolute value)	ABSCFO	-	-	**	-	-		-	-	
Earnings impersistence	IMPERSIST	+	+	**	+	+	**	+	+	
Share increase	SHAREINC	+	-		+	-		-	+	
Share decrease	SHAREDEC	+	-	**	-	-		+	-	***
Corporate governance index member	ISECGI	-	-	**	-	-		-	-	*

Notes:

***, **, * denote two-tailed significance at the 1%, 5%, and 10%, respectively. Year and industry dummies are not presented for brevity purpose. ABSDACC / POSSDACC / ABSNEGDACC: Absolute/positive/absolute negative value of discretionary accruals computed with modified cross-sectional Jones model. BIG4: 1 if the firm is audited by a Big 4 audit company (Deloitte & Touche, Ernst & Young, KPMG, and PricewaterhouseCoopers), 0 otherwise. INDSPEC: 1 if the firm is audited by an industry specialist audit company, 0 otherwise. QUA: 1 if the firm received a qualified opinion, 0 otherwise. DISC: 1 if the firm received a disclaimer of opinion, 0 otherwise. SHORT: 1 if the auditor tenure is shorter than 3 years, 0 otherwise. LONG: 1 if the auditor tenure is longer than 9 years, 0 otherwise. PSHORT: 1 if the partner tenure is shorter than 3 years, 0 otherwise. PLONG: 1 if the auditor tenure is longer than 9 years, 0 otherwise. AUDPEN: 1 for the concurrent and post-sanction years if audit firm is sanctioned by Capital Market Board, 0 otherwise. FIRMPEN: 1 if any penalty is charged to firm by Capital Market Board, 0 otherwise. FIRMSIZE: Natural logarithm of firm's total assets. LEV: Total liabilities divided by total assets. OPERCYC: Natural logarithm of days sales in inventory and receivable. CAPINS: Gross plant property equipment, scaled by sales. ABSTACC: Firm's net income minus cash flow from operations, scaled by total assets, shown in absolute value. ABSCFO: Cash flow from operations, scaled by total assets, shown in absolute value. IMPERSIST: 1 if the firm has low earnings persistence, 0 otherwise. SHAREINC: 1 if the firm has equity issuance more than 10%, 0 otherwise. SHAREDEC: 1 if the firm has equity repurchase more than 10%, 0 otherwise. ISECGI: 1 if the firm is a member of Corporate Governance Index in Istanbul Stock Exchange, 0 otherwise.

Table 9. Regressions of Absolute Discretionary Accruals/ Positive Accruals /Absolute Negative Accruals with Auditor-Related and Control Variables

$$ABSDACC_t / POSDACC_t / ABSNEGDACC_t = \beta_0 + \beta_1 BIG4_t + \beta_2 INDSPEC + \beta_3 SHORT_t + \beta_4 LONG_t + \beta_5 PSHORT_t + \beta_6 PLONG_t + \beta_7 QUA_t + \beta_8 DISC_t + \beta_9 AUDPEN_t + \beta_{10} FIRMPEN_t + \beta_{11} FIRMSIZE_t + \beta_{12} LEV_t + \beta_{13} OPERCYC_t + \beta_{14} CAPINS_t + \beta_{15} ABSTACC_t + \beta_{16} ABCSFO_t + \beta_{17} PERSIST_t + \beta_{18} SHAREINC_t + \beta_{19} SHAREDEC_t + \beta_{20} ISECGI_t + \mu_t$$

Dependent variable:		Absolute discretionary accruals (ABSDACC)		Positive discretionary accruals (POSDACC)		Negative discretionary accruals (ABSNEGDACC)		
Independent variables:	Abbreviation	Coefficients	t-statistic	Coefficients	t-statistic	Coefficients	t-statistic	
Intercept		0.023	0.661	-0.027	-0.566	0.070	1.470	
Big 4	BIG4	-0.006	-1.126	0.002	0.283	0.014	1.851	**
Industry specialist	INDSPEC	-0.012	-1.983	-0.009	-1.034	-0.015	-1.932	**
Short auditor tenure	SHORT	0.007	1.223	0.011	1.479	0.001	0.080	
Long auditor tenure	LONG	-0.008	-1.059	0.003	0.315	-0.018	-1.747	*
Short partner tenure	PSHORT	-0.005	-0.867	-0.003	-0.355	-0.008	-1.127	
Long partner tenure	PLONG	0.030	1.673	0.047	2.036	-0.004	-0.163	**
Qualified opinion	QUA	0.004	0.634	0.008	0.756	0.009	0.954	
Disclaimer of opinion	DISC	-0.047	-2.841	-0.012	-0.461	-0.042	-1.944	**
Penalty to auditor	AUDPEN	-0.005	-0.348	-0.017	-0.929	0.015	0.738	
Penalty to firm	FIRMPEN	-0.046	-3.257	-0.038	-1.831	-0.053	-2.907	***
Firm size	FIRMSIZE	-0.001	-0.240	0.002	0.375	-0.005	-1.069	
Leverage	LEV	0.010	2.718	0.013	3.365	0.002	0.264	*
Operating cycle	OPERCYC	0.011	1.702	0.021	2.308	0.006	0.649	**
Capital intensity	CAPINS	-0.001	-1.690	-0.001	-1.702	0.000	-0.988	*
Total accruals (Absolute value)	ABSTACC	0.402	16.668	0.703	16.772	0.332	10.006	***

Table 9 (Continued)

Cash flow from operations (Absolute value)	ABSCFO	-0.050	-2.205	**	-0.042	-1.162		-0.032	-1.001
Earnings impersistence	IMPERSIST	0.010	2.480	**	0.013	2.352	**	0.007	1.138
Share increase	SHAREINC	-0.001	-0.112		-0.009	-0.682		0.006	0.504
Share decrease	SHAREDEC	-0.068	-2.270	**	-0.041	-1.288		-0.195	-2.944 ***
Corporate governance index member	ISECGI	-0.003	-2.024	**	-0.001	-0.418		-0.003	-1.896 *
Adjusted R ²			0.292			0.403			0.382
F Value			22.505	***		18.643	***		11.470 ***

Notes:

***, **, * denote two-tailed significance at the 1%, 5%, and 10%, respectively. Year and industry dummies are not presented for brevity purpose. ABSDACC / POSSDACC / ABSNEGDACC: Absolute/positive/absolute negative value of discretionary accruals computed with modified cross-sectional Jones model. BIG4: 1 if the firm is audited by a Big 4 audit company (Deloitte & Touche, Ernst & Young, KPMG, and PricewaterhouseCoopers), 0 otherwise. INDSPEC: 1 if the firm is audited by an industry specialist audit company, 0 otherwise. QUA: 1 if the firm received a qualified opinion, 0 otherwise. DISC: 1 if the firm received a disclaimer of opinion, 0 otherwise. SHORT: 1 if the auditor tenure is shorter than 3 years, 0 otherwise. LONG: 1 if the auditor tenure is longer than 9 years, 0 otherwise. PSHORT: 1 if the partner tenure is shorter than 3 years, 0 otherwise. PLONG: 1 if the auditor tenure is longer than 9 years, 0 otherwise. AUDPEN: 1 for the concurrent and post-sanction years if audit firm is sanctioned by Capital Market Board, 0 otherwise. FIRMPEN: 1 if any penalty is charged to firm by Capital Market Board, 0 otherwise. FIRMSIZE: Natural logarithm of firm's total assets. LEV: Total liabilities divided by total assets. OPERCYC: Natural logarithm of days sales in inventory and receivable. CAPINS: Gross plant property equipment, scaled by sales. ABSTACC: Firm's net income minus cash flow from operations, scaled by total assets, shown in absolute value. ABSCFO: Cash flow from operations, scaled by total assets, shown in absolute value. IMPERSIST: 1 if the firm has low earnings persistence, 0 otherwise. SHAREINC: 1 if the firm has equity issuance more than 10%, 0 otherwise. SHAREDEC: 1 if the firm has equity repurchase more than 10%, 0 otherwise. ISECGI: 1 if the firm is a member of Corporate Governance Index in Istanbul Stock Exchange, 0 otherwise.

are heterogeneous. Long auditor tenure appear to advance audit quality since it reduces discretionary transactions due to enhanced client knowledge and audit practices, however longer tenures appear to enforce compromising auditor independence more at partner level than it is at audit firm level. Moreover, issuance of disclaimer of opinion is related with less discretionary transactions, indicating a higher audit quality.

In terms of firm-related factors, magnitude of total accruals has the largest and most significant explanatory power related to discretionary accruals, which is consistent with other studies using total accruals in their models (Frankel et al., 2002; Balsam et al, 2003). Firms sanctioned by CMB are evidenced to have lower discretionary accruals. Lower discretion imposes less risk on audit procedures, increasing audit quality. Higher leverage and earnings impersistence are positively associated with discretionary accruals, meaning that audit quality in high-levered and impersistent-incomed firms are likely to be lower compared to firms with low leverage and persistent earnings.

The evidence also show that firms are more cautious during equity decreasing operation that could stem from potentially increasing litigation costs of client and auditor. Lastly, as a firm-related factor on audit quality, better corporate governance mechanisms are documented to imply lower earnings management in ISECGI for the period 2005 through 2010.

CHAPTER 6

MODEL 2: MEASURING AUDIT QUALITY BY ABNORMAL WORKING CAPITAL ACCRUALS

Estimation Differences

In Model 2, abnormal working capital accruals are used as an alternative a proxy for audit quality (DeFond and Park, 2001; Kim et al. 2003). Working capital accruals differ from modified cross-sectional model for the reason that Jones model constructs the estimates of expected accruals on the coefficient from a regression of accruals on the change in sales. After controlling for the change in sales, an intercept term that is equivalent to the average level of accruals is employed. In contrast, Model 2 estimates expected accruals upon the firm-specific ratio of working capital to sales (DeFond and Park, 2001).

Particularly, abnormal working capital accruals (AWACC) is the difference between the current year's realized working capital accruals and the expected level of working capital accruals. First, we need to compute non-cash working capital (WCA) for firm j in year t as:

$$WCA_{jt} = (CA_{jt} - \text{Cash}_{jt}) - (CL_{jt} - \text{STD}_{jt}) \quad (5)$$

where,

CA_{jt} = current assets

Cash_{jt} = cash and cash equivalents

CL_{jt} = current liabilities

STD_{jt} = short-term debt

Following DeFond and Park (2001), abnormal working capital (AWACC) is computed as follows:

$$AWACC_{jt} = WCA_{jt} - [(WCA_{jt-1}/REV_{jt-1}) * REV_{jt}] \quad (6)$$

where,

WCA_{jt} = non-cash working capital accruals computed by (5), and

REV_{jt} = sales revenue.

AWCA takes in the difference between the current year's working capital accruals and normal level of working capital accruals required to support current sales activities. AWACC is interpreted as result of opportunistic earnings management.

In order to improve the comparability of the results with Model 1, the dependent variable (AWACC) is presented in three groups: (1) ABSAWACC is the absolute value of abnormal working capital accruals, (2) POSAWACC is positive (income-increasing) abnormal working capital accruals, (3) ABSNEGAWACC is negative (income-decreasing) abnormal working capital in absolute value. The independent variables and their estimations are kept the same with Model 1.

Descriptive and Univariate Results

Means and standard deviations of dependent variables are shown in Table 10. The descriptive statistics of pooled sample for independent variables are not repeated since they are given in Table 6 of Model 1.

For 1144 firm-year items for period 2005 through 2010, absolute value of abnormal working capital accruals is TRY 28.075 million. Fifty-four percent

(621/1144) of the sample consists of income-increasing (positive) abnormal working capital accruals, and the remaining 46 percent (528/1144) possess income-decreasing (negative) abnormal working capital accruals. The average magnitude of positive abnormal working capital accruals is TRY 29.939 million that is higher than magnitude of negative abnormal working capital accruals, TRY 25.510 million.

Table 10. Descriptive Statistics of Variables for Pooled Sample (n=1144)*

Dependent variables (in millions):		Mean	Std. deviation
Absolute abnormal working capital accruals	ABSAWACC	28.075	52.187
Positive abnormal working capital accruals (n=621)	POSAWACC	29.939	57.723
Absolute negative abnormal working capital accruals (n=528)	ABSNEGAWACC	25.510	44.457

Notes:

* Top dependent variables are winsorized at top 1% and bottom 99% percentiles

The univariate statistics for auditor size, industry specialization, and auditor's litigation are given in Panel A of Table 11. The results indicate that clients of Big 4 auditors have significantly less abnormal working capital accruals both in magnitude (absolute value) and upward/downward directions. The differences between groups are significant at 0.01 level for all types of abnormal working capital accruals.

Lower absolute/positive/negative abnormal working capital accruals at 0.01 significance level are registered for the clients of industry specialist auditors. The difference for negative abnormal working capital accruals is slightly higher than absolute and positive abnormal working capital accruals. Saturated results are given for auditor's litigation although they do not posit any statistically significant difference between sanctioned and non sanctioned auditors.

Panel B of Table 11 presents the results of ANOVA tests for differences of abnormal working capital accruals in relation with audit firm tenures, partner tenures, and audit opinion types. Although the table shows statistically insignificant results for auditor tenure differences, clients with medium auditor tenure have lower

Table 11. Univariate Tests for Model 2

Panel A: Descriptive Statistics of Mann-Whitney U Tests (in millions)

	Big 4	Non Big 4		Industry specialist	Non industry specialist		Sanctioned auditor	Non sanctioned auditor
	Mean	Mean		Mean	Mean		Mean	Mean
ABSAWACC	20.591	36.686	***	19.102	43.328	***	27.497	28.088
POSAWACC	22.324	38.520	***	20.434	45.552	***	33.530	29.856
ABSNEGAWACC	18.374	33.880	***	17.246	40.333	***	19.818	25.631

Panel B: Descriptive Statistics of ANOVA Tests (in millions)

	Audit firm tenure		
	Short	Medium	Long
	Mean	Mean	Mean
ABSAWACC	26.057	28.764	32.453
POSAWACC	27.211	31.192	32.310
ABSNEGAWACC	24.174	25.617	31.641

	Partner tenure		
	Short	Medium	Long
	Mean	Mean	Mean
ABSAWACC	27.008	28.792	19.028
POSAWACC	30.117	30.266	12.849
ABSNEGAWACC	23.098	26.683	27.856

	Audit opinion			
	Non Qualified	Qualified	Disclaimer	
	Mean	Mean	Mean	
ABSAWACC	29.863	16.655	16.292	**
POSAWACC	31.117	22.502	6.585	
ABSNEGAWACC	27.913	10.821	20.822	**

Notes:

***, **, * denote significant significance at 1%, 5%, and 10%, respectively

ABSAWACC = Absolute value of abnormal working capital accruals. POSAWACC = Positive abnormal working capital accruals. ABSNEGAWACC = Absolute value of negative abnormal working capital.

abnormal working capital accruals. However, in contrast to expectations and findings of Model 1, client with shorter auditor tenure possess lower abnormal working capital accruals. Saturated results exist for partner tenure differences so that longer clients with longer partner tenure have lower ABSAWACC and POSAWAC while they have higher ABSNEGAWAC. Albeit the results are not statistically significant, multivariate regression is expected to help clarifying the relation between abnormal working capital accruals and auditor/partner tenures.

The results register statistically significant and expected differences for audit opinion types. Clients receiving qualified opinion and disclaimer of opinion have lower absolute/positive/negative abnormal working capital accruals than clients of non qualified opinions although the results are significant only for absolute and negative abnormal working capital accruals at 0.05 level.

Multivariate Results

The expected associations and results of OLS regressions of Model 2 are respectively given in tables 12 and 13 which measure audit quality by absolute abnormal working capital accruals (ABSAWACC) and signed abnormal working capital accruals (POSAWACC & ABSNEGAWACC) computed by following DeFond and Park (2001). Similar to Model 1, ABSAWACC stands for magnitude of earnings management whereas POSAWACC and ABSNEGAWACC stand for upward and downward management of earnings, respectively. Table 12 gives the expected signs and Table 13 gives the coefficients of explanatory variables and model summary statistics.

After controlling Pearson correlations matrix and VIF scores of regressions, none of independent variables are found to present a multicollinearity problem. The results are presented in tables 25-25-26-28 in Appendix B.

As seen in Table 13, the adjusted R-squared value of regression for absolute abnormal working capital accruals is circa 0.39 that is higher than its counterpart 0.29 in Model 1. The R-squared values are close to Model 1: 0.43 and 0.35 for positive/negative abnormal working capital accruals, respectively. There appears to be a significant relationship between dependent and independent variables since F-statistic values are significant at 0.01 level.

Big 4 clients are evidenced to have lower absolute/positive/negative abnormal working capital accruals at 0.01 and 0.05 significance levels, suggesting that audits by Big 4 are likely to better curtail earnings managements. In parallel, clients of industry specialist auditors have lower abnormal and negative working capitals accruals significant at 0.05 level, and lower income-increasing abnormal working capital accruals significant at 0.10 level.

SHORT reveals no statistically significant results, whereas LONG presents results consistent with Model 1, i.e. negative abnormal working capital accruals are negatively and significantly ($p < 0.01$) associated with long audit tenures, implying tenure increases client knowledge and expertise that results in higher audit quality. Coefficients of PSHORT exhibit expected signs for absolute and positive abnormal working capital accruals although statistical significance is not relatively stronger. Shorter partner tenures are positively related with income-increasing working capital accruals ($p < 0.10$), which indicates that partner switches could negatively influence audit quality. In parallel with literature and findings of Model 1, longer partner tenure is likely to result in higher positive ($p < 0.05$) and negative ($p < 0.10$)

abnormal accruals, implying that auditor independence could be impaired more at partner level than audit firm level.

The results suggest there exists no statistically significant relationship between type of audit opinion and abnormal working capital accruals. Disclaimer of opinion provides the expected sign for all regressions and saturated results exist for qualified audit opinion. None of the coefficients are statistically significant.

Findings related to auditor and firm litigation appear to contradict with suggestions of Model 1. Although a negative association is expected between litigation and abnormal accruals in subsequent periods, Model 2 exhibits opposing (positive) but mostly statistically insignificant results beside POSAWACC: Table 13 registers a significant ($p < 0.10$) positive association only between positive abnormal working capitals and firm litigation.

It is hypothesized in literature for the reason that larger firms could engage in income-decreasing earnings management due to extensive visibility increasing litigation probability and costs. Larger firms are also evidenced for income-increasing earnings management since they face more pressures to beat earnings forecasts (Barton & Simko, 2002; Myers et al., 2006). The coefficients strongly support the arguments in the literature and associates larger firm size with larger abnormal absolute/positive/negative working capital accruals ($p < 0.01$).

Consistent with Model 1, coefficients for operating cycle indicated a positive relation with abnormal working capital accruals, presenting a statistical significance for absolute and negative abnormal working capital accruals ($p < 0.10$ for both).

Table 12. Expected Signs of Coefficients in Regressions of Absolute / Positive /Negative Abnormal Working Capital Accruals with Auditor-related and Firm-related Variables

$$ABS AWACC_t / POS AWACC_t / ABS NEG AWACC_t = \beta_0 + \beta_1 BIG4_t + \beta_2 INDSPEC + \beta_3 SHORT_t + \beta_4 LONG_t + \beta_5 PSHORT_t + \beta_6 PLONG_t + \beta_7 QUA_t + \beta_8 DISC_t + \beta_9 AUDPEN_t + \beta_{10} FIRMPEN_t + \beta_{11} FIRMSIZE_t + \beta_{12} LEV_t + \beta_{13} OPERCYC_t + \beta_{14} CAPINS_t + \beta_{15} ABSTACC_t + \beta_{16} ABCSFO_t + \beta_{17} PERSIST_t + \beta_{18} SHAREINC_t + \beta_{19} SHAREDEC_t + \beta_{20} ISECGI_t + \mu_t$$

Dependent variable:		Absolute abnormal working capital accruals (ABS AWACC)			Positive abnormal working capital accruals (POS AWACC)			Negative abnormal working capital accruals (ABS NEG AWACC)		
Independent variables:	Abbreviation	Expected	Estimated		Expected	Estimated		Expected	Estimated	
		sign	sign		sign	sign		sign	sign	
Intercept		?	-	***	?	-	***	?	-	***
Big 4	BIG4	-	-	***	-	-	***	-/+	-	**
Industry specialist	INDSPEC	-	-	**	-	-	*	-	-	**
Short auditor tenure	SHORT	+	-		+	-		+	-	
Long auditor tenure	LONG	+	-		+	+		+	-	***
Short partner tenure	PSHORT	+	+		+	+	*	+	-	
Long partner tenure	PLONG	+	+		+	+	**	+	+	*
Qualified opinion	QUA	-	+		-	+		-	-	
Disclaimer of opinion	DISC	-	-		-	-		-	-	
Penalty to auditor	AUDPEN	-	+		-	+		-	-	
Penalty to firm	FIRMPEN	-	+		-	+	*	-	+	
Firm size	FIRMSIZE	-/+	+	***	-/+	+	***	-/+	+	***
Leverage	LEV	+	+		+	+		+	+	

Table 12 (Continued)

Dependent variable:		Absolute abnormal working capital accruals (ABSAWACC)			Positive abnormal working capital accruals (POSAWACC)			Negative abnormal working capital accruals (ABSNEGAWACC)		
		Expected	Estimated		Expected	Estimated		Expected	Estimated	
<u>Independent variables:</u>	<u>Abbreviation</u>	<u>sign</u>	<u>sign</u>		<u>sign</u>	<u>sign</u>		<u>sign</u>	<u>sign</u>	
Operating cycle	OPERCYC	+	+	*	+	+		+	+	*
Capital intensity	CAPINS	-	+		-	-		-	+	
Total accruals (Absolute value)	ABSTACC	+	+	***	+	+	**	+	+	**
Cash flow from operations (Absolute value)	ABSCFO	-	+		-	+		-	+	*
Earnings impersistence	IMPERSIST	+	+	**	+	+	**	+	+	
Share increase	SHAREINC	+	-		+	-		-	+	
Share decrease	SHAREDEC	+	+		-	+		+	+	
Corporate governance index member	ISECGI	-	-		-	+		-	-	

Notes:

***, **, * denote two-tailed significance at the 1%, 5%, and 10%, respectively. Year and industry dummies are not presented for brevity purpose. ABSAWACC / POSAWACC / ABSNEGAWACC: Absolute/positive/absolute negative value of abnormal working capital accruals computed as in DeFond and Park (2001). BIG4: 1 if the firm is audited by a Big 4 audit company (Deloitte & Touche, Ernst & Young, KPMG, and PricewaterhouseCoopers), 0 otherwise. INDSPEC: 1 if the firm is audited by an industry specialist audit company, 0 otherwise. QUA: 1 if the firm received a qualified opinion, 0 otherwise. DISC: 1 if the firm received a disclaimer of opinion, 0 otherwise. SHORT: 1 if the auditor tenure is shorter than 3 years, 0 otherwise. LONG: 1 if the auditor tenure is longer than 9 years, 0 otherwise. PSHORT: 1 if the partner tenure is shorter than 3 years, 0 otherwise. PLONG: 1 if the auditor tenure is longer than 9 years, 0 otherwise. AUDPEN: 1 for the concurrent and post-sanction years if audit firm is sanctioned by Capital Market Board, 0 otherwise. FIRMPEN: 1 if any penalty is charged to firm by Capital Market Board, 0 otherwise. FIRMSIZE: Natural logarithm of firm's total assets. LEV: Total liabilities divided by total assets. OPERCYC: Natural logarithm of days sales in inventory and receivable. CAPINS: Gross plant property equipment, scaled by sales. ABSTACC: Firm's net income minus cash flow from operations, scaled by total assets, shown in absolute value. ABSCFO: Cash flow from operations, scaled by total assets, shown in absolute value. IMPERSIST: 1 if the firm has low earnings persistence, 0 otherwise. SHAREINC: 1 if the firm has equity issuance more than 10%, 0 otherwise. SHAREDEC: 1 if the firm has equity repurchase more than 10%, 0 otherwise. ISECGI: 1 if the firm is a member of Corporate Governance Index in Istanbul Stock Exchange, 0 otherwise.

Table 13. Regressions of Absolute / Positive /Negative Abnormal Working Capital Accruals with Auditor-related and Firm-related Variables

$$ABS AWACC_t / POS AWACC_t / ABS NEG AWACC_t = \beta_0 + \beta_1 BIG4_t + \beta_2 INDSPEC + \beta_3 SHORT_t + \beta_4 LONG_t + \beta_5 PSHORT_t + \beta_6 PLONG_t + \beta_7 QUA_t + \beta_8 DISC_t + \beta_9 AUDPEN_t + \beta_{10} FIRMPEN_t + \beta_{11} FIRMSIZE_t + \beta_{12} LEV_t + \beta_{13} OPERCYC_t + \beta_{14} CAPINS_t + \beta_{15} ABSTACC_t + \beta_{16} ABSCFO_t + \beta_{17} PERSIST_t + \beta_{18} SHAREINC_t + \beta_{19} SHAREDEC_t + \beta_{20} ISECGI_t + \mu_t$$

Dependent variable:		Absolute abnormal working capital accruals (ABS AWACC)			Positive abnormal working capital accruals (POS AWACC)			Negative abnormal working capital accruals (ABS NEG AWACC)		
<u>Independent variables:</u>	<u>Abbreviation</u>	<u>Coefficients</u>	<u>t-statistic</u>		<u>Coefficients</u>	<u>t-statistic</u>		<u>Coefficients</u>	<u>t-statistic</u>	
Intercept		-379602185.14	-17.503	***	-464051116.46	-14.891	***	-276082320.47	-9.331	***
Big 4	BIG4	-11576462.12	-3.625	***	-16535113.89	-3.608	***	-8574734.57	-1.981	**
Industry specialist	INDSPEC	-8676363.76	-2.539	**	-8989468.79	-1.811	*	-9468514.29	-2.066	**
Short auditor tenure	SHORT	-2419937.51	-0.707		-5130377.98	-1.032		-636889.07	-0.140	
Long auditor tenure	LONG	-3873080.69	-1.095		2417759.89	0.480		-14084745.56	-2.910	***
Short partner tenure	PSHORT	4104586.32	1.276		8078071.98	1.731	*	-1023796.56	-0.239	
Long partner tenure	PLONG	825086.72	0.188		8560059.45	1.365	**	11449189.45	1.874	*
Qualified opinion	QUA	717968.04	0.167		3698201.07	0.566		-2207591.40	-0.397	
Disclaimer of opinion	DISC	-2213418.977	-0.223		-15838780.75	-0.749		-142421.75	-0.013	
Penalty to auditor	AUDPEN	4347089.66	0.506		9049751.40	0.711		-1164305.43	-0.102	
Penalty to firm	FIRMPEN	4150523.42	0.481		8111105.24	0.581	*	5975464.38	0.585	
Firm size	FIRMSIZE	50757114.35	21.425	***	60870002.82	17.566	***	38264936.76	12.047	***
Leverage	LEV	3147086.27	1.491		3353968.85	0.553		1955891.08	0.934	
Operating cycle	OPERCYC	6768978.01	1.746	*	3332303.75	0.619		9954664.60	1.807	*
Capital intensity	CAPINS	204164.94	1.095		-377954.43	-0.807		287633.39	1.492	

Table 13 (Continued)

Dependent variable:		Absolute abnormal working capital accruals (ABSAWACC)			Positive abnormal working capital accruals (POSAWACC)			Negative abnormal working capital accruals (ABSNEGAWACC)		
Independent variables:	Abbreviation	Coefficients	t-statistic		Coefficients	t-statistic		Coefficients	t-statistic	
Total accruals (Absolute value)	ABSTACC	39035794.85	3.300	***	36945699.46	2.040	**	32369891.19	2.062	**
Cash flow from operations (Absolute value)	ABSCFO	3982541.19	0.295		11734596.03	0.529		4272111.37	0.267	*
Earnings impersistence	IMPERSIST	6498128.84	2.497	**	7747699.96	1.988	**	3374998.98	0.999	
Share increase	SHAREINC	-3057769.04	-0.553		-3942932.93	-0.511		4304286.23	0.564	
Share decrease	SHAREDEC	28771167.77	1.550		25491951.69	0.983		23070123.49	0.878	
Corporate governance index member	ISECGI	-1042378.72	-0.138		9060495.22	0.823		-10022144.82	-0.999	
Adjusted R ²			0.389			0.428			0.346	
F-value			22.377	***		14.660	***		9.202	***

Notes:

, *, * denote two-tailed significance at the 1%, 5%, and 10%, respectively. Year and industry dummies are not presented for brevity purpose. ABSAWACC / POSAWACC / ABSNEGAWACC: Absolute/positive/absolute negative value of abnormal working capital accruals computed as in DeFond and Park (2001). BIG4: 1 if the firm is audited by a Big 4 audit company (Deloitte & Touche, Ernst & Young, KPMG, and PricewaterhouseCoopers), 0 otherwise. INDSPEC: 1 if the firm is audited by an industry specialist audit company, 0 otherwise. QUA: 1 if the firm received a qualified opinion, 0 otherwise. DISC: 1 if the firm received a disclaimer of opinion, 0 otherwise. SHORT: 1 if the auditor tenure is shorter than 3 years, 0 otherwise. LONG: 1 if the auditor tenure is longer than 9 years, 0 otherwise. PSHORT: 1 if the partner tenure is shorter than 3 years, 0 otherwise. PLONG: 1 if the auditor tenure is longer than 9 years, 0 otherwise. AUDPEN: 1 for the concurrent and post-sanction years if audit firm is sanctioned by Capital Market Board, 0 otherwise. FIRMPEN: 1 if any penalty is charged to firm by Capital Market Board, 0 otherwise. FIRMSIZE: Natural logarithm of firm's total assets. LEV: Total liabilities divided by total assets. OPERCYC: Natural logarithm of days sales in inventory and receivable. CAPINS: Gross plant property equipment, scaled by sales. ABSTACC: Firm's net income minus cash flow from operations, scaled by total assets, shown in absolute value. ABSCFO: Cash flow from operations, scaled by total assets, shown in absolute value. IMPERSIST: 1 if the firm has low earnings persistence, 0 otherwise. SHAREINC: 1 if the firm has equity issuance more than 10%, 0 otherwise. SHAREDEC: 1 if the firm has equity repurchase more than 10%, 0 otherwise. ISECGI: 1 if the firm is a member of Corporate Governance Index in Istanbul Stock Exchange, 0 otherwise.

Total accruals do present a statistically significant but less powerful relationship when related coefficients are compared with those of Model 1. As expected, absolute ($p < 0.01$), positive ($p < 0.05$), and negative ($p < 0.10$) abnormal working capital accruals are positively associated with earnings management, indicating that larger total accruals of clients are likely to risk assurance provided by audit services.

Coefficients for IMPERSIST reveal a positive relation with abnormal accruals, statistically significant for absolute and positive abnormal working capital accruals ($p < 0.05$ for both), which is consistent with literature suggestion and findings of Model 1.

Despite their statistical insignificance; equity issuance has an unexpected negative relation with absolute and positive accruals, and an expected positive relation with negative accruals. Likewise, there is an expected but insignificant parallelism between equity decreasing transactions and negative accruals.

Finally, unlike Model 1, the coefficients related to corporate governance are not statistically significant but have the expected signs for absolute and negative abnormal working capital accruals.

The evidence from Model 2 supports the arguments that Big 4 auditors and industry specialist auditors are more able to curtail earnings management. The evidence in favor of Big 4 auditors is stronger than it is in Model 1. The argument that longer auditor tenure could result in lower negative abnormal accruals due to enhanced client knowledge and auditor experience is also supported by Model 1 and Model 2.

Model 1 has suggested a positive relation between longer partner tenure absolute/positive discretionary accruals. A similar suggestion is hold for positive and negative abnormal working capital accruals in Model 2, which provides evidence for

implication that auditor independence is more likely to decrease at partner level when compared to audit firm level. Model 2 also provide a statistically insignificant support that abnormal accruals decrease in the existence of disclaimer of opinion that signifies higher auditor independence and higher audit quality.

Unlike Model 1, Model 2 evidences that larger firm size is strongly related with earnings management, indicating that litigation and forecast pressures on large firms could lead them to engaging earning management activities that risk the quality of assurance provided by audit services. Moreover, the link between corporate governance mechanisms and better audit quality could receive a support in regressions for abnormal and negative working capital accruals, albeit it is not statistically significant. Lastly, the argument that higher total accruals and/or impersistent earnings could signify lower audit quality is also supported by Model 2.

CHAPTER 7

MODEL 3: MEASURING AUDIT QUALITY BY AUDITOR INDEPENDENCE

Theoretical Background and Estimation Differences

The impairment of auditor independence has been one of the sources of many corporate collapses and scandals in the world, including case of Enron in United States. The discussion on media has showed that auditor independence is the main subject when questioning role of audit in these corporate scandals.

Auditor independence is twofold: Actual and perceived auditor independence. Actual auditor independence could be explained as the mental attitude of the auditor in terms of professional objectivity (Gul & Tsui, 1992). Perceived audit independence is relevant to stakeholders' or public's perception of the auditor's independence since the independence relies on the perceptions of users of financial statements (Bakar, Rahman, & Rashid 2005). Actual auditor independence is not observable, therefore many of the studies concentrates on the perceived audit independence (Gul & Tsui, 1992; Teoh & Lim, 1996; Craswell, Stokes, & Laughton, 2002; Abbott et al., 2003; Gramling, Jenkins, & Taylor, 2010).

A common measurement for auditor independence is the size of audit fees and client importance, i.e. fee dependence level (Shockley, 1982; Gul & Tsui, 1992; Teoh & Lim, 1996; Ashbaugh et al., 2003). Shockley (1982) argues that when auditors become financially dependent on their clients they would be less able to resist client pressures in any conflict situation, jeopardizing auditor independence.

DeAngelo (1981) employs the term “quasi rent” for the revenue an auditor earns from a single client above the variable costs of the audit, and explains that small auditors will have fewer clients and hence a smaller number of “quasi rents” when compared to larger auditors. This prepares the ground for the argument that large auditors offer higher audit quality than small auditors due to their ability to preserve their independence. The reasoning behind this argument is that auditors with many clients are less likely to be influenced by any one client. It can bear loss of one client while retaining “quasi rents” related with its large client portfolio. For DeAngelo, large number of clients could be seen as a collateral that serves as an incentive for auditors to issue an opinion free of bias. High level of collateral will provide auditors with less inclination to cheat for two reasons: (1) There will be other clients if this clients switches the auditor because of a disagreement. (2) If the auditor were to cheat and it was detected afterwards, its reputation will be discredited and other clients may switch to other auditors (Berkess & Simnett, 2002).

The concerns for influence of fee dependence on audit quality takes its place in IFAC Code of Ethics (2005):

290.206...When the total fees generated by an assurance client represent a large proportion of a firm’s total fees, the dependence on that client or client group and concern about the possibility of losing the client may create a self-interest threat...

As a response to these concerns, the SEC requires all public firms to disclose fees paid to external auditors since 2000. In Turkey, CMB requires all authorized auditors to upload the engagements, audit team information, and audit fee information to Within Information Transferring Project (UVAP) since 2007, however the information is not publicly disclosed.

Influenced by DeAngelo (1981), auditor independence and audit quality relation is employed by some of studies (Elliott & Jacobson, 1998; Carmichael, 1999; Kinney, 1999; Barkess & Simnett, 2002; Gramling et al., 2010). Auditor independence will be measured by following Barkess & Simnett (2002) and is defined as:

$$AUDIND_{ijt} = \frac{Fee_{ijt}}{\sum Fee_{it}}$$

where;

$AUDIND_{ijk}$ = level of fee dependency of auditor i to client j in year t ,

Fee_{ijt} = Fee earned by auditor i from client j in year t , and

$\sum Fee_{it}$ = Total fees earned by the auditor i in year t .

In original model, total fees comprise audit fees plus non-audit fees earned from clients. However, since only audit fees are available on UVAP, the level of fee dependency is measured only by audit fee data. Lastly, the independent variables and their estimations are kept same with Model 1 and Model 2 for comparability.

Descriptive Statistics and Univariate Tests

Disclosure of audit contracts was voluntary for ISE-authorized auditors until 2007 and has become mandatory since 2007. Since the data is not publicly available, the researcher requested and conducted an archive study at CMB headquarters in Ankara to collect relevant fee data for audit fees. However, it is difficult to say that all auditors are conveying entirety of their contracts to CMB, thus the sample lacks

some of audit fee information for the period 2005 through 2010; though the majority of missing information belongs to years 2005 and 2006 when disclosure was voluntary. Eventually, the final sample consists of 592 observations.

Table 14 presents an analysis of the number of listed firms on ISE that contributes 5%, 10%, 15%, 20%, and 25% or more to their auditor's total audit revenue for the sampling period. The table shows a relative fluctuation in the number of clients who potentially constitute risk of dependence. Since the sample is very limited for years 2005 and 2006, the researcher is hesitant to elaborate on observations in these periods. For the rest of sample, the number of clients that contributes to more than 5 percent of their auditor's revenue increases from 46.8% to 55.3% in 2008 which is followed by a decrease to 37.3% in succeeding year. However, potential dependence slightly increases to 41.7%, remarking that there appears to be no trend in potential auditor dependence level between years 2007 and 2010. Similar description could be given for levels of analysis other than 5% where any tendency ceases to exist.

Table 14. Clients Which Contribute >5%, >10%, >15%, >20%, and >25% to Their Auditors Revenue (n=592)

Year	Number of sample firms	5% of Revenue	10% of Revenue	15% of Revenue	20% of Revenue	25% of Revenue
2005	2	2 (100.0%)	1 (50.0%)	1 (50.0%)	0 (0.0%)	0 (0.0%)
2006	22	22(100.0%)	20 (90.9%)	16 (54.6%)	12 (54.6%)	10 (45.5%)
2007	94	44 (46.8%)	33 (35.1%)	27 (28.7%)	19 (20.2%)	15 (16.0%)
2008	141	78 (55.3%)	50 (35.5%)	40 (28.4%)	30 (21.3%)	22 (15.6%)
2009	158	59 (37.3%)	47 (29.8%)	35 (22.2%)	30 (19.0%)	24 (15.2%)
2010	175	73 (41.7%)	55 (31.4%)	42 (24.0%)	31 (17.7%)	25 (14.3%)

Panel A of Table 15 presents the univariate statistics for auditor size, industry specialization, and auditor’s litigation. The results indicate that Big 4 auditors have significantly less dependence when compared to non Big 4 clients. The differences are statistically significant at 0.01 level.

The auditor dependence for industry specialist auditors appears to be lower than non specialists at 0.01 significance level. Although a higher dependence is expected for sanctioned auditors, they appear to have lower dependence when compared to non sanctioned auditors. Albeit, the results are insignificant and further multivariate analysis is expected to clarify the relationship between auditor dependence and effect of auditor litigation.

Table 15. Univariate Tests for Model 3

Panel A: Descriptive Statistics of Mann-Whitney U Tests (in millions)

	Big 4	Non Big 4		Industry specialist	Non industry specialist		Sanctioned auditor	Non sanctioned auditor
	Mean	Mean		Mean	Mean		Mean	Mean
Auditor independence	0.030	0.232	***	0.038	0.197	***	0.115	0.134

Panel B: Descriptive Statistics of ANOVA Tests

		Audit firm tenure		
		Short	Medium	Long
		Mean	Mean	Mean
Auditor independence		0.154	0.122	0.119 ***
		Partner tenure		
		Short	Medium	Long
		Mean	Mean	Mean
Auditor independence		0.146	0.122	0.207
		Audit opinion		
		Non Qualified	Qualified	Disclaimer
		Mean	Mean	Mean
Auditor independence		0.121	0.195	0.314 ***

Notes:

***, **, * denote significant significance at 1%, 5%, and 10%, respectively

Auditor independence computed by fee earned from a single client divided by total fees earned by the auditor, therefore smaller scores represent higher auditor independence.

Panel B of Table 15 exhibits ANOVA analysis for difference of auditor independence in relation with audit firm tenures, partner tenures, and audit opinion types. The results show that auditor dependence is lowest for clients with long audit firm tenure (0.119), closely followed by client with medium audit firm tenures (0.122). However, results for partner tenure differs from results for audit firm tenure because auditor dependence appears to be higher for short (0.146) and long partner tenures (0.207) although differences are statistically insignificant.

Lastly, auditor dependence shows an unexpected and statistically significant result ($p < 0.01$) for audit opinion types, which requires clarification in multivariate analysis.

Multivariate Results

Table 16 documents the expected signs, coefficients, and collinearity statistics of OLS regression which measures audit quality by auditor independence (AUDIND).

The adjusted R-squared value of regression for auditor independence is circa 0.27. The F-statistics value is 7.48 and significant at 0.01 level. Pearson correlation matrix (Appendix C Table 29) does not indicate any critical correlations to check. VIF values are far below the critical value of 10, indicating no multicollinearity problem for the regression model.

In our analysis, readers should pay attention to the relation that auditor independence becomes greater as the dependent variable decreases; therefore an inverse interpretation is required when the coefficients are examined.

Auditor independence is found to be higher in Big 4 clients (-0.184, $p < 0.01$) and clients of industry specialist auditors (-0.060, $p < 0.05$). Heterogeneous results

exist for tenure analysis. Lower independence is expected for shorter audit firm tenures since it is hypothesized that auditors' intention to sustain the engagement during the initial years may jeopardize auditor independence. In favor of this argument, the coefficient for short tenure is statistically significant and posits a negative relation between auditor independence and audit firm tenures shorter than 3 years (0.047, $p < 0.05$). For longer audit firm tenures, a positive but insignificant relation is found between auditor independence and longer audit firm tenures. Likewise, the results are mixed and statistically insignificant for partner tenures.

Auditor independence is positively associated with disclaimer of opinion, indicating that disclaimer of opinion types might be a predictor for higher auditor independence (0.098, $p < 0.10$). The auditor independence is exhibited as increasing for the years succeeding CMB sanction on the auditor (-0.103, $p < 0.05$).

Among firm-related variables, evidence shows that only firm size is significantly related with auditor independence. Auditor independence is negatively associated with firm size (0.040, $p < 0.001$), indicating that auditors may be more tolerant to pressures of larger firms since auditors do not only earn high premiums from large-size clients but also have incentives to maintain these firms as a part of their marketing strategy.

In summary, auditor-related variables are documented to explain more of auditor independence when compared to firm-related variables. Big 4 auditors and industry specialist auditors are positively associated with higher auditor independence. CMB sanctions on auditors appear to enforce auditors to increase independence in succeeding years. Lastly, the results reveal that short audit firm tenure and larger clients are more likely to deteriorate auditor independence, signifying a lower audit quality.

Table 16. Regressions of Auditor Independence with Auditor-related and Firm-related Variables

$$AUDIND_t = \beta_0 + \beta_1 BIG4_t + \beta_2 INDSPEC + \beta_3 SHORT_t + \beta_4 LONG_t + \beta_5 PSHORT_t + \beta_6 PLONG_t + \beta_7 QUA_t + \beta_8 DISC_t + \beta_9 AUDPEN_t + \beta_{10} FIRMPEN_t + \beta_{11} FIRMSIZE_t + \beta_{12} LEV_t + \beta_{13} OPERCYC_t + \beta_{14} CAPINS_t + \beta_{15} ABSTACC_t + \beta_{16} ABSCFO_t + \beta_{17} PERSIST_t + \beta_{18} SHAREINC_t + \beta_{19} SHAREDEC_t + \beta_{20} ISECGI_t + \mu_t$$

Dependent variable:

Auditor independence (AUDIND)

<u>Independent variables:</u>	<u>Abbreviation</u>	<u>Expected sign</u>	<u>Coefficients</u>	<u>t-statistic</u>		<u>Tolerance</u>	<u>VIF</u>
Intercept		?	-0.113	-0.581			
Big 4	BIG4	-	-0.184	-8.273	***	0.445	2.245
Industry specialist	INDSPEC	-	-0.060	-2.514	**	0.404	2.476
Short auditor tenure	SHORT	+	0.047	2.179	**	0.489	2.045
Long auditor tenure	LONG	+	-0.001	-0.055		0.684	1.461
Short partner tenure	PSHORT	+	-0.015	-0.747		0.543	1.842
Long partner tenure	PLONG	+	0.000	0.006		0.760	1.315
Qualified opinion	QUA	-	0.010	0.368		0.734	1.363
Disclaimer of opinion	DISC	-	0.098	1.720	*	0.735	1.361
Penalty to auditor	AUDPEN	-	-0.103	-2.383	**	0.900	1.111
Penalty to firm	FIRMPEN	-	-0.018	-0.340		0.947	1.055
Firm size	FIRMSIZE	-/+	0.040	2.703	***	0.551	1.815
Leverage	LEV	+	-0.004	-0.361		0.806	1.240
Operating cycle	OPERCYC	+	-0.016	-0.632		0.752	1.329

Table 16 (Continued)

<u>Independent variables:</u>	<u>Abbreviation</u>	<u>Expected sign</u>	<u>Coefficients</u>	<u>t-statistic</u>	<u>Tolerance</u>	<u>VIF</u>
Capital intensity	CAPINS	-	0.001	0.799	0.766	1.305
Total accruals (Absolute value)	ABSTACC	+	-0.173	-1.645	0.693	1.443
Cash flow from operations (Absolute value)	ABSCFO	-	0.114	1.394	0.718	1.392
Earnings impersistence	IMPERSIST	+	0.019	1.185	0.896	1.117
Share increase	SHAREINC	+	-0.028	-0.748	0.944	1.059
Share decrease	SHAREDEC	+	-0.042	-0.505	0.950	1.052
Corporate governance index member	ISECGI	-	-0.005	-0.131	0.782	1.279
Adjusted R ²				0.272		
F-value				7.484	***	

Notes:

***, **, * denote two-tailed significance at the 1%, 5%, and 10%, respectively. Year and industry dummies are not presented for brevity purpose. AUDIND: Auditor independence computed as audit fee earned from a single client divided by total fees earned by the auditor. BIG4: 1 if the firm is audited by a Big 4 audit company (Deloitte & Touche, Ernst & Young, KPMG, and PricewaterhouseCoopers), 0 otherwise. INDSPEC: 1 if the firm is audited by an industry specialist audit company, 0 otherwise. QUA: 1 if the firm received a qualified opinion, 0 otherwise. DISC: 1 if the firm received a disclaimer of opinion, 0 otherwise. SHORT: 1 if the auditor tenure is shorter than 3 years, 0 otherwise. LONG: 1 if the auditor tenure is longer than 9 years, 0 otherwise. PSHORT: 1 if the partner tenure is shorter than 3 years, 0 otherwise. PLONG: 1 if the auditor tenure is longer than 9 years, 0 otherwise. AUDPEN: 1 for the concurrent and post-sanction years if audit firm is sanctioned by Capital Market Board, 0 otherwise. FIRMPEN: 1 if any penalty is charged to firm by Capital Market Board, 0 otherwise. FIRMSIZE: Natural logarithm of firm's total assets. LEV: Total liabilities divided by total assets. OPERCYC: Natural logarithm of days sales in inventory and receivable. CAPINS: Gross plant property equipment, scaled by sales. ABSTACC: Firm's net income minus cash flow from operations, scaled by total assets, shown in absolute value. ABSCFO: Cash flow from operations, scaled by total assets, shown in absolute value. IMPERSIST: 1 if the firm has low earnings persistence, 0 otherwise. SHAREINC: 1 if the firm has equity issuance more than 10%, 0 otherwise. SHAREDEC: 1 if the firm has equity repurchase more than 10%, 0 otherwise. ISECGI: 1 if the firm is a member of Corporate Governance Index in Istanbul Stock Exchange, 0 otherwise.

CHAPTER 8

CONCLUSION

The objective of this dissertation is to verify the factors influencing audit quality in ISE with a focus on audit-related influence through a threefold analysis perspective. The first two analyses focus on audit quality-earnings management linkage while the third analysis is based on audit quality-auditor independence connection.

As typical for services, not only the service providers' qualifications but also clients' characteristics are parameters in audit production function (O'Keefe et al., 1994). Therefore the potential factors influencing audit quality are aggregated into two groups in all analyses. The first group, audit-related variables, represents the auditor qualifications and it is the main focus of this dissertation on which hypotheses are constructed. The second group, firm-related variables, is used to compare and control for client-related influence on audit quality.

First two analyses adopt earnings management (EM) approach that is based on the very function of auditing for fair and true presentation of financial statement, i.e. high quality audit results in less earnings management in financial statements. The first EM model uses discretionary accruals as a proxy of earnings management that is computed from modified cross-sectional Jones model by Dechow et al. (1995) while the second one employs abnormal working capital accruals that is measured by DeFond and Park (2001). Both EM models scrutinize the impacts of audit-related and firm-related variables by using a pooled data of 1144 observations from ISE for the period 2005 through 2010.

The last model adopts auditor independence (AI) approach that suggests high auditor independence results in higher audit quality for the reason that higher independence auditors resist to client pressures therefore they are more able to deliver higher quality audit services. The AI model uses auditor independence as a proxy for auditor quality that is computed from fee dependency model of Barkess and Simnett (2002). It investigates the impact of audit-related and firm-related variables by using a sample of 559 observations. The sample size of AI model is less than EM models due to missing audit fee data.

Summary of Results

Table 17 documents significant associations evidenced by all models and present concluding remarks related to impact of audit-related factors on audit quality. Table 18 presents the hypotheses in the table and compares the results of all models in terms of their support for hypotheses. The results will be discussed in following separate sections for each hypothesis.

Auditor Size (Hypothesis 1)

Many studies focusing on audit quality have evidenced that Big 4 auditors deliver higher quality audit services (Palmrose, 1988; Teoh & Wong, 1993; Becker et al., 1998, Palmrose, 1988, Frankel et al., 2002), thus Hypothesis 1 predicts that audit quality is higher in clients of Big 4 auditors. Model 2, which is based on abnormal working capital accruals, supports the hypothesis for all regressions ($p < 0.01$, $p < 0.05$) while Model 1 suggests that Big 4 auditors are less prudent for

Table 17. Summary of Results and Evidence for Audit-related Variables

		Dependent variable	Statistically significant variables	Concluding remarks for audit-related variables
Model 1: Discretionary accruals	Audit quality in terms of reduction in	Magnitude of earnings management	<u>Big 4, long partner tenure, disclaimer of opinion</u> , firm litigation, leverage, operating cycle, capital intensity, total accruals, cash flow from operations, impersistent earnings, equity purchases, high corporate governance.	Big 4 auditors are likely to reduce earnings management and thus to provide audit services of higher quality. Disclaimer of opinion signifies higher audit quality, as well. However, partners with long client tenures are evidenced to provide less qualified audit services.
		Income-increasing earnings management	<u>Long partner tenure</u> , firm size, firm litigation, leverage, operating cycle, capital intensity, total accruals, earnings impersistence.	Partners with long client tenures are likely to mercy income-increasing earnings management, implying that partners with longer tenures are less resistant to client pressures
		Income-decreasing earnings management	<u>Big 4, auditor's industry specialization, long audit firm tenure*</u> , <u>disclaimer of opinion</u> , firm litigation, leverage, total accruals, equity purchases, high corporate governance.	Industry specialist auditors, and auditors auditing the same client for longer periods are able to curtail downward earnings management, thus are more likely to provide higher quality audit services. Big 4 auditors appear to be less prudent for income-decreasing earning management. Disclaimer of opinion signifies higher audit quality, as well.
Model 2: Abnormal working capital accruals	Audit quality in terms of reduction in	Magnitude of earnings management	<u>Big 4, auditor's industry specialization</u> , firm size, operating cycle, total accruals, impersistent earnings.	Big 4 auditors and industry specialist auditors are more likely to reduce earnings management, and thus provide audit services of higher quality.
		Income-increasing earnings management	<u>Big 4, auditor's industry specialization, short partner tenure, long partner tenure</u> , firm litigation, firm size, total accruals, impersistent earnings.	Big 4 auditors and industry specialist auditors are more likely to reduce income-increasing earnings management, and thus provide audit services of higher quality. Short and long partner tenures signify inferior audit quality, implying lack of client knowledge and overfamiliarity with client could jeopardize audit quality.
		Income-decreasing earnings management	<u>Big 4, auditor's industry specialization, long audit firm tenure*</u> , <u>long partner tenure</u> , firm size, operating cycle, total accruals, cash flow from operations.	Big 4 auditors, industry specialist auditors, and audit firms auditing the same client for longer periods are more likely to reduce income-decreasing earnings management. However, long partner tenures are likely to related with lower audit quality in terms of reduction in income-decreasing earnings management.
Model 3: Auditor independence	Audit quality in terms of	Auditor independence	<u>Big 4, auditor's industry specialization, short audit firm tenure, disclaimer of opinion, auditor litigation</u> , firm size	Big 4 auditors and industry specialist auditors are more likely to provide more qualified audit services. Auditors are more likely to increase the quality of their audit services in aftermath of sanctions by CMB. Audit firms with short client tenure are more associated with lower audit quality, implying lack of client knowledge generate more dependence on client assertions.

* Sign of relation is contrary to hypotheses' expectations.

Table 18. Hypotheses and Comparative Presentation of Results

Panel A: Results related to hypotheses

Hypotheses	Statistical significance level		
	1%	5%	10%
H1: Quality of the audit services provided by Big 4 auditors are higher when compared to non Big 4 auditors.	Big 4 auditors reduce magnitude of earnings management (Model 2), income-increasing earnings management (Model 2). Big 4 auditors provide more independent audits.	Big 4 auditors increases (decreases) income-decreasing earnings management in Model 1 (Model 2).	
H2: Quality of the audit services provided by industry specialist auditors are higher when compared to non industry specialist auditors.		Industry specialist auditors reduce magnitude of earnings management (Model 1 & 2), income-decreasing earnings management (Model 1 & 2). Industry specialist auditors provide more independent audits.	Industry specialist auditors reduce income-increasing earnings management (Model 2).
H3a: Quality of the audit services provided in early years of the audit firm tenure is lower when compared to medium years of the audit firm tenure.		Auditor dependency increases with short audit firm tenures.	
H3b: Quality of the audit services provided in later years of the audit firm tenure is lower when compared to medium years of the audit firm tenure.	Long audit firm tenures decreases income-decreasing earnings management (Model 2).		Long audit firm tenures decreases income-decreasing earnings management (Model 1).
H4a: Quality of the audit services provided in early years of the audit partner tenure is lower when compared to medium years of the audit partner tenure.			Short partner tenures increases income-increasing earnings management (Model 2).
H4b: Quality of the audit services provided in later years of the audit partner tenure is lower when compared to medium years of the audit partner tenure.	Long partner tenures increases income-increasing earnings management (Model 1 & 2).		Long partner tenures increases magnitude of earnings management (Model 1) and income-decreasing earnings management (Model 2).
H5: Issuing modified auditor opinion signifies high quality of audit services provided by the auditor.	Disclaimer of opinion decreases magnitude of earnings management (Model 1).	Disclaimer of opinion decreases income-decreasing earnings management (Model 1).	Disclaimer of opinion signified less independent audits.
H6: CMB sanctions generate a reactive increase in the quality of audit services provided by the auditor in post-sanction years.		Auditors provide more independent audits subsequent to litigation acts against them.	

Table 18 (Continued)

Panel B: Comparative results related to models and hypotheses

Hypothesis / Dependent Variable	Absolute EM		Income-increasing EM		Income-decreasing EM		Auditor Independence (AI)
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 3
	ABSDACC	ABSAWACC	POSDACC	POSAWACC	ABSNEGDACC	ABSNEGAWACC	AUDIND
H1		✓ ***		✓ ***	✓ **	✓ **	✓ ***
H2	✓ **	✓ **		✓ *	✓ **	✓ **	✓ **
H3a							✓ **
H3b					× *	× ***	
H4a				✓ *			
H4b	✓ *		✓ **	✓ **		✓ *	
H5	✓ ***				✓ **		× *
H6							✓ **

Notes:

***, **, * denote two-tailed significance at the 1%, 5%, and 10%, respectively. EM: Earnings Management. ABSDACC / POSSDACC / ABSNEGDACC: Absolute/positive/absolute negative value of discretionary accruals computed with modified cross-sectional Jones model (Dechow et al., 1995). ABSAWACC / POSAWACC / ABSNEGAWACC: Absolute/positive/absolute negative value of abnormal working capital accruals computed as in DeFond and Park (2001). AUDIND: Auditor independence computed as audit fee earned from a single client divided by total fees earned by the auditor (Barkess & Simnett, 2002).

preventing income-decreasing EM ($p < 0.10$), implying that litigation and brand reputation concerns of Big 4 auditors could jeopardize audit quality in income-decreasing cases (Kim et al., 2003; Ashbaugh-Skaife et al., 2008). Using auditor independence as a proxy to auditor quality, evidence from Model 3 ($p < 0.01$) reinforces the findings of EM models, indicating that auditor independence is higher for Big auditors.

All in all, Big 4 auditors are evidenced to provide higher audit quality services in Model 2 and 3. However, Model 1 and 2 provide different results for Big 4's role in restricting income-decreasing EM, requiring further research.

Industry Specialization of Auditor (Hypothesis 2)

Industry specialists are associated with better audit quality since their industrial knowledge and experience enhance their ability to identify misstatements and accounting errors more promptly and efficiently (Solomon et al., 1999). Besides income-increasing Model 1, all models provide evidence that industry specialists provide higher quality audit services. Better constraining of earnings management and higher auditor independence are associated with industry specialization. Only income-increasing Model 2 has a relatively moderate support ($p < 0.10$), however all other regressions share a robust and statistically significant evidence ($p < 0.05$) in support of hypothesis 2. The results are consistent with Balsam et al. (2003), Krishnan (2003b), Dunn and Mayhew (2004), Caramanis and Lennox (2008), and Reichelt and Wang (2010).

Short Auditor Tenure (Hypotheses 3a and 4a)

Auditors frequently lack client-specific knowledge in early period of engagement and they could have concerns for maintaining their new clients, conjointly reducing the auditor's ability to detect and adjust misstatements. Therefore Hypothesis 3a (H3a) and Hypothesis 4a (H4a) predict a lower audit quality for shorter audit firm and partner tenures, respectively. However, table 17 presents that each of these hypotheses is supported only by one model. AI Model 3 ($p < 0.05$) and income-increasing EM Model 2 ($p < 0.10$) provide evidence that audits in ISE are less qualified in early years of engagements at audit firm and partner levels, respectively. The empirical evidence is consistent with Davis et al. (2000), Johnson et al. (2002), Myers et al. (2003), Carcello and Nagy (2004) and Ho et al. (2010) who posit lower higher discretion and lower auditor independence in early years of audit engagements.

On the other hand, EM Model 1 and Model 3 provide unexpected but statistically insignificant results at partner levels, reminding another angle in the literature positing that lack of client knowledge and experience at partner level may not be inversely affecting audit quality because the audit team could remain largely unchanged (Carey & Simnett, 2006).

Long Auditor Tenure (Hypotheses 3b and 4b)

Hypothesis 3b (H3b) and Hypothesis (H4b) predict that long auditor-client relationship at audit firm and partner level could reduce professional objectivity and lessen audit effort applied during audit work due to client-specific knowledge

obtained through repeated audit work (Shockley, 1981), resulting in lower audit quality in terms of inferior detection of errors and higher discretionary accounting (Chiu & Huang, 2005; Dao et al, 2008).

For partner level results (H4b), 4 out of 6 EM Models provide statistically significant evidence that audit quality (EM) increases (decreases) with longer partner tenures. EM Models 1 and 2 conjointly underpin H4b for income-increasing EM. Notably, IA model provides a positive but insignificant association between auditor independence and long partner tenure.

None of the models could find a significant negative relation between audit quality and longer audit firm tenures, i.e. H3b could not be supported in this dissertation. Contrary, income-decreasing EM Model 1 ($p < 0.10$) and Model 2 ($p < 0.01$) suggest evidence for the counter argument in literature that auditors obtain in-depth knowledge of client's business structure, operations and processes, thus become able to deliver a high quality audit service as the tenure lengthens (Johnson et al., 2002; Myers et al., 2003, Ho et al., 2010).

Audit Opinion Type (Hypothesis 5)

In the aim of offsetting the litigation risk, auditors are likely to increase audit effort and quality of audit planning as to extensively cover risky matters/accounts in firm-periods they issue modified opinion. Therefore Hypothesis 5 (H5) predicts that audits are more likely to be of higher quality in periods with modified opinion. Modified opinions are of two types: qualified opinion and disclaimer of opinion.

None of the models posit results supporting H5 in presence of qualified opinion; therefore the dissertation could not support the prediction that audit quality

is high in the presence of qualified opinion.

However, the models provide a moderate consistent evidence for H5 in the presence of disclaimer of opinion. Model 1 supports H5 for absolute and income-decreasing EM at 0.01 and 0.05 significance levels, respectively. Additionally, other four regressions of EM Model 1 and Model 2 provide supporting but statistically insignificant results for H5. Consequently, it could be argued for EM models that H5 is barely sensitive to different measures of audit quality, thus moderate conjoint evidence empirically exists for higher quality audits in presence of disclaimer of opinion. The findings are consistent with Payne (2002) and Barbadillo et al. (2004).

CMB Sanctions on Auditors (Hypothesis 6)

The sanctions on auditors are likely to distort auditor's reputation and H6 predicts that auditors may subsequently and reactively increase audit effort - thus audit quality - in order to recover their reputation and to reduce future risks related with being added to "black list" of the regulator. (Boone et al, 2011).

Only IA model provides evidence for H6, suggesting that sanctioned auditors executes more independent audits in years following CMB sanctions which is consistent with Barron et al, 2001. However, none of EM models reveal significant support, therefore this dissertation could not empirically suggest an association between audit quality and auditor sanctions in the framework of EM.

Comparison of Audit-related and Firm-related Variables

This dissertation mainly provides two different approaches to audit quality, each of which delivered different results in terms of predictive power attributed to two different groups of variables: (1) Audit-related variables and (2) firm-related variables.

Table 19 compares the contribution of audit-related and firm-related variables to explanation of audit quality in context of earnings management (EM) models. Even though predictive power of all EM regressions is high (between 0.29 and 0.43), the evidence suggests that main contribution to audit quality arises from firm-related variables. Model 1 posits that audit-related variables provide an r-squared value between 0.034 and 0.050 that represent a circa 11% contribution to the predicting audit quality, meaning the majority of variation in audit quality is attributable to firm-related variables. Consistently, using working abnormal capital accruals as a proxy, Model 2 suggests a higher contribution from audit-related variables varying between 0.076 and 0.092 that constitute 17% - 30% percent of explanation in the variation of audit quality, evidencing firm-related variables play the majority of role in leveling audit quality. All changes in R-squareds are significant at 0.01 level, excluding Model 1 for income-decreasing EM ($p < 0.02$).

Table 20 presents a comparison of auditor-related and firm-related variables in context of auditor independence. The table evidences that audit-related variables contribute more ($p < 0.01$, 0.249) to the predictive power of the model when compared with firm-related variables ($p < 0.01$, 0.065).

The difference between could be attributed to the difference between the ways EM and AI models measures audit quality. EM models use a auditor-firm

Table 19. Comparison of Audit-related and Firm-related Variables in Earnings Management Models: Model 1 and 2

Panel A: Regressions for magnitude of earnings management

	Model 1: Dependent variable (ABSDACC)					Model 2: Dependent variable (ABSAWACC)						
	R ²	Adjusted R ²	R ² change	Adjusted R ² change	F change	Sig F change	R ²	Adjusted R ²	R ² change	Adjusted R ² change	F change	Sig F change
AV	0.034	0.026			4.385	0.000	0.076	0.069			10.342	0.000
AV + FV	0.312	0.291	0.278	0.265	17.957	0.000	0.407	0.389	0.331	0.320	24.756	0.000

Panel B: Regressions for income increasing earnings management

Model	Model 1: Dependent variable (POSSDACC)					Model 2: Dependent variable (POSAWACC)						
	R ²	Adjusted R ²	R ² change	Adjusted R ² change	F change	Sig F change	R ²	Adjusted R ²	R ² change	Adjusted R ² change	F change	Sig F change
AV	0.050	0.034			3.183	0.001	0.078	0.065			5.778	0.000
AV + FV	0.439	0.403	0.389	0.369	14.576	0.000	0.460	0.428	0.382	0.363	16.536	0.000

Panel C: Regressions for income decreasing earnings management

Model	Model 1: Dependent variable (ABSNEGDACC)					Model 2: Dependent variable (ABSNEGAWACC)						
	R ²	Adjusted R ²	R ² change	Adjusted R ² change	F change	Sig F change	R ²	Adjusted R ²	R ² change	Adjusted R ² change	F change	Sig F change
AV	0.036	0.021			2.358	0.013	0.092	0.076			5.847	0.000
AV + FV	0.326	0.284	0.290	0.263	9.421	0.000	0.388	0.346	0.296	0.270	9.541	0.000

Notes:

AV: Audit-related variables. FV: Firm-related variables (including year and industry dummies). ABSDACC / POSSDACC / ABSNEGDACC: Absolute/positive/absolute negative value of discretionary accruals computed with modified cross-sectional Jones model. ABSAWACC / POSAWACC / ABSNEGAWACC: Absolute/positive/absolute negative value of abnormal working capital accruals computed as in DeFond and Park (2001).

Table 20. Comparison of Auditor-related and Firm-related Variables in Model 3

Dependent variable: AUDIND	R ²	Adjusted R ²	R ² change	Adjusted R ² change	F change	Sig F change
AV	0.249	0.237			21.408	0.000
AV + FV	0.314	0.272	0.065	0.035	7.494	0.000

Notes:

AUDIND: Auditor independence computed as audit fee earned from a single client divided by total fees earned by the auditor (Barkess & Simnett, 2002). AV: Audit-related variables. FV: Firm-related variables (including year and industry dummies).

context data, e.g. financial statements, thus firm-related data to evaluate audit quality therefore firm-related variables, especially firm performance variables such as total accruals, cash flows, leverage, and persistence could be more associated with the audit quality measure. However, AI model measures audit quality by auditor independence that is derived from audit engagement and auditor's portfolio. Therefore, different weighting of auditor related factors in each models may arise from the usage of different sources of data in each.

Discussion and Implications

This study provides series of statistical models catering results on effectiveness of audit process and factors outside the control of auditors. The findings of this dissertation could contribute to ability of audit firms to better understand audit-related and client-related factors imposing risk on audit service quality, thus they could differentiate their service-provision strategies to improve audit quality.

An effective audit process requires an auditor to communicate with plentiful detail on the objectives of audit and the audit report. Risk of material misstatement in

the financial statements should be noticed. An effective auditor recommends potential ways of enhancing financial reporting and internal controls, and provides the firm with a list of adjusted and unadjusted differences identified during the audit process.

The evidence associating Big 4 auditors with higher audit quality could imply that the cost of failure to issue a going-concern opinion to a distressed company could be higher for Big auditors in terms of losing reputation (Dechow et al., 2010). Additionally, this dissertation encourages doing more research on service provision structures of Big 4 auditors on ISE. A detailed empirical examination of Big 4 auditors for types of corporate policies, service planning procedures, internal control mechanism, and compensation systems and how these are integrated and adapted to Turkish business culture could be beneficial for better understanding the empirical evidence of this dissertation for the higher quality services provided by Big 4 auditors.

Moreover, this study provides evidence to governing bodies for assessing the effectiveness of the regulations on audit market. For example, our results imply to regulators that long partner tenures are imposing a higher and significant risk on the quality of audit services than long audit firm tenures. It has been a hot debate on ISE whether audits firm rotation or audit partner rotation should be enforced for curtailing extremely long and close auditor-client relationship. CMB enacted a regulation by promulgation of Communiqué 22 in 2006, enforcing audit firm rotation for every seven years for public companies. It also requires at least a two years of lag for a public company to hire the predecessor audit firm. This act is criticized on the basis of two arguments: (1) It is rather partners that could face threats to their objectivity and independence since their compensation is closely tied to personal

portfolios. (2) Enforcing audit team rotation could risk client specific audit quality each seven year since new audit firm lacks specific knowledge and experience for the client, particularly in the very first year of engagement.

By later amendments in 2009 and 2011, audit partner rotation is included as an alternative only if certain conditions related to internal control mechanisms and staff are met by both client and audit firm. By its evidence indicating a reduced audit quality for short audit firm tenure and/or long partner tenures, this study provides implications for regulators that their latest decision enforcing partner rotation could have positive impact on audit quality in ISE.

Furthermore, this study provides evidence for understanding auditor independence in appearance, i.e. perceived audit quality. The concept of auditor independence is critical to compliance with the principles of integrity and professional objectivity. Auditors and the audit teams must be independent of their clients both in fact and in appearance. A single client is not significant for Big auditor although an auditor with one or few clients may consider that accommodating with clients and misreporting provides more gain compared to standing resistant and potentially ending the engagement (DeAngelo, 1981). Even Code of Ethics of Institute of Chartered Accountants of England and Wales (ICAEW) (2009) suggests a 30% threshold for fee dependency to each client. Thus our results could be useful for introducing a scientific discussion of fee dependency level to the ongoing working process on revising Code of Ethics in audit legislation.

This dissertation also implies that perceived auditor independence in fact should be factored into the audit risk model. Audit risk is defined as the risk that the firm will give an appropriate opinion; the risk model supports the concept of audit quality (Fearnley et al.; 2005). However, the current model stops at detection risk, at

the time the auditor identifies misstatement since identification of a misstatement does not guarantee that appropriate audit opinion will be given. If the auditor is not competent or independent enough, then they may not handle the problems that occur during the audit work and a misleading opinion may be issued.

In addition to inclusion of auditor independence into the audit risk model, this dissertation also underpins Fearnley et al. (2005) for arguing that the model should be classified explicitly into the risk that originates from the client (firm-related factors) and the risks that originate from audit firm (audit-related factors) as to reflect the way in which the independence framework recognizes the safeguards for maintaining audit quality. This dissertation also breaks down these risks to specific periods and industries, bringing an additional angle to testing of audit model in the context of ISE. Our findings imply that audit risk in context of ISE is predominantly comprised of inherent risk since firm-related factors constitute a larger portion of audit risk in terms of earnings management when compared to audit-related factors while audit-related factors play a more significant in leveling audit risk if independence framework is adopted.

This research is subject to following limitations. First, unfortunately, there is no unambiguous measure of earnings management for accruals. Modified cross-sectional Jones model and abnormal working capital accrual model are selected in this dissertation, following Dechow et al. (1995) and DeFond and Park (2001), respectively. Future studies could consider other measures of discretionary accruals. For example, an alternative might be model of DeFond and Subramanyam (1998) which specifies intangible amortization and bad debt provision as components of earnings management. Or alternatively, one could employ Dechow and Dichev approach (2002) that models change in working capital accruals as a function of past,

present, and future cash flows given their purpose to alter the timing of cash flow recognition in earnings.

Furthermore, this study considers annual financial statements in measuring audit quality even though audit quality could vary throughout the interim periods. Future studies could consider use of quarterly data because it could have several advantages in detecting audit quality/earnings management. In-depth auditing is less frequent for interim reporting, allowing higher discretion and requiring less detailed disclosure than annual financial statements (Jeter & Shivakumar, 1999). Therefore interim periods provide greater occasions to managers to engage in greater earnings management and fourth quarter could be related to settling up the discretion engaged in preceding interim periods, meaning that a variance in audit quality might exist among interim periods.

A limitation of accrual models is that these models are estimated at the firm level, which allows variation across firms in the elements of normal accruals. On the other hand, parameter estimates are time-invariant in firm-level estimation, imposing sample survivorship biases (Dechow et al., 2010). Therefore, the models have been generally estimated at the industry level which assumes constant coefficient estimates for each industry. Consequently, large residuals of firms may be result of variation posited by industry classification rather than stemming from earnings management or accounting errors. To put it in other words, measurement error in the residual may be related to industry characteristics, which can be a case in certain circumstances. For instance, the model may have an inadequate fit in growth industries, and growth may be correlated with elements of abnormal accruals.

Moreover, an essential point to keep in mind during review of an accrual model is that the levels of abnormal accruals computed from the models tend to be

positively correlated with the level of total accruals. For instance, a firm with profound total accruals has profound abnormal accruals. This argument is significant in reviewing outcomes of studies in accrual literature. Whether abnormal accruals remark earnings management or whether they are the result of inadequately specified accruals models is still an ongoing debate in the accounting literature.

Furthermore, as a limitation to Model 3, fees for non audit services could not be considered in measuring auditor independence since related information is unavailable on UVAP. After Enron case, provision of non audit services to audit clients are forbidden for audit firms since non audit services integrate too much familiarity with client, generating a threat of increased client dependency and jeopardized professional skepticism. Many studies empirically evidenced that fees for non audit services are associated with reduced auditor independence (Frankel et al., 2002; Francis & Ke, 2002; Ashbaugh-Skaife et al., 2003; Chung & Kullapur, 2003, Larker & Richardson, 2003) Therefore, one should put a reminder for non audit services, and Model 3 should be revisited in the future when non audit fee information become available on UVAP or any other database.

Finally, since audit quality has become a trendy topic of research in emerging markets with increasing amount of FDI and increasing number of international investors putting greater emphasis on the reliability of investee information, it could be contributable and interesting for researchers to integrate the models and findings of this study to a multi-cultural research that compares the relative performance of auditors in emerging markets while discussing structural and cultural reasons behind potential differences.

APPENDIX A: OTHER MULTIVARIATE STATISTICS FOR MODEL 1

Table 21. Pearson Correlation Matrix (Dependent Variable = Absolute Value of Discretionary Accruals)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	
1. ABSDACC	1																					
2. BIG4	.103**	1																				
3. INDSPEC	.144**	.680**	1																			
4. SHORT	0.056	-.071*	-.127**	1																		
5. LONG	-0.01	0.005	0.014	-.244**	1																	
6. PSHORT	0.022	-0.01	-.062*	.566**	.151**	1																
7. PLONG	.067*	-.117**	-.097**	-.087**	.355**	-.084**	1															
8. QUA	.104**	-.218**	-.185**	0	-0.02	-0	-0.02	1														
9. DISC	-0.02	-.131**	-.108**	0.042	-0.05	0.004	-0.02	-0.05	1													
10. AUDPEN	0.021	-.146**	-.072*	0.017	0.004	0.009	.078**	.077**	.066*	1												
11. FIRMPEN	-0.03	-0.01	-0.03	0.026	0.009	0.031	-0.02	.085**	.071*	-0.02	1											
12. FIRMSIZE	-.113**	.415**	.467**	-0.05	0.034	-0.05	-.070*	-.223**	-.099**	-0.04	-0	1										
13. LEV	.106**	-.130**	-.112**	0.024	-0.02	0.005	-0.03	.211**	.317**	0.046	-0	-.136**	1									
14. OPERCYC	0.012	-.194**	-.131**	.088**	0.017	.060*	-0.05	.122**	.122**	0.045	-0.01	-.172**	0.035	1								
15. CAPINS	-0.04	-.086**	-.076**	.079**	-0.04	0.003	-0.01	.133**	.194**	0.038	-0.01	-.076*	.089**	.287**	1							
16. ABSTACC	.495**	-.133**	-.145**	0.013	0	0.001	.059*	.127**	.074*	0	.124**	-.140**	.095**	-0.05	0.002	1						
17. ABSCFO	.226**	-0.02	-0.02	0	-0.02	0.016	0.035	0.004	.129**	-0.03	.076*	0.023	.119**	-.088**	-0.05	.559**	1					
18. IMPERSIST	0.033	-0.04	0.013	-0.01	-0.05	0.016	-0.02	.087**	-0.01	0.04	0.026	0.051	0.019	-.113**	0.028	-0.01	0.01	1				
19. SHAREINC	0.013	-0	-0.02	-0.01	-0	0.019	0.004	-0.01	-0.03	-0.01	0.021	-0.02	-0.03	0.045	-0.01	0.025	-0.02	-0.01	1			
20. SHAREDEC	-0.02	-0.01	0.002	0.038	-0.02	.068*	-0.01	0.019	-0.01	-0.01	-0.01	-0.05	0.001	.068*	0.028	0.039	-0	0.004	-0.02	1		
21. ISECGI	-0.04	.161**	.176**	0.017	0.006	0.013	-0.02	-0.06	-0.03	0.001	-0.03	.278**	0.004	-0.04	-0.02	-0.01	0.004	.095**	-0.01	-0.01	1	

Table 22. Pearson Correlation Matrix (Dependent Variable = Positive Discretionary Accruals)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	
1. POSDACC	1																					
2. BIG4	-.126**	1																				
3. INDSPEC	-.152**	.725**	1																			
4. SHORT	0.077	-.114**	-.157**	1																		
5. LONG	0.056	-0.02	0.004	-.255**	1																	
6. PSHORT	0.037	-0.02	-0.08	.553**	-.187**	1																
7. PLONG	.113**	-.117**	-.102*	-.093*	.366**	-.086*	1															
8. QUA	.098*	-.160**	-.132**	-0.02	0.004	-0.05	-0.04	1														
9. DISC	-0.03	-.103*	-.090*	0.019	-0.04	0.028	-0.01	-0.04	1													
10. AUDPEN	-0.02	-.146**	-.104*	0.003	0.017	0.015	0.07	.144**	.085*	1												
11. FIRMPEN	-0.03	-0.02	0.003	0.043	-0	0.054	-0.02	0.048	.106*	-0.02	1											
12. FIRMSIZE	-0.08	.416**	.509**	-0.06	0.01	-0.05	-.101*	-.218**	-0.06	-0.06	0.029	1										
13. LEV	.116**	-.107*	-.087*	0.032	-0.01	0.029	-0.02	.229**	.222**	0.03	-0.01	-.120**	1									
14. OPERCYC	0.02	-.214**	-.138**	0.061	0.043	0.045	0.019	.198**	0.051	0.05	-0.01	-.139**	-0.02	1								
15. CAPINS	-0.05	-.101*	-.097*	.099*	-0.05	0.035	-0.02	.262**	.083*	0.025	-0.01	-.092*	-0.01	.299**	1							
16. ABSTACC	.594**	-.112**	-.144**	0.064	-0	0.052	0.033	0.078	-0.04	-0.05	0.045	-0.07	-0.02	-.094*	-0.01	1						
17. ABSCFO	.174**	-0.07	-0.06	0.055	-0.02	.087*	0.024	0.054	.305**	-0.01	0.026	-0.07	.218**	-0.03	-0.06	.298**	1					
18. IMPERSIST	0.072	-0.01	0.02	-0.01	-0.04	-0.03	0.02	.119**	-0.02	.090*	0.064	0.031	0.029	-.135**	0.061	0.011	-0.03	1				
19. SHAREINC	0.002	-0.05	-0.07	0.017	0.004	-0	-0.03	-0.04	-0.03	-0.04	0.034	-0.03	-0.03	0.002	-0.01	0.051	-0.01	-0.01	1			
20. SHAREDEC	-0.02	0.008	0.019	0.027	-0.03	0.08	-0.01	-0.03	-0.01	-0.01	-0.01	-0.05	-0	.093*	0.059	0.034	-0.01	-0.02	-0.02	1		
21. ISECGI	-0.03	.126**	.195**	0.008	-0	0.001	-0.02	-0.06	-0.02	-0.03	-0.03	.256**	0.021	-0.03	-0.03	-0.03	-0.05	0.061	-0.04	-0.02	-0.02	1

Table 23. Pearson Correlation Matrix (Dependent Variable = Absolute Value of Negative Discretionary Accruals)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.
1. ABSNEGDAC	1																				
2. BIG4	-0.08	1																			
3. INDSPEC	-.137**	.638**	1																		
4. SHORT	0.033	-0.03	-.098*	1																	
5. LONG	-0.07	0.03	0.024	-.234**	1																
6. PSHORT	0.007	0.007	-0.05	.579**	-.117**	1															
7. PLONG	0.018	-.117**	-.091*	-0.08	.345**	-.082*	1														
8. QUA	.113**	-.273**	-.229**	0.019	-0.05	0.037	0	1													
9. DISC	-0.02	-.156**	-.122**	0.061	-0.05	-0.01	-0.02	-0.06	1												
10. AUDPEN	0.062	-.144**	-0.04	0.03	-0.01	0.003	.087*	0.018	0.056	1											
11. FIRMPEN	-0.03	0.001	-0.05	0.013	0.02	0.011	-0.02	.110**	0.049	-0.02	1										
12. FIRMSIZE	-.148**	.413**	.431**	-0.05	0.056	-0.05	-0.04	-.230**	-.130**	-0.01	-0.03	1									
13. LEV	.098*	-.178**	-.154**	0.016	-0.03	-0.03	-0.04	.202**	.464**	0.074	0.001	-.172**	1								
14. OPERCYC	0.003	-.175**	-.127**	.110**	-0.01	0.074	-.120**	0.066	.173**	0.04	-0.01	-.197**	.111**	1							
15. CAPINS	-0.04	-.081*	-0.07	0.072	-0.03	-0.02	-0.01	0.068	.242**	0.049	-0.02	-0.07	.200**	.290**	1						
16. ABSTACC	.490**	-.167**	-.153**	-0.01	0.004	-0.03	.084*	.146**	.110**	0.037	.163**	-.193**	.202**	-0.03	0.001	1					
17. ABSCFO	.284**	0.006	0.014	-0.03	-0.02	-0.04	0.049	-0.04	0.031	-0.05	.101*	0.079	0.016	-.117**	-0.05	.647**	1				
18. IMPERSIST	-0.01	-0.07	0.005	-0.01	-0.06	0.061	-0.06	0.06	-0.01	-0.01	-0.01	0.07	0.005	-.094*	0.011	-0.03	0.04	1			
19. SHAREINC	0.024	0.038	0.025	-0.02	-0.01	0.037	0.035	0.019	-0.04	0.017	0.01	-0.01	-0.02	0.081	-0.01	0.008	-0.03	-0.01	1		
20. SHAREDEC	-0.04	-0.04	-0.03	0.061	-0.01	0.06	-0.01	.110**	-0.01	-0.01	-0.01	-0.07	0.014	0.031	0.004	.083*	0.025	0.053	-0.01	1	
21. ISECGI	-0.05	.191**	.160**	0.025	0.014	0.022	-0.02	-0.05	-0.03	0.031	-0.03	.296**	-0.02	-0.04	-0.02	0	0.03	.125**	0.024	-0.01	1

Table 24. Collinearity Statistics for Regressions of Model 1

$$ABSDACC_t / POSDACC_t / ABSNEGACC_t = \beta_0 + \beta_1 BIG4_t + \beta_2 INDSPEC + \beta_3 SHORT_t + \beta_4 LONG_t + \beta_5 PSHORT_t + \beta_6 PLONG_t + \beta_7 QUA_t + \beta_8 DISC_t + \beta_9 AUDPEN_t + \beta_{10} FIRMPEN_t + \beta_{11} FIRMSIZE_t + \beta_{12} LEV_t + \beta_{13} OPERCYC_t + \beta_{14} CAPINS_t + \beta_{15} ABSTACC_t + \beta_{16} ABSCFO_t + \beta_{17} PERSIST_t + \beta_{18} SHAREINC_t + \beta_{19} SHAREDEC_t + \beta_{20} ISECGI_t + \mu_t$$

Dependent variable:	Absolute discretionary accruals (ABSDACC)		Positive discretionary accruals (POSDACC)		Negative discretionary accruals (ABSNEGDACC)		
	Abbreviation	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF
<u>Independent variables:</u>							
Intercept							
Big 4	BIG4	0.473	2.113	0.586	1.706	0.488	2.050
Industry specialist	INDSPEC	0.440	2.275	0.566	1.767	0.482	2.077
Short auditor tenure	SHORT	0.592	1.690	0.561	1.783	0.569	1.759
Long auditor tenure	LONG	0.716	1.396	0.620	1.613	0.707	1.414
Short partner tenure	PSHORT	0.649	1.540	0.656	1.525	0.610	1.638
Long partner tenure	PLONG	0.822	1.216	0.695	1.438	0.791	1.264
Qualified opinion	QUA	0.787	1.271	0.766	1.305	0.762	1.313
Disclaimer of opinion	DISC	0.782	1.279	0.616	1.623	0.668	1.497
Penalty to auditor	AUDPEN	0.916	1.092	0.859	1.165	0.904	1.106
Penalty to firm	FIRMPEN	0.944	1.060	0.904	1.107	0.913	1.095
Firm size	FIRMSIZE	0.626	1.599	0.676	1.479	0.602	1.661
Leverage	LEV	0.797	1.254	0.562	1.779	0.636	1.572
Operating cycle	OPERCYC	0.767	1.304	0.840	1.191	0.746	1.341
Capital intensity	CAPINS	0.806	1.241	0.699	1.431	0.794	1.259
Total accruals (Absolute value)	ABSTACC	0.615	1.625	0.411	2.431	0.423	2.366
Cash flow from operations (Absolute value)	ABSCFO	0.621	1.610	0.392	2.553	0.474	2.110
Earnings impersistence	IMPERSIST	0.925	1.081	0.874	1.145	0.868	1.152
Share increase	SHAREINC	0.974	1.027	0.943	1.061	0.958	1.043
Share decrease	SHAREDEC	0.968	1.034	0.949	1.053	0.958	1.044
Corporate governance index member	ISECGI	0.835	1.198	0.853	1.172	0.809	1.236

APPENDIX B: OTHER MULTIVARIATE STATISTICS FOR MODEL 2

Table 25. Pearson Correlation Matrix (Dependent Variable = Absolute Value of Abnormal Working Capital Accruals)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	
1. ABSAWACC	1																					
2. BIG4	-.103**	1																				
3. INDSPEC	-.144**	.680**	1																			
4. SHORT	0.056	-.071*	-.127**	1																		
5. LONG	-0.01	0.005	0.014	-.244**	1																	
6. PSHORT	0.022	-0.01	-.062*	.566**	-.151**	1																
7. PLONG	.067*	-.117**	-.097**	-.087**	.355**	-.084**	1															
8. QUA	.104**	-.218**	-.185**	0	-0.02	-0	-0.02	1														
9. DISC	-0.02	-.131**	-.108**	0.042	-0.05	0.004	-0.02	-0.05	1													
10. AUDPEN	0.021	-.146**	-.072*	0.017	0.004	0.009	.078**	.077**	.066*	1												
11. FIRMPEN	-0.03	-0.01	-0.03	0.026	0.009	0.031	-0.02	.085**	.071*	-0.02	1											
12. FIRMSIZE	-.113**	.415**	.467**	-0.05	0.034	-0.05	-.070*	-.223**	-.099**	-0.04	-0	1										
13. LEV	.106**	-.130**	-.112**	0.024	-0.02	0.005	-0.03	.211**	.317**	0.046	-0	-.136**	1									
14. OPERCYC	0.012	-.194**	-.131**	.088**	0.017	.060*	-0.05	.122**	.122**	0.045	-0.01	-.172**	0.035	1								
15. CAPINS	-0.04	-.086**	-.076**	.079**	-0.04	0.003	-0.01	.133**	.194**	0.038	-0.01	-.076*	.089**	.287**	1							
16. ABSTACC	.495**	-.133**	-.145**	0.013	0	0.001	.059*	.127**	.074*	0	.124**	-.140**	.095**	-0.05	0.002	1						
17. ABSCFO	.226**	-0.02	-0.02	0	-0.02	0.016	0.035	0.004	.129**	-0.03	.076*	0.023	.119**	-.088**	-0.05	.559**	1					
18. IMPERSIST	0.033	-0.04	0.013	-0.01	-0.05	0.016	-0.02	.087**	-0.01	0.04	0.026	0.051	0.019	-.113**	0.028	-0.01	0.01	1				
19. SHAREINC	0.013	-0	-0.02	-0.01	-0	0.019	0.004	-0.01	-0.03	-0.01	0.021	-0.02	-0.03	0.045	-0.01	0.025	-0.02	-0.01	1			
20. SHAREDEC	-0.02	-0.01	0.002	0.038	-0.02	.068*	-0.01	0.019	-0.01	-0.01	-0.01	-0.05	0.001	.068*	0.028	0.039	-0	0.004	-0.02	1		
21. ISECGI	-0.04	.161**	.176**	0.017	0.006	0.013	-0.02	-0.06	-0.03	0.001	-0.03	.278**	0.004	-0.04	-0.02	-0.01	0.004	.095**	-0.01	-0.01	1	

Table 26. Pearson Correlation Matrix (Dependent Variable = Positive Abnormal Working Capital Accruals)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	
1. POSAWACC	1																					
2. BIG4	.140**	1																				
3. INDSPEC	.276**	.578**	1																			
4. SHORT	-0.03	-.066*	-0.05	1																		
5. LONG	0.017	0.014	0.031	-.407**	1																	
6. PSHORT	0.002	-0	0.007	.563**	-.251**	1																
7. PLONG	-0.04	-.136**	-.090**	-.266**	.487**	-.258**	1															
8. QUA	-0.04	-.216**	-.176**	-0.01	-0.06	-0.01	0.022	1														
9. DISC	-0.04	-.131**	-.096**	0.049	-.080**	0.013	-0.01	-0.05	1													
10. AUDPEN	0.009	-.139**	-0.05	0.021	-0	0.013	0.017	.077**	.066*	1												
11. FIRMPEN	-0.02	-0	-0.02	0.026	-0.01	0.03	-0.02	.081**	.068*	-0.02	1											
12. FIRMSIZE	.609**	.407**	.453**	-0.04	0.016	-0.04	-0.03	-.221**	-.102**	-0.04	0.005	1										
13. LEV	0.004	-.138**	-.103**	0.022	-0.061*	0.002	0.01	.231**	.315**	0.04	-0	-.161**	1									
14. OPERCYC	-.114**	-.180**	-.079**	.093**	-0.03	.062*	-0.05	.114**	.137**	0.041	-0.01	-.141**	0.033	1								
15. CAPINS	-0.05	-.084**	-.073*	.079**	-0.05	0.003	-0.04	.130**	.191**	0.039	-0.01	-.073*	.085**	.286**	1							
16. ABSTACC	0.068	-.146**	-.110**	-0.01	-0.06	-0.02	0.007	.145**	.071*	-0.01	.081**	-.148**	.157**	-0.04	-0	1						
17. ABSCFO	.083*	-0.05	-0.01	-0.02	-0.06	-0.01	-0.03	0.041	.101**	-0.03	.061*	-0.02	.174**	-.091**	-0.05	.654**	1					
18. IMPERSIST	.124**	-0.06	0.005	0.006	-.062*	0.021	-.062*	.081**	-0.01	0.037	0.029	-0	0.007	-.096**	0.031	-0.01	0.011	1				
19. SHAREINC	-0.07	-0	-0.01	-0.01	0.003	0.018	-0.04	0.002	-0.03	-0.01	0.021	-0.01	-0.03	0.052	-0.01	0.013	-0.02	-0	1			
20. SHAREDEC	0.019	-0.01	0.012	0.037	-0.01	.068*	-0.03	0.018	-0.01	-0.01	-0.01	-0.05	0	.066*	0.028	0.024	-0	0.005	-0.02	1		
21. ISECGI	.183**	.150**	.173**	0.025	-0.03	0.019	-0.02	-0.05	-0.03	-0.03	-0.03	.236**	-0	-0.02	-0.02	-0.03	-0.04	0.056	0.004	-0.01	1	

Table 27. Pearson Correlation Matrix (Dependent Variable = Absolute Value of Negative Abnormal Working Capital)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.
1. ABSNEGAW _t	1																				
2. BIG4	.174**	1																			
3. INDSPEC	.261**	.578**	1																		
4. SHORT	-0.02	-.066*	-0.05	1																	
5. LONG	-0.07	0.014	0.031	-.407**	1																
6. PSHORT	-0.04	-0	0.007	.563**	-.251**	1															
7. PLONG	0.035	-.136**	-.090**	-.266**	.487**	-.258**	1														
8. QUA	-.127**	-.216**	-.176**	-0.01	-0.06	-0.01	0.022	1													
9. DISC	-0.02	-.131**	-.096**	0.049	-.080**	0.013	-0.01	-0.05	1												
10. AUDPEN	-0.02	-.139**	-0.05	0.021	-0	0.013	0.017	.077**	.066*	1											
11. FIRMPEN	.086*	-0	-0.02	0.026	-0.01	0.03	-0.02	.081**	.068*	-0.02	1										
12. FIRMSIZE	.547**	.407**	.453**	-0.04	0.016	-0.04	-0.03	-.221**	-.102**	-0.04	0.005	1									
13. LEV	-0.03	-.138**	-.103**	0.022	-0.061*	0.002	0.01	.231**	.315**	0.04	-0	-.161**	1								
14. OPERCYC	-.146**	-.180**	-.079**	.093**	-0.03	.062*	-0.05	.114**	.137**	0.041	-0.01	-.141**	0.033	1							
15. CAPINS	-0.03	-.084**	-.073*	.079**	-0.05	0.003	-0.04	.130**	.191**	0.039	-0.01	-.073*	.085**	.286**	1						
16. ABSTACC	0.025	-.146**	-.110**	-0.01	-0.06	-0.02	0.007	.145**	.071*	-0.01	.081**	-.148**	.157**	-0.04	-0	1					
17. ABSCFO	0.08	-0.05	-0.01	-0.02	-0.06	-0.01	-0.03	0.041	.101**	-0.03	.061*	-0.02	.174**	-.091**	-0.05	.654**	1				
18. IMPERSIST	0.018	-0.06	0.005	0.006	-.062*	0.021	-.062*	.081**	-0.01	0.037	0.029	-0	0.007	-.096**	0.031	-0.01	0.011	1			
19. SHAREINC	0.036	-0	-0.01	-0.01	0.003	0.018	-0.04	0.002	-0.03	-0.01	0.021	-0.01	-0.03	0.052	-0.01	0.013	-0.02	-0	1		
20. SHAREDEC	-0.03	-0.01	0.012	0.037	-0.01	.068*	-0.03	0.018	-0.01	-0.01	-0.01	-0.05	0	.066*	0.028	0.024	-0	0.005	-0.02	1	
21. ISECGI	.091*	.150**	.173**	0.025	-0.03	0.019	-0.02	-0.05	-0.03	-0.03	-0.03	.236**	-0	-0.02	-0.02	-0.03	-0.04	0.056	0.004	-0.01	1

Table 28. Collinearity Statistics for Regressions of Model 2

$$ABS AWACC_t / POS AWACC_t / ABS NEG AWACC_t = \beta_0 + \beta_1 BIG4_t + \beta_2 INDSPEC + \beta_3 SHORT_t + \beta_4 LONG_t + \beta_5 PSHORT_t + \beta_6 PLONG_t + \beta_7 QUA_t + \beta_8 DISC_t + \beta_9 AUDPEN_t + \beta_{10} FIRMPEN_t + \beta_{11} FIRMSIZE_t + \beta_{12} LEV_t + \beta_{13} OPERCYC_t + \beta_{14} CAPINS_t + \beta_{15} ABSTACC_t + \beta_{16} ABCFCFO_t + \beta_{17} PERSIST_t + \beta_{18} SHAREINC_t + \beta_{19} SHAREDEC_t + \beta_{20} ISECGI_t + \mu_t$$

Dependent variable:	Abbreviation	Absolute abnormal working capital accruals (ABS AWACC)		Positive abnormal working capital accruals (POS AWACC)		Negative abnormal working capital accruals (ABS NEG AWACC)	
		Tolerance	VIF	Tolerance	VIF	Tolerance	VIF
<u>Independent variables:</u>							
Intercept							
Big 4	BIG4	0.574	1.742	0.586	1.706	0.488	2.050
Industry specialist	INDSPEC	0.575	1.738	0.566	1.767	0.482	2.077
Short auditor tenure	SHORT	0.559	1.788	0.561	1.783	0.569	1.759
Long auditor tenure	LONG	0.624	1.602	0.620	1.613	0.707	1.414
Short partner tenure	PSHORT	0.646	1.547	0.656	1.525	0.610	1.638
Long partner tenure	PLONG	0.697	1.435	0.695	1.438	0.791	1.264
Qualified opinion	QUA	0.772	1.295	0.766	1.305	0.762	1.313
Disclaimer of opinion	DISC	0.786	1.273	0.616	1.623	0.668	1.497
Penalty to auditor	AUDPEN	0.922	1.084	0.859	1.165	0.904	1.106
Penalty to firm	FIRMPEN	0.952	1.050	0.904	1.107	0.913	1.095
Firm size	FIRMSIZE	0.659	1.517	0.676	1.479	0.602	1.661
Leverage	LEV	0.778	1.286	0.562	1.779	0.636	1.572
Operating cycle	OPERCYC	0.784	1.276	0.840	1.191	0.746	1.341
Capital intensity	CAPINS	0.813	1.230	0.699	1.431	0.794	1.259
Total accruals (Absolute value)	ABSTACC	0.521	1.918	0.411	2.431	0.423	2.366
Cash flow from operations (Absolute value)	ABCFCFO	0.519	1.927	0.392	2.553	0.474	2.110
Earnings impersistence	IMPERSIST	0.931	1.074	0.874	1.145	0.868	1.152
Share increase	SHAREINC	0.973	1.027	0.943	1.061	0.958	1.043
Share decrease	SHAREDEC	0.969	1.032	0.949	1.053	0.958	1.044
Corporate governance index member	ISECGI	0.864	1.158	0.853	1.172	0.809	1.236

APPENDIX C: OTHER MULTIVARIATE STATISTICS FOR MODEL 3

Table 29. Pearson Correlation Matrix (Dependent Variable = Auditor Independence)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	
1. ABSAWACC	1																					
2. BIG4	-.477**	1																				
3. INDSPEC	-.367**	.680**	1																			
4. SHORT	0.076	-.071*	-.127**	1																		
5. LONG	-0.02	0.005	0.014	-.244**	1																	
6. PSHORT	0.047	-0.01	-.062*	.566**	-.151**	1																
7. PLONG	0.056	-.117**	-.097**	-.087**	.355**	-.084**	1															
8. QUA	.104*	-.218**	-.185**	0	-0.02	-0	-0.02	1														
9. DISC	.133**	-.131**	-.108**	0.042	-0.05	0.004	-0.02	-0.05	1													
10. AUDPEN	-0.02	-.146**	-.072*	0.017	0.004	0.009	.078**	.077**	.066*	1												
11. FIRMPEN	-0.01	-0.01	-0.03	0.026	0.009	0.031	-0.02	.085**	.071*	-0.02	1											
12. FIRMSIZE	-.146**	.415**	.467**	-0.05	0.034	-0.05	-.070*	-.223**	-.099**	-0.04	-0	1										
13. LEV	0.068	-.130**	-.112**	0.024	-0.02	0.005	-0.03	.211**	.317**	0.046	-0	-.136**	1									
14. OPERCYC	0.073	-.194**	-.131**	.088**	0.017	.060*	-0.05	.122**	.122**	0.045	-0.01	-.172**	0.035	1								
15. CAPINS	0.078	-.086**	-.076**	.079**	-0.04	0.003	-0.01	.133**	.194**	0.038	-0.01	-.076*	.089**	.287**	1							
16. ABSTACC	0.04	-.133**	-.145**	0.013	0	0.001	.059*	.127**	.074*	0	.124**	-.140**	.095**	-0.05	0.002	1						
17. ABSCFO	.090*	-0.02	-0.02	0	-0.02	0.016	0.035	0.004	.129**	-0.03	.076*	0.023	.119**	-.088**	-0.05	.559**	1					
18. IMPERSIST	0.053	-0.04	0.013	-0.01	-0.05	0.016	-0.02	.087**	-0.01	0.04	0.026	0.051	0.019	-.113**	0.028	-0.01	0.01	1				
19. SHAREINC	-0.05	-0	-0.02	-0.01	-0	0.019	0.004	-0.01	-0.03	-0.01	0.021	-0.02	-0.03	0.045	-0.01	0.025	-0.02	-0.01	1			
20. SHAREDEC	-0.03	-0.01	0.002	0.038	-0.02	.068*	-0.01	0.019	-0.01	-0.01	-0.01	-0.05	0.001	.068*	0.028	0.039	-0	0.004	-0.02	1		
21. ISECGI	-.097*	.161**	.176**	0.017	0.006	0.013	-0.02	-0.06	-0.03	0.001	-0.03	.278**	0.004	-0.04	-0.02	-0.01	0.004	.095**	-0.01	-0.01	1	

REFERENCES

- Abbott, L. J., Park, Y., & Parker, S. (2000). The effects of audit committee activity and independence on corporate fraud. *Managerial Finance*, 26 (11), 55-68.
- Abbott, L. J., Park, Y., & Parker, S., Gary, F. (2006). Earnings management, litigation risk, and asymmetric audit fee responses. *Auditing*, 25 (1), 85-98.
- Ahmed, A. S., Neel, M., & Wang, D. (2012). Does mandatory adoption of IFRS improve accounting quality? Preliminary evidence. Working Paper. Electronic version available at: <http://ssrn.com/abstract=1502909>.
- Altıntaş, A. T. (2008). Halka Açık Şirketlerin Bağımsız Denetiminin Kalitesinin Algılanmasına İlişkin Bir Araştırma [A Study on the Perception of Audit Quality in Turkey], Ph.D. Dissertation, İstanbul University.
- Ali, A. (1994). The incremental information content of earnings, working capital from operations, and cash flows. *Journal of Accounting Research*, 32 (1), 61-74.
- Arrunada, B. (1999). The Provision of non-audit services by auditors: Let the market evolve and decide. *International Review of Law and Economics*, 19, 513-531.
- Ashbaugh-Skaife, H. & LaFond, R., Mayhew, B. W. (2003). Do nonaudit services compromise auditor independence? Further evidence. *The Accounting Review*, 78 (3), 611-639.
- Ashbaugh-Skaife, H., Collins, & D. W., Kinney Jr., W. R. (2007). The discovery and reporting of internal control deficiencies prior to SOX-mandated audits. *Journal of Accounting and Economics*, 44, 166-192.
- Ashbaugh-Skaife, H., Collins, D. W., Kinney Jr., & W. R., LaFond, R. (2008). The Effect of SOX Internal Control Deficiencies and Their Remediation on Accrual Quality. *The Accounting Review*, 83 (1), 217-250.
- Asthana, S. C., Balsam, S., & Krishnan, J. (2010). Corporate governance, audit firm reputation, auditor switches, and client stock price reactions: the Andersen experience. *International Journal of Auditing*, 14, 274-293.
- Baginski, S. P., Lorek, K. S., Willinger, G. L., & Branson, B. C. (1999). The relationship between economic characteristics and alternative annual earnings persistence measures. *The Accounting Review*, 74 (1), 105-120.
- Baker, N. B., Rahman, R. A., & Rashid, H. M. (2005). Factors influencing auditor independence: Malaysian loan officers' perceptions. *Managerial Auditing Journal*, 20 (8/9), 804-822.

- Baker, T., Collins, D., & Reitenga, A. (2003). Stock option compensation and earnings management incentives. *Journal of Accounting, Auditing and Finance*, 18 (4), 557-582.
- Ball, R., & Shivakumar, L. (2005). The role of accruals in asymmetrically timely gain and loss recognition. Working Paper. Electronic version available at: <http://ssrn.com/abstract=649681>
- Balsam, S. (1998). Discretionary accounting choices and CEO compensation. *Contemporary Accounting Research*, 15 (3), 229-252.
- Balsam S., Krishnan, J., & Yang, J. S. (2003). Auditor industry specialization and earnings quality. *Auditing*, 22 (2), 71-97.
- Bannister, J. W. & Wiest, D. N. (2001). Earnings management and auditor conservatism: effects of SEC enforcement actions. *Managerial Finance*, 27 (12), 57-71.
- Barbadillo, E. R., Aguilar, N. G., Barbera, C. F., & Benau, M. A. G. (2004). Audit quality and the going-concern decision-making process: Spanish evidence. *European Accounting Review*, 13 (4), 597-620.
- Barkess, L., Simnett, R. & Urquhart, P. (2002), The effect of client fee dependence on audit independence, *Australian Accounting Review*, 12 (3), 14-21.
- Barron, O., Pratt, J., & Stice, J. D. (2000), Misstatement direction, litigation risk, and planned audit investment, *Journal of Accounting Research*, 39 (3), 449-462.
- Barth, M. E., Beaver, W. H., & Landsman, W. R. (2001). The relevance of the value relevance literature for financial accounting standard setting: Another view. Working Paper. Electronic version available at: <http://ssrn.com/abstract=246861>.
- Barth, M. E., Landsman, W. R., & Lang, M. H. (2008). International accounting standards and accounting quality. Working Paper. Electronic version available at: <http://ssrn.com/abstract=688041>.
- Barton, J. (2005). Who cares about auditor reputation? *Contemporary Accounting Research*, 22 (3), 549-586.
- Bartov, E., Gul, F. A., & Tsui, J. S. L. (2001). Discretionary-accruals models and audit qualifications. *Journal of Accounting and Economics*, 30, 421-452.
- Barua, A., Davidson, L. F., Rama, D. V., & Thiruvadi, S. (2010). CFO gender and accruals quality. *Accounting Horizons*, 24 (1), 25-39.
- Bauman, C. C., Bauman, M. P., & Halsey, R. F. (2001). Do firms use the deferred tax asset valuation allowance to manage earnings? *The Journal of the American Taxation Association*, 23, 27-48.

- Bauwhede, H. V., Willekens, M., & Gaeremynck, A. (2003). Audit firm size, public ownership, and firms' discretionary accruals management. *The International Journal of Accounting*, 38, 1-22.
- Beasley, M. S. (1996). An empirical analysis of the relation between the board of director composition and financial statement fraud. *The Accounting Review*, 71 (4), 443-465.
- Beatty, A., Chamberlain, S. L., & Maglilo, J. (1995). Managing financial reports of commercial banks: The influence of taxes, regulatory capital, and earnings. *Journal of Accounting Research*, 33 (2), 231-261.
- Beck, P. J. & Wu, M. G. H. (2006). The impact of judgment enhancement strategies on audit quality and firm risk when clients have correlated business risks. Working paper. Electronic version available at: http://aaahq.org/audit/midyear/07midyear/papers/Beck_TheImpactOfJudgement.pdf.
- Becker, C. L., DeFond, M. L., Jiambalvo, J., & Subramanyam, K. R. (1998). The effect of audit quality on earnings management. *Contemporary Accounting Research*, 15 (1), 1-24.
- Behn, B. K., Choi, J. H., & Kang, T. (2008). Audit quality and properties of analyst earnings forecasts. *The Accounting Review*, 83 (2), 327-348.
- Beneish, M. D. (1998). Discussion of "Are Accruals during Initial Public Offerings Opportunistic?". *Review of Accounting Studies*, 3, 209-221.
- _____ (1999). Incentives and penalties related to earnings overstatements that violate GAAP, *The Accounting Review*, 74 (4), 425-457.
- _____ (2001). Earnings management: A perspective. *Managerial Finance*, 27 (12), 3-17.
- Bergstresser, D. & Philippon, T. (2006). CEO incentives and earnings managements. *Journal of Financial Economics*, 80, 511-529.
- Bhagat, S. & Black, B. (2002). The non-correlation between board independence and long-term firm performance. *Journal of Corporation Law*, 27 (2), 231-273.
- Boone, J. P., Khurana, I. K., & Raman, K. K. (2010). Do the Big 4 and the second-tier firms provide audits of similar quality? *Journal of Accounting and Public Policy*, 29, 330-352.
- Boone, J. P., Khurana, I. K., & Raman, K. K. (2011). Litigation risk and abnormal accruals. *Auditing: A Journal of Practice & Theory*, 30 (2), 231-256.
- Bowen, R. M., Noreen, E. W., & Lacey, J. M. (1981). Determinants of the corporate decision to capitalize interest, *Journal of Accounting and Economics*. 151-179.

- Brown, L. D. & Pinello, A. S., To what extent does the financial reporting process curb earnings surprise games?, *Journal of Accounting Research*, 45 (5), 947-981.
- Capkun, V., Collins, D.W., & Jeanjean, T (2012). Does adoption of IAS/IFRS deter earnings management? Working Paper. Electronic copy available at: <http://ssrn.com/abstract=1850228>
- Caramanis, C. & Lennox, C. (2007). Audit effort and earnings managements. *Journal of Accounting and Economics*, 45, 116-138.
- Carcello, J. P. & Palmrose, Z. (1994). Auditor litigation and modified reporting on bankrupt clients. *Journal of Accounting Research*, 32, 1-30.
- Carcello, J.V. & Nagy, A. L. (2004), Audit firm tenure and fraudulent financial reporting, *Auditing*, 23 (2), 55-69.
- Carey, P. & Simnett, R. (2006), Audit partner tenure and audit quality, *The Accounting Review*, 81 (3), 653-676.
- Carmichael, D. R. (1999). In search of concepts of auditor independence, *The CPA Journal*, 69, 38-43.
- Catanach, Jr. A. H & Walker, P. L. (1999). The International Debate Over Mandatory Auditor Rotation: A Conceptual Research Framework. *Journal of International Accounting, Auditing & Taxation*, 8 (1), 43-66.
- Chen, K. C. W. & Church, B. K., Going Concern Opinions and the Market's Reaction to Bankruptcy Filings, *The Accounting Review*, 71 (1), 117-128.
- Chaney, P. K, Jeter, D. C., & Shivakumar, L. (2004). Self-Selection of Auditors and Audit Pricing in Private Firms. *The Accounting Review*, 79 (1), 51-72.
- Chen, P. & Daley, L. (1996). Regulatory Capital, Tax, and Earnings Management Effects on Loan Loss Accruals in the Canadian Banking Industry. *Contemporary Accounting Research*, 13 (1), 91-128.
- Chen, C., Lin, C., & Lin, Y. (2008). Audit Partner Tenure, Audit Firm Tenure, and Discretionary Accruals: Does Long Auditor Tenure Impair Earnings Quality? *Contemporary Accounting Research*, 25 (2), 415-445.
- Chen, J. P., Su, X., & Wu, X. (2009). Forced Audit Firm Change, Continued Partner-Client Relationship, and Financial Reporting Quality. *Auditing: A Journal Of Practice & Theory*, 28 (2), 227-246.
- Chen, J., Gu, Z., & Tang, Y. (2008). Causes or consequences? Earnings management around seasoned equity offerings. Working Paper. Electronic copy available at: <http://ssrn.com/abstract=1108063>.

- Chi, W. & Huang, H. (2005). Discretionary accruals, audit-firm tenure and audit-partner tenure: empirical evidence from Taiwan. *Journal of Contemporary Accounting & Economics*, 1 (1), 65-92.
- Chi, H. & Chen, C. (2011). Firm versus Partner Measures of Auditor Industry Expertise and Effects on Auditor Quality. *Auditing: A Journal of Practice & Theory*, 30 (2), 201-229.
- Choi, J., Kim, J., Qui, A. & Zang, Y. (2008). Auditor Locality, Audit Quality and Audit Pricing. Working Paper. Electronic version available at: <http://ssrn.com/abstract=649681>
- Christie, A. A. & Zimmerman, L. J. (1994). Efficient and opportunistic choices of accounting procedures: corporate control contests. *The Accounting Review*, 69 (4), 539-566.
- Chung, H. & Kallapur, S. (2003), Client importance, non audit services, and abnormal Accruals, *The Accounting Review*, 78 (4), 931-955.
- Clatworthy, M. A., Makepeace, G. H., & Peel, M. J. (2009), Selection bias and the Big Four premium: new evidence using Heckman and matching models, *Accounting and Business Research*, 39 (2), 139-166.
- Cohen, D. A., Dey, A., & Lys, T. Z. (2007). Real and Accrual-based Earnings Management in the Pre- and Post-Sarbanes Oxley Periods. Electronic copy available at: <http://ssrn.com/abstract=813088>.
- Cohen, J. & Krishnamoorthy, G, & Wright, A. (2010). Corporate governance in the post-Sarbanes-Oxley era: Auditors' experiences. *Contemporary Accounting Research*, 27 (3), 751-786.
- Collins, D.W. & Hribar, P. (1999). Earnings-based and accrual-based market anomalies: one effect or two? Working paper. Electronic version available at: <http://ssrn.com/abstract=166455>.
- Coville, T. G. (2008). SOX generated changes in board composition: Has accounting 's academia noticed? *International Journal of Disclosure and Governance*, 5 (4), 333-348.
- Dao, M., Mishra, S., & Raghunandan, K., (2008). Auditor Tenure and Shareholder Ratification of the Auditor. *Accounting Horizons*, 22 (3), 297- 314.
- Davidson, R., Stewart, J. G., & Kent, P. (2005). Internal governance structures and earnings management, *Accounting and Finance*, 45, 241-267.
- Davisa, E. B. & Ashton, R. H. (2002). Threshold adjustment in response to asymmetric loss functions: The case of auditors "substantial doubt" thresholds. *Organizational Behavior and Human Decision Processes*, 89, 1082-1099.

- Davis, L. R., Soo, D., & Trompeter, G. (2000). Auditor Tenure, Auditor Independence and Earnings Management. Working paper. Electronic version available at: <http://aaahq.org/audit/midyear/01midyear/papers/soo.pdf>
- DeAngelo, L. E. (1981). Auditor size and auditor quality. *Journal of Accounting and Economics*, 3, 183-199.
- DeAngelo, H., DeAngelo, L. & Skinner, D. J. (1994). Accounting choice in troubled companies. *Journal of Accounting and Economics*, 17 (1), 113-143.
- Dechow, P. M., (1994). Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals. *Journal of Accounting and Economics*, 18 (1), 3-42.
- Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management, *The Accounting Review*, 70 (2), 193-225.
- Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1996). Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the SEC. *Contemporary Accounting Research*, 13 (1), 1-36.
- Dechow, P. M., Dichew, I.D., McNichols, M. F. (2002). The Quality of Accruals and Earnings: The Role of Accrual Estimation Errors. *The Accounting Review*, 77, 35-59.
- Dechow, P. M., Richardson, S. A., Tuna, I., Why Are Earnings Kinky? An Examination of the Earnings Management Explanation, *Review of Accounting Studies*, 8 (2) 355-384.
- Dechow, P., Ge W., & Schrand, C. (2010). Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics*, 50, 344-401.
- DeFond, M. L. (1992). The association between changes in client firm agency costs and auditor switching. *Auditing: A Journal of Practice & Theory*, 11 (1), 16-31.
- DeFond, M. L. & Jiambalvo, J. (1994). Debt covenant violation and manipulation of accruals. *Journal of Accounting and Economics*, 17 (1-2), 145-176.
- DeFond, M. L. & Park, C. W. (1997). Smoothing income in anticipation of future earnings. *Journal of Accounting and Economics*, 23, 115-139.
- Defond, M. L., Subramanyam, K. R. (1998). Auditor changes and discretionary accruals. *Journal of Accounting and Economics*, 25, 35-67.
- DeFond, M. L., Francis, J. R., & Wong, T. J. (2000). Auditor industry specialization and market segmentation: Evidence from Hong Kong. *Auditing: A Journal of Practice & Theory*, 19 (1), 49-66.

- DeFond, M.L., Park, C. W. (2001). The reversal of abnormal accruals and the market valuation of earnings surprises. *The Accounting Review*, 76 (3), 375-404.
- Defond, M. L., Raghunandan, K., Subramanyam, K. R. (2002). Do non-audit service fees impair auditor independence? Evidence from going concern audit opinions. *Journal of Accounting Research*, 40 (4), 1247-1274.
- Demirkan, S. & Platt, H. (2009). Financial status, corporate governance quality, and the likelihood of managers using discretionary accruals. *Accounting Research Journal*, 22 (2), 93-117.
- Dietrich, J. R., Harris, M. S., Muller, K. A. (2001). The reliability of investment property fair value estimates. *Journal of Accounting and Economics*, 30, 125-158.
- Doyle, J., Ge, W., & McVay S. (2007). Determinants of weaknesses in internal control over financial reporting. *Journal of Accounting and Economics*, 44, 193-223.
- Dunn, K. A., Mayhew, B. W. (2004). Audit firm industry specialization and client disclosure quality. *Review of Accounting Studies*, 9 (1), 35-58.
- Efendi, J., Srivastava A., Swanson, E. P. (2007). Why do corporate managers misstate financial statements? The role of option compensation and other factors. *Journal of Financial Economics*, 85, 667-708.
- Elder, R. J. & Zhou, J. (2002), Audit firm size, industry specialization and earnings management by initial public offering firms, Electronic version available at: http://aaahq.org/audit/midyear/02midyear/papers/IPO_EarningsMgmt.pdf
- Elliott, J. A. (1982). "Subject to" Audit Opinions and Abnormal Security Returns Outcomes and Ambiguities. *Journal of Accounting Research*, 20 (2), 617-638.
- Elliott, R. K. & P. D. Jacobson (1998). Audit independence concepts. *The CPA Journal*, 68, 30-37.
- Ergun, Ü. (1999). Bağımsız denetimde kalitenin önemi ve Sermaye Piyasası Kanunu kapsamında faaliyet gösteren bağımsız denetim kuruluşlarının görünümü. *Muhasebe Bilim Dünyası Dergisi*, 1 (1), 157-175.
- Fafatas, S. A., (2010). Auditor conservatism following audit failures. *Managerial Auditing Journal*, 25 (7), 639-658.
- Fairfield, P. M., Whisenant, J. S., Yohn, T. L. (2003). Accrued earnings and growth: implications for future profitability and market mispricing. *The Accounting Review*, 78 (1), 353-371.

- Fearnley, S., Beattie, V., & Brandt, R. (2005). Auditor independence and audit risk: a reconceptualization. *Journal of International Accounting Research*, 4 (1), 39-71.
- Ferguson, A., Francis, J. R., & Stokes, D. J. (2003). The effects of firm-wide and office-level industry expertise on audit pricing. *The Accounting Review*, 78 (2), 429-448.
- Firth, Michael & Smith, A. (1992). Selection of auditor firms by companies in the new issue market. *Applied Economics*, 24, 247-255.
- Francis, J., Hanna, J. D., & Vincent, L. (1996). Causes and Effects of Discretionary Asset Write-Offs. *Journal of Accounting Research*, 34, 117-134.
- Francis, J. R. (2004). What do we know about audit quality? *The British Accounting Review*, 36, 345-368.
- _____ (2011). A framework for understanding and researching audit quality. *Auditing: A Journal of Practice & Theory*, 30 (2), 125-152.
- Francis, J. R. & Krishnan, J. (1999). Accounting accruals and auditor reporting conservatism, *Contemporary Accounting Research*, 16 (1), 135-165.
- Francis, J. R., Maydew, E. L., & Sparks, H. C. (1999). The role of Big 6 auditors in the credible reporting of accruals. *Auditing*; 18 (2), 17-34.
- Francis, J. R., & Krishnan, J. (2002). Evidence on accounting firm risk-management strategies before and after 'The Private Securities Litigation Reform Act of 1995'. *Asia-Pacific Journal of Accounting and Economics*, 9, 135-157.
- Francis, J. R., Reichelt, K., & Wang, D. (2005). The pricing of national and city-specific reputations for industry expertise in the U.S. audit market. *The Accounting Review*, 80 (1), 113-136.
- Francis, J. R., & Ke, B. (2006). Disclosure of fees paid to auditors and the market valuation of earnings surprises. *Review of Accounting Studies*, 11 (4), 495 - 523.
- Francis, J. R., and D. Wang, (2008). The joint effect of investor protection and Big 4 audits on earnings quality around the world. *Contemporary Accounting Research*, 25 (1), 1-39.
- Francis, J. R., & Yu, M. (2009). The effect of big four office size on audit quality. *The Accounting Review*, 84 (5), 1521-1552.
- Frank, M. M., Rego, S. O. (2006). Do managers use the valuation allowance account to manage earnings around certain earnings. *The Journal of the American Taxation Association*, 28 (1), 43-65.

- Frankel, R. M., Johnson, M. J., Nelson K. K. (2002). The relation between auditors' fees for non audit services and earnings management. *The Accounting Review*, 77, 71-105.
- Frost, A. (1994). Uncertainty-modified audit reports and future earnings. *Auditing*, 13 (1), 22-35.
- Ge, W. & McVay, S. (2005). Uncertainty-modified audit reports and future earnings. *Accounting Horizons*, 19 (3), 137-158.
- Geiger, M. A., Rama, D. V. (2003). Audit fees, non audit fees, and auditor reporting on stressed companies. *Auditing*, 22 (2), 53-69.
- Geiger, M. A. & Raghunandan, K. (2002). Auditor tenure and audit reporting failures. *Auditing*, 21 (1), 67-78.
- Ghosh, A. & Moon, D. (2005). Auditor Tenure and Perceptions of Audit Quality. *The Accounting Review*, 80 (2), 585-612.
- _____ (2010). The effect of CEO ownership on the information content of reported earnings. *Review of Quantitative Finance and Accounting*, 35, 393-410.
- Gompers, P. A., Ishii, J. L., & Metrick, A. (2003). Corporate governance and equity prices, *Quarterly Journal of Economics*, 118 (1), 107-155.
- Graham, J. R, Harvey, C. R., & Rajgopal, S. (2005). The economic implications of corporate financial reporting. *Journal of Accounting and Economics*, 40, 3-73.
- Gramling, A. A., Jenkins, J. G., & Taylor, M. (2010). Policy and research implications of evolving independence rules for public company auditors. *Accounting Horizons*, 24 (4), 547-566.
- Guidry, F., Leone, Andrew, J., & Rock, S. (1999). Earnings-based bonus plans and earnings management by business-unit managers. *Journal of Accounting and Economics*, 26, 113-142.
- Gul, F. A. & Tsui, J. S. (1992). An empirical analysis of Hong Kong bankers' perceptions of auditor ability to resist management pressure in an audit conflict situation. *Journal of International Accounting, Auditing and Taxation*, 1 (2), 177-190.
- Gul, F. A., Chen, C. J., & Tsui, J. S. (2003). Discretionary accounting accruals, managers' incentives, and audit fees. *Contemporary Accounting Research*, 20 (3), 441-463.
- Gupta, S., Laux, R., & Lynch, D. (2011). Do firms use tax cushion reversals to meet earnings targets? Evidence from the Pre- and Post-FIN 48 periods, Electronic copy available at: <http://ssrn.com/abstract=1163842>.

- Hall, S. C. & Stammerjohan, W. W. (2007), Damage awards and earnings management in the oil industry. *The Accounting Review*, 72 (1), 47-65.
- Hamilton, J., Ruddock, C., Stokes, D., & Taylor, S. (2005), Audit partner rotation and earnings quality, earnings conservatism. Working paper. Electronic version available at: <http://ssrn.com/abstract=740846>.
- Hanlon, M. & Heitzman, S. (2010). A review of tax research. *Journal of Accounting and Economics*, 50, 127-178.
- Harris, D. & Shi, L. (2011). Earnings management to avoid losses with positive, negative, large and small discretionary accruals. Electronic copy available at: <http://ssrn.com/abstract=1867555>.
- Healy, P. M. (1985). The effect of bonus schemes on accounting decisions. *Journal of Accounting and Economics*, 7 (1), 85-107.
- Heckman, J. J. (1979). Sample selection bias as a specification error, *Econometrica*, 47 (1), 153-161.
- Heninger, W. G. (2001). The association between auditor litigation and abnormal accruals. *The Accounting Review*, 76 (1), 111-126.
- Hirst, D. E. (1994). Auditor sensitivity to earnings management. *Contemporary Accounting Research*, 11 (1), 405-422.
- Ho, L. J., Liu, C, Schaefer, T. (2010). Audit tenure and earnings surprise management. *Review of Accounting and Finance*, 9 (2), 116-138.
- Hadgson, A., Lhaopadchan, S., & Buakes, S. (2011). How informative is the Thai corporate governance index? A financial approach. *International Journal of Accounting and Information Management*, 19 (1), 53-79.
- Hogan, C. E. (1997). Costs and Benefits of Audit Quality in the IPO Market: A Self-Selection Analysis, *The Accounting Review*, 72 (1), 67-86.
- Hogan, C. E. & Jeter, D. C. (1999). Industry specialization by auditors. *Auditing*, 18 (1), 1-17.
- Houston, R. W., Peters, M. F., & Pratt, J. H. (1999). The audit risk model, business risk and audit-planning decisions. *The Accounting Review*, 74 (3), 281-298.
- International Federation of Accountants, (2006). *Code of Ethics for Professional Accountants*, Electronic copy available at: <http://www.ifac.org/sites/default/files/publications/files/ifac-code-of-ethics-for.pdf>

_____, (2010), *Handbook of International Quality Control, Auditing, Review, Other Assurance, and Related Services Pronouncements*, Electronic copy available at:
<http://www.ifac.org/publications-resources/2010-handbook-international-quality-control-auditing-review-other-assurance-a>

Institute of Chartered Accountants of England and Wales (2009). *Code of Ethics*, Electronic copy available at:
<http://www.icaew.com/en/technical/ethics/icaew-code-of-ethics/icaew-code-of-ethics>

Ireland, J. C. & Lennox, C. S. (2002). The large audit firm fee premium: a case of selectivity bias? *Journal of Accounting, Auditing and Finance*, 17 (1), 73-91.

Jaggi, B., Gul, F., & Lau, T., (2012). Auditor industry specialization, political economy and earnings quality: Some cross-country evidence. *Journal of International Financial Management & Accounting*, 23 (1), 23-61.

Jeter, D. C. & Shivakumar, L. (1999). Cross-sectional estimation of abnormal accruals using quarterly and annual data: effectiveness in detecting event-specific earnings management. *Accounting and Business Research*, 29 (4), 299-319.

Johnson, W. B. & Ramanan R. (1988). Discretionary accounting changes from "Successful Efforts" to "Full Cost" methods. *The Accounting Review*, 63 (1), 96-110.

Johnson, V. E., Khurana, I. K., & Reynolds, J. K. (2002). Audit-firm tenure and the quality of financial reports. *Contemporary Accounting Research*, 19 (4), 637-660.

Jones, J. (1991). Earnings management during import relied investigations. *Journal of Accounting Research*, 29 (2), 193-228.

Kavut, L. (2001). Bağımsız denetçiler ile denetim hizmeti alan işletmelerin yöneticilerinin denetim kalitesine ilişkin görüş ve tutumları [Independent Auditors and Managers of Auditees' Attitudes and Opinions on Audit Quality]. *İMKB Dergisi*, 5 (20), 1-30.

Kasznik, Ron (1999). On the association between voluntary disclosure and earnings management. *Journal of Accounting Research*, 37 (1), 56-81.

Keating, A. S. & Zimmerman, J. L. (1999). Depreciation policy changes: tax, earnings management, and investment opportunity incentives. Simon School of Business Working Paper No. FR 99-06. Electronic version available at:
<http://ssrn.com/abstract=161526>.

Kim, M., Kross, W., (1998). The impact of the 1989 change in bank capital standards on loan loss provisions and loan write-offs. *Journal of Accounting and Economics*, 25, 69-99.

- Kim, J., Chung, R., Firth, M. (2003). Auditor conservatism, asymmetric monitoring, and earnings management. *Contemporary Accounting Research*, 20 (2), 323-359.
- Kinney, W. R. Jr., (1999). Auditor independence: A burdensome constraint or core value? *Accounting Horizons*, 13, 69-75.
- Klein, A., (2002). Audit committee, board of director characteristics, and earnings management. *Journal of Accounting and Economics*, 33, 375-400.
- Kothari, S.P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics*, 39, 163-197.
- Krishnan, G. V. (2003a). Does Big 6 auditor industry expertise constrain earnings management. *Accounting Horizons*, Supplement, 1-16.
- _____ (2003b), Audit quality and the pricing of discretionary accruals, *Auditing*, 22 (1). 109-126.
- _____ (2005). The association between big 6 auditor industry expertise and the asymmetric timeliness of earnings. *Journal of Accounting, Auditing & Finance*, 20, 209-228.
- Krishnan, J. (2005). Audit Committee Quality and Internal Control: An Empirical Analysis. *The Accounting Review*, 80 (2), 649-675.
- Krishnan, J. & Krishnan, J. (1997). Litigation risk and auditor resignations. *The Accounting Review*, 72 (4), 539-560.
- Krishnan, J., Lixin, S., & Zhang, Y. (2011). Non audit Services and Earnings Management in the Pre-SOX and Post-SOX Eras. *Auditing: A Journal of Practice & Theory*, 30 (3), 103-123.
- Kwon, S. (1996). The Impact of Competition within the Client's Industry on the Auditor Selection Decision. *Auditing*, 15 (1), 53-69.
- Lara, J. M., Osma, B. G., & Panelva, F. (2009). Accounting conservatism and corporate governance, *Review of Accounting Studies*, 14, 161-201.
- Larcker, D. F. & Richardson, S. A. (2004). Fees paid to audit firms, accrual choices, and corporate governance. *Journal of Accounting Research*, 42 (3), 625-658.
- Larcker, D. F., Richardson, S. A., & Tuna, I. (2007). Corporate governance, accounting outcomes, and organizational performance. *Contemporary Accounting Research*, 24 (4), 963-1008.

- Lassila, D. R., Omer, T. C., Shelley, M. K., Smith, L. M. (2010). Do complexity, governance, and auditor independence influence whether firms retain their auditors for tax services? *Journal of American Taxation Association*, 32 (1), 1-23.
- Lee, C. J., Li, L.Y., & Yue, H. (2006). Performance, growth and earnings management. *Review of Accounting Studies*, 11, 305-334.
- Lee, H. Y. & Mande, V. (2003). The effect of the Private Securities Litigation Reform Act of 1995 on accounting discretion of client managers of Big 6 and non-Big 6 auditors. *Auditing*, 22 (1), 93-108.
- _____ (2005). The relationship of audit committee characteristics with endogenously determined audit and non-audit fees. *Quarterly Journal of Finance and Accounting*, 44 (3-4), 93-112.
- Lee, T. A., Ingram, R. W., & Howard, T. P. (1999). The difference between earnings and operating cash flow as an indicator of financial reporting fraud. *Contemporary Accounting Research*, 16 (4), 749 – 86.
- Lennox, C. S. (1999). Audit quality and auditor switching: Some lessons for policy makers. Working Paper. Electronic version available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=121048.
- Lennox, C. S., Francis, J. R., & Wang, Z. (2012). Selection models in accounting research. *The Accounting Review*, 87 (2), 586-616.
- Liang, P. J. (2010). Equilibrium earnings management, incentive contracts, and accounting standards. *Contemporary Accounting Research*, 21 (3), 685-718.
- Lin, Z. & Shih, M. S. (2005). New insights into using jones-type models to detect earnings management: interpretations and implications for earnings management research. Working Paper. Electronic version available at: <http://www.bschool.nus.edu.sg/Departments/FinanceNAccounting/Seminars/Papers/lin%20zhi%20xing%20%20bias%20in%20jone%20type%20models.pdf>.
- Little, R. J. (1985). A Note About Models for Selectivity Bias. *Econometrica*, 53 (6), 1469-1474.
- Lobo, G. & Zhou, J. (2006). Did conservatism in financial reporting increase after the Sarbanes-Oxley Act? Initial evidence. *Accounting Horizons*, 20 (1), 57 - 73.
- Lowensohn, S., Johnson, L. E., Elder, R. J., & Davies, S. P. (2007). Auditor specialization, perceived audit quality, and audit fees in the local government audit market. *Journal of Accounting and Public Policy*, 26, 705-732.
- Lys, T. & Watts, R. L. (1994). Lawsuits against Auditors, *Journal of Accounting Research*, 32, 65-93.

- Malmquist, D. H. (1990). Efficient contracting and the choice of accounting method in the oil and gas industry. *Journal of Accounting and Economics*, 12, 173-205.
- Manry, D. L., Mock, T. J., & Turner, J. L. (2008). Does increased audit partner tenure reduce audit quality? *Journal of Accounting, Auditing & Finance*, 23 (4), 553 -572.
- Mansi, S., Maxwell, W. F., & Miller, D. P. (2004). Does auditor quality and tenure matter to investors? Evidence from the bond market. *Journal of Accounting Research*, 42 (4), 755-793.
- Mayhew, B. W. & Wilkins, M. S. (2003). Audit firm industry specialization as a differentiation strategy: evidence from fees charged to firms going public. *Auditing*, 22 (2), 33-52.
- McMeeking, K. P., Peasnell, K. V., & Pope, P. F. (2007). The effect of large audit firm mergers on audit pricing in the UK. *Accounting and Business Research*, 37 (4), 301-319.
- McVay, S. E. (2006). Earnings management using classification shifting: an examination of core earnings and special items. *The Accounting Review*, 81 (3), 501-531.
- Miller, G. S. & Skinner, D. J. (1998). Determinants of the valuation allowance for deferred tax assets under SFAS No. 109. *The Accounting Review*, 73 (2), 213-233.
- Moreland, K. A. (1995). Criticisms of auditors and the association between earnings and returns of client firms. *Auditing*, 14 (1), 94-103.
- Morsfield, S. G. & Tan, C. E. (2006). Do venture capitalists influence the decision to manage earnings in initial public offerings? *The Accounting Review*, 81 (5), 1119-1150.
- Moses, O. D. (1987). Income smoothing and incentives: empirical tests using accounting changes. *The Accounting Review*, 62 (2), 358-377.
- Myers, J. N., Myers, L., & Omer, T. C. (2003). Exploring the term of the auditor-client relationship and the quality of earnings: A case for mandatory auditor rotation. *The Accounting Review*, 78 (3), 779-799.
- Myers, J. N., Myers, L., Palmrose, Z., & Scholz, S. (2005). Mandatory auditor rotation: evidence from restatements. Electronic version available at: <http://swebdir.com/audit/midyear/04midyear/papers/Myers.pdf>
- Myers, J. N., Myers, L., & Skinner, D. J. (2007). Earnings momentum and earnings management. *Journal of Accounting, Auditing and Finance*, 22 (2), 249-284.

- Nelson, M. W., Elliott, J. A., & Tarpley, R. L. (2002). Managers' and Auditors' Earnings Management Decisions. *The Accounting Review*, 77, Supplement, 175-202.
- Nuhoğlu, N. İ. (2010). The reaction and perception of financial stakeholders: Does the auditor name effect their decision? An experimental survey in an emerging market – Turkey. *İİF - İktisat, İşletme, Finans*, 25 (293), 25-68.
- Nissim, D. & Penman, S. H. (2001). Ratio analysis and equity valuation: from research to practice. *Review of Accounting Studies*, 6, 109-154.
- O'Keefe, T. B., Simunic, D. A., & Stein, M. T. (1994). The production of audit services: evidence from a major public accounting firm. *Journal of Accounting Research*, 32 (2), 241-261.
- Pae, J. (2005). Expected accrual models: the impact of operating cash flows and reversals of accruals. *Review of Quantitative Finance and Accounting*, 24, 5-22.
- Palmrose, Z. (1988). An analysis of auditor litigation and audit service quality, *The Accounting Review*, 63 (1), 55-73.
- Palmrose, Z. & Scholz, S. (2004). The circumstances and legal consequences of non-gaap reporting: Evidence from restatements. *Contemporary Accounting Research*, 24 (1), 139-180.
- Palmrose, Z., Richardson, V. J., & Scholz, S. (2004). Determinants of market reactions to restatement announcements. *Journal of Accounting and Economics*, 37, 59-89.
- Payne, J. L. (2002). Accounting accruals: The influence of going-concern audit opinions and audit quality. *Accounting Enquiries*, 11 (1), 43-82.
- Penman, S. H. & Zhang, X. (2002). Accounting conservatism, the quality of earnings, and stock returns. *The Accounting Review*, 77 (2), 237-264.
- Petroni, K. R. (1992). Optimistic reporting in the property- casualty insurance industry. *Journal of Accounting and Economics*, 15 (4), 485-508.
- Petroni, K. R., Ryan, S. G., & Wahlen, J. M. (2000). Discretionary and non-discretionary revisions of loss reserves by property-casualty insurers: Differential implications for future profitability, risk and market value. *Review of Accounting Studies*, 5 (2), 95-125.
- Phillips, F. (1999). Auditor attention to and judgments of aggressive financial reporting. *Journal of Accounting Research*, 37 (1), 167-189.
- Pratt, J. & Stice, J. D. (1994). The effects of client characteristics on auditor litigation risk judgments, required audit evidence, and recommended audit fees, *The Accounting Review*, 69 (4), 639-656.

- Reichelt, K.J., Wang D. (2010). National and office-specific measures of auditor industry expertise and effects on audit quality. *Journal of Accounting Research*, 48 (3), 647-689.
- Revsine, L., Collins, D., Johnson, B., & Mittelstaedt, F. (1999). *Financial Reporting and Analysis*, McGraw-Hill/Irwin Publications, 4th Edition.
- Reynolds, J. K. & Francis, J. R. (2001). Does size matter? The influence of large clients on office-level auditor reporting decisions. *Journal of Accounting and Economics*, 30, 375-400.
- Reynolds, J. K., Deis, D. R., & Francis, J. R. (2004). Professional service fees and auditor objectivity. *Auditing*, 23 (1), 29, 2.
- Richardson, S. A., Sloan, R. G., Soliman, M. T., & Tuna, İ. (2005). Accrual reliability, earnings persistence and stock prices. *Journal of Accounting and Economics*, 39, 437-485.
-
- (2006). The implications of accounting distortions and growth for accruals and profitability. *The Accounting Review*, 81 (3), 713-743.
- Rosner, R. L. (2003). Earnings manipulation in failing firms. *Contemporary Accounting Research*, 20 (2), 361-408.
- Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics*, 42, 335 – 370.
- Samelson, D. , Lowensohn, S, & Johnson, L. E. (2006). The determinants of perceived audit quality and auditee satisfaction in local government. *Journal of Public Budgeting, Accounting & Financial Management*, 18 (2), 139-166.
- Schneider, A. & Neil, W. (1990). A Test of Audit Deterrent to Financial Reporting Irregularities Using the Randomized Response Technique. *The Accounting Review*, 65 (3), 668-681.
- Schrand, C. M. & Wong, M. H. (2003). Earnings management using the valuation allowance for deferred tax assets under SFAS No. 109. *Contemporary Accounting Research*, 20 (3), 579-611.
- Shackelford, D. A. & Shevlin, T. (1999). Empirical tax research in accounting, *Journal of Accounting and Economics*, 31, 321-387.
- Shivakumar, L. (2000). Do firms mislead investors by overstating earnings before seasoned equity offerings? *Journal of Accounting and Economics*, 29, 339-371.
- Shockley, R. A. (1981). Perceptions of auditors' independence: An empirical analysis. *The Accounting Review*, 56 (4), 785-800.

- Simunic, D. A. (1980). The Pricing of Audit Services: Theory and evidence. *Journal of Accounting Research*, 18 (1), 161-190.
- _____ (1984). Auditing, Consulting, and Auditor Independence. *Journal of Accounting Research*, 22 (2), 679-702.
- Simunic, D. A. & Stein, M. T. (1990). Audit risk in a client portfolio context. *Contemporary Accounting Research*, 6 (2), 329-343.
- _____ (1996). Impact of litigation risk on audit pricing: A review of the economics and the evidence. *Auditing*, 15, 119-134.
- _____ (1996). Reply: The impact of litigation risk on audit pricing: A review of the economics and the evidence. *Auditing*, 15, 145-148.
- Skinner, D. J. (1993). The investment opportunity set and accounting procedure choice. *Journal of Accounting and Economics*, 16, 407-445.
- Solomon, I., Shields, M. D., & Whittington, O. R. (1999). What Do Industry-Specialist Auditors Know? *Journal of Accounting Research*, 37 (1), 191-208.
- Sirinidhi, B. N. & Gul, A. F. (2007). The differential effects of auditors' non audit and audit fees on accrual quality. *Contemporary Accounting Research*, 24 (2), pages 595-629.
- Subramanyam, K. R., Wild, J.J. (1996). Going-concern status, earnings persistence, and informativeness of earnings. *Contemporary Accounting Research*, 13 (1), 251-273.
- Sun, J. & Liu, G. (2011). Client-specific litigation risk and audit quality differentiation. *Managerial Auditing Journal*, 26 (4), 300-316.
- Svanström, T. & Sundgren, S. (2012). The demand for non-audit services and auditor-client relationships: Evidence from Swedish small and medium-sized enterprises. *International Journal of Auditing*, 16, 54-78.
- Sweeney, A. P. (1994). Debt-covenant violations and managers' accounting responses. *Journal of Accounting and Economics*, 17 (3), 281-308.
- Teoh, H.Y. & Lim, E. (1996). An empirical study of the effects of audit committees, disclosure of non-audit fees and other issues on audit independence: Malaysian evidence. *Journal of International Accounting, Auditing and Taxation*, 5 (2), 231-248.
- Teoh, S. H. & Wong, T. J. (1993). Perceived auditor quality and the earnings response coefficient. *The Accounting Review*, 68 (2), 346-366.
- Trueman, B. & Titman, S. (1988). An explanation for accounting income smoothing. *Journal of Accounting Research*, 26, Supplement, 127-139.

- Uecker, W. C., Brief, A. P., & Kinney, Jr. W. R. (1981). Perception of the internal and external auditor as a deterrent to corporate irregularities. *Accounting Review*, 56 (3), 465-478.
- Vafeas, N. (1999). The nature of board nominating committees and their role in corporate governance. *Journal of Business Finance & Accounting*, 26 (1/2), 199-225.
- _____ (2005). Audit committees, boards, and the quality of reported earnings. *Contemporary Accounting Research*, 22 (4), 1093-1122.
- Venkataraman, R. & Weber, J., & Willenborg, M. (2008). Litigation risk, audit quality, and audit fees: evidence from initial public offerings. *The Accounting Review*, 83 (1), 1315-1345.
- Wallace, A. W. (1981). The association between municipal market measures and selected financial reporting practices. *Journal of Accounting Research*, 19 (2), 502-520.
- Watkins, A. L., Hillison, W., & Morecroft, S. E. (2004). Audit quality: A synthesis of theory and empirical evidence. *Journal of Accounting Literature*, 23, 153-193.
- Watts, R. L. & Zimmerman, J. L. (1990). Positive Accounting Theory: A ten year perspective. *The Accounting Review*, 65 (1), 131-156.
- Weber, J. & Willenborg, M. (2003). Do expert informational intermediaries add value? Evidence from auditors in microcap IPOs. *Journal of Accounting Research*, 41 (4), 681-720.
- Weber, J. & Willenborg, M., & Zhang, J. (2008). Does auditor reputation matter? The case of KPMG Germany and ComROAD AG. *Journal of Accounting Research*, 46 (4), 972-941.
- Whittred, G. P. (1980). Audit qualification and the timeliness of corporate annual reports. *Accounting Review*, 55 (4), 563-577.
- Willenborg, M. (1999). Empirical analysis of the economic demand for auditing in the initial public offerings market. *Journal of Accounting Research*, 37 (1), 225-238.
- Willoughby, M., Carmona, P., Momparler, A. (2012). The effects of the provision of consulting services on audit reporting quality. *The Service Industries Journal*, 32 (3), 411-429.
- Wooldridge, J. M. (2009). *Introductory Econometrics: A Modern Approach*, South Western College Publication, 4th Edition.
- Young, S. (1998). The determinants of managerial accounting policy choice: Further evidence of for the UK. *Accounting and Business Research*, 28 (2), 131-143.

Zhang, B. & Emanuel, D. (2008). The provision of non-audit services and earnings conservatism, Do New Zealand auditors compromise their independence? *Accounting Research Journal*, 21 (2), 195-221.